
CENTRE FOR FINANCIAL REGULATION AND INNOVATION

White Paper

Strategic Fintech

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The University of Strathclyde is a leading international technological university that has made *Fintech* one of its strategic clusters.

The concept of Strategic Fintech is part of the taught curriculum and research agenda at Strathclyde Business School. It is led at the faculty level by Eleanor Shaw, Vice-Dean (External Engagement) and at a university level by Tim Bedford Associate Principal, Research and Knowledge Exchange.

This paper introduces the concept of *Strategic Fintech*, an implications led approach to evaluate the changes that financial technology brings to financial services. It details the changing nature of financial mediation in a digital world. *Strategic Fintech* provides a framework from which to manage disruption at both a business and a societal level. It is the basis of *Fintech* as taught at business schools. It encompasses disruptive business models, new financial service delivery methods, distributed ledgers, change management, regulatory challenges, and changing financial skill-sets. It provides senior management and entrepreneurs with the insights needed to navigate the reshaping of financial markets. Its contribution is in defining the strategic approach to *Fintech*.

KEYWORDS

Fintech, Strategy, Business models, Innovation, Financial Services, Disruption, Artificial Intelligence, Taught finance, Fintech Scotland.

1 | INTRODUCTION

Strategic Fintech is a way of thinking, acting and influencing in financial services in order to promote the success of an organization and/or society. It is grounded in a strong understanding of the disruptive nature of finance and technological innovation. Its adoption requires a vision of the future of capital markets.

The term *Fintech* has many meanings but typically is used to describe financial technology driven innovation. It refers more casually to a subset of digital financial business models that have technology at their core. It is used

Abbreviations: GDP - Gross Domestic Product; M-Pesa - a mobile phone-based money transfer technology; SFE - Scottish Financial Enterprise;

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loosely to encompass Management Science techniques such as Artificial Intelligence, Machine Learning, Analytics, Statistics, and Methods. According to Dorfleitner et al. (2017), as a rule *Fintech* companies offer Internet-based and application-oriented products. These are collectively contributing to what is claimed to be a revolution in financial markets, heralding an era of cheaper, faster and more customized services. *Strategic Fintech's* contribution is anchored in the benefits derived from the distributed nature of the internet.

Focusing on change, this paper presents *Fintech* in terms of its strategic implications. The promise of *Fintech* is that it will enable customers, enhance efficiency, and disrupt the financial services sector. *Fintech* also promises to deliver tangible societal benefits, deriving from the lower cost, more choice, and better service. It will change the competitive positioning of incumbent institutions, a process which requires planning as well as execution. In this respect, Wilson (2017) makes the point that it is possible to create strategic value as part of this phenomena. This is the essence of *Strategic Fintech* from an academic perspective.

There is an increasing body of academic literature on *Fintech*. As a nascent theme, this tends to focus on future challenges and potential opportunities. It is suggested, however, that such thought pieces are not rigorous enough for the top peer reviewed journals. Many of the insights are therefore drawn from white papers produced by consultants and government. A review of the literature, as well as current and future research directions, can be found in Gomber, Koch and Siering (2017).

In summary, the concept of *Strategic Fintech* is a mindset which revolves around the process by which insights into the business and societal implications of the *Fintech* revolution are used to transform financial services. It is a way of thinking and applied analysis, as promoted by business schools. It is not just the evolution of technology but also the creation of an ecosystem.

2 | THE FINTECH REVOLUTION

The *Strategic Fintech* process addresses what Demircuc-Kunt et al (2018) of the World Bank termed the *Fintech revolution*. This is a term used to describe advances in financial technology that have enabled faster, cheaper and more secure digital transactions. This results in the migration of the backbone of financial markets to the Internet, which in turn facilitates mass customization and disintermediation. Meanwhile, Artificial Intelligence and Machine Learning are being applied to financial data, gaining *Strategic Fintech* insights that can be used to source liquidity, evaluate credit, mitigate risk and automate decisions.

Although some of the advantages of *Fintech* have been promoted as revolutionary, Peat, Kelly and Broby (2017), however, provide a cautionary note. They discuss whether *Fintech* is hype or reality. They conclude that there are clear benefits from the technology. They advise not to fall into the trap of believing it will change everything. In this respect, *Fintech* could be said to be more evolutionary than revolutionary. That said, its adoption and understating are critical to future success in financial services.

There is a digital revolution that is well documented. As part of that, financial services have generated an explosion in data. The processing of this data, as explained by Friedman (2001), requires a range of skills that are not traditional associated with financial services. These include Computer Programming Languages, Data Base Management, Artificial Intelligence, Machine Learning, Pattern Recognition and Visualization. The process of *Strategic Fintech* brainstorming takes inventory of these and ensures that the financial company of the future is fit for purpose. Meanwhile, *Strategic Fintech*, as taught at universities, addresses the skills gap.

It is best to think of *Strategic Fintech* as a holistic view of the financial landscape and an overview of how it is changing. It incorporates an understanding of a customer's assets and liabilities, cash flows and risk preferences. In this respect,

financial service companies could cease to be just liquidity mediators. Some become preference matchers. They achieve the same economic function that traditional incumbents deliver, but in a friction-less way. Sureshchandar et al. (2001) argue that this should be viewed holistically, that there should be a focus on *total quality service*, in the same way that manufacturing companies focus on *total quality management*.

Birch and Young (1997) argued that financial organizational structures may be inappropriate for an internet enabled future over two decades ago. As financial services moves away from bricks and mortar, the security of client money, custodial assets and transactions becomes of increasing concern. This is why *Strategic Fintech* incorporates not just thoughts about the Organization but also Cryptography, Internet Security and Regulatory Insights. Trust is, after all, essential to the smooth running of any financial service. *Fintech* companies have to be trusted in order to be accepted.

Financial markets are set to change dramatically. The role of central marketplaces, such as the Stock Exchange, will be made redundant by price discovery and liquidity delivered over the Internet. There will be less need for a deep balance sheet to conduct business. Customers data will be come portable. The cost of financial transfers will fall dramatically. Digital devices will replace the wallet. *Strategic Fintech* pre-empts these coming changes and allows companies to position themselves for the future.

The *Fintech* revolution is technology led. Internet protocols are central to it. Placing financial data on *blockchains* and *distributed ledgers* creates an immutable public record. The interoperability of that information brings many advantages. Deshpande (2017) provides a good discussion on this. That said, there are a multitude of different *blockchain* protocols, both public and private. These all suffer from varying issues which prevent their rapid adoption. Until solved, the demands of the global payments system, billions of transactions per second, will prevent them from being rolled out overnight. It is clear, however, that the future will have digital money in some form or other. *Strategic Fintech* plans for such an eventuality.

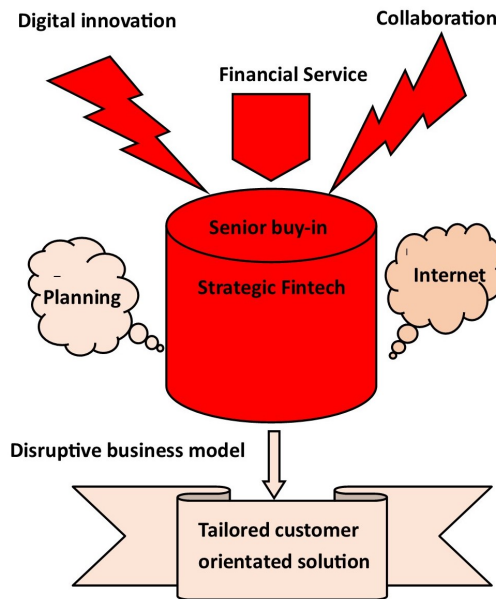
Addressing such top level issues is important. According to the IMF, in 2018 financial services represents some 16.8 per cent of global GDP, approximately USD 11 trillion. It is therefore not surprising that there is an entrepreneurial drive to monetize *Fintech* innovations. The process of disintermediation is creating a whole raft of beneficiaries and the revolution that results requires a *Strategic Fintech* understanding of the ecosystem on order to navigate it.

3 | THE STRATEGIC FINTECH FRAMEWORK

The concept of the *Strategic Fintech* framework is one of managed innovation. It is a business school led approach to managing change. It combines the ecosystem, uniting challengers and incumbents, government and universities. The alignment of interests is done at the platform level, allowing for competition but on a level playground. It benefits from industry insight and an understanding of emerging trends and consumer behavior. At its core is a technology and competence focus. It is a way of approaching, addressing and actioning innovative change.

Having a strategy focus on *Fintech* innovation, be it a corporate or national level, is a commitment to a set of coherent, mutually reinforcing practices aimed at delivering a digital financial service. This concept is captured by Gomber et al (2018). The idea behind *Strategic Fintech* is to promote alignment within an organization, clarify objectives and priorities, and help focus corporate behavior and product innovation. The overall strategy is customer focused, but supported by both the back and front office.

The core technologies behind *Strategic Fintech* are central to understanding how collaboration benefits the majority of participants. Take for example the role of Artificial Intelligence in *Fintech*, the ability of a digital computer to perform financial tasks. This results in black box outcomes unless proper thought and oversight goes into the development of its core assumptions. This is avoided by a holistic view of the risks and an understanding of the moving parts.

FIGURE 1 Holistic view of Strategic Fintech

An understanding of *Fintech* is not sufficient to win the fight for market share. An execution plan needs to be made, competencies mapped and products designed. Even the most simple applications need to have the right look, feel and cross platform functionality. Zahra and Covin (1993) illustrate how to incorporate technology into such an approach. In an Internet context, they also need to be secure and reliable. The *Strategic Fintech* process plans for such technology readiness. It is a co-development between technicians and finance professionals.

Although the cost of implanting digital solutions is considerably less than traditional financial services, *Fintech* models still have to have a viable approach to profitability. Financial innovation can create value in many ways but challengers are not as well capitalized as incumbents and have a less ability to make margin without a deposit base. It might make banking and obtaining financial advice easier but that is not the same as secure and reliable. That said, innovation is happening at a fast pace and is changing financial markets. Sirkin et al (2008) argued that such developments are radically redefining the competitive landscape.

Fintech innovation can make financial services more reliable or more convenient. *Strategic Fintech*, as depicted in Figure 1, is essentially a holistic way of rethinking the business with respect to the outcomes of innovation. It necessitates thinking out of the box in an innovative way with a broad alliance of practitioners and academics. The process is as follows:

- Consider what aspect of financial services can be digitalized.
- Consider how this can be done over the internet in a secure fashion.
- Work out if the innovation is evolutionary or disruptive in nature.
- Check the regulatory implications of the new approach.
- Validate the customer demand.
- Test robustness and security protocols.

- Develop an implementation strategy.
- Develop a diffusion approach for acceptance.

These steps should be combined with standard strategy techniques, as taught at business schools. This can be done in respect of the position in the market, commercial viability of new products, the business idea, the strategic options and partnerships.

The theory of disruptive innovation was pioneered by Christensen et al. (2015). They argued that this process create opportunities by creating new categories of customers. This is essentially the hope of open banking. It empowers simplification and convenience, optimizing financial data. Insufficient financial technology competencies and knowledge are the biggest challenges faced by challengers. Incumbents tend to have the skill-sets but they are deployed on legacy systems that are different to migrate away from. That said, challengers are more familiar with their customers and what they require.

The mindset of an organization is important during periods of disruptive change. Senior management understanding and buy-in is critical to success during such turbulent times. There is a reluctance in many organizations to make change due to the unfamiliarity with the new technology. The cost of failure is also large and more immediate. This is why the *Strategic Fintech* implementation should be a structured and planned process. Based on the Parasuraman (2000) Technology Readiness Index rankings many of the technologies are tried and tested but just being used in new and novel ways.

Strategic Fintech is about redefining the culture attributes into actionable core values. Jablonsky and Barsky (2000) show how the digital workplace is changing. Behaviors have to be adapted, built around common goals and values. These should be framed in terms of what the technology can do for customers. Clearly, with *Fintech* there is also a re-skilling component and as change is uncertain an element of monitoring and review. The key cultural readiness ingredients are:

- Vision
- Attitudes
- Conditions
- Resources
- Skill-sets

Accelerating talent adaption and acquisition is an important component of cultural readiness. The challenge is that finance and technology do not naturally sit well together. Technology is built upon logic whilst finance is a social science and subject to unpredictability. One way to marry these is through the sandbox approach, the way some financial regulators are addressing disruptive change and new technology. This is similar in concept to a *Fintech* Innovation Laboratory, discussed next.

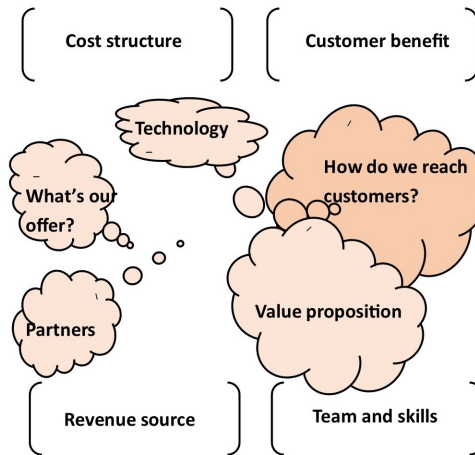
4 | FINTECH INNOVATION LABORATORY

The strength of implementing *Strategic Fintech* insights comes from the ability to take disciplined action and actioning organizational change. It advocates *living laboratory* concept, the *innovation laboratory*, where all participants in a financial marketplace can come together and develop the future of financial markets to the benefit of all.

The *innovation laboratory*, as explained by Lewis and Moultrie (2005), is the concept is depicted in Figure 2. In such laboratories, teams are dedicated to thinking out of the box. They do this in a neutral space, typically a university

or research facility. Agile methods are used to look at defined enterprise level research problems and projects. This enfranchises the researchers and creates a framework for exploring and developing digital approaches with view to commercialization.

FIGURE 2 The Fintech Innovation Laboratory



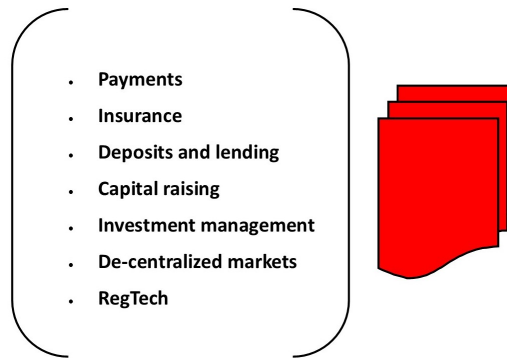
A useful tool for an innovation laboratory is a data lake. This is a central repository of financial data, both structured and unstructured, that can be used to test and develop ideas. Hai et al (2016) suggest such a system should be based on common access to raw data. This should have a well designed metadata management backbone, based on heterogeneous data sources. Time series and financial information are well suited to this. The advantage of a financial data lake is that new Fintech innovations can be tested in simulations without putting client money at risk.

The innovation laboratory is a central part of the *Strategic Fintech* concept. It incorporates a co-working space between academia and industry. It provides the support and tools to validate digital business concepts and novel methods of financial service delivery. The diversity of backgrounds and experiences is a major benefit of such facilities. The aim is to connect people who are changing the financial system whilst developing their conceptual ideas and scaling innovative concept

5 | THE DIGITAL FUTURE

The reason such out of the box thinking is necessary is that the world is going through a digital transformation. Many academics believe that the innovative use of technology will have a profound implications for business, society and our way of life. Brynjolfsson and McAfee (2012) also believe it will fundamentally change employment. A *Strategic Fintech* approach should ensure that these do not prove a barrier to digital entrepreneurship.

The evolution of digital finance was detailed in a report on The Future of Financial Services by the World Economic Forum, Schwab (2010). The report is summarized by Figure 3. It argues that all aspects of financial services that will be impacted. This can be categorized into Payments, Insurance, Deposits and Lending, Capital Raising, Investment Management and Market Provisioning.

FIGURE 3 Digital Financial Services.

Having a bright digital future does not come without challenges. There are some market distorting factors related to the Internet, all of which need to be part of the *Strategic Fintech* brief. A high percentage of digital content, and especially financial content, is still primarily in the English languages. Digital finance also has documented vulnerabilities. As noted by Nyirenda-Jere and Biru (2015), there are increasing security breaches.

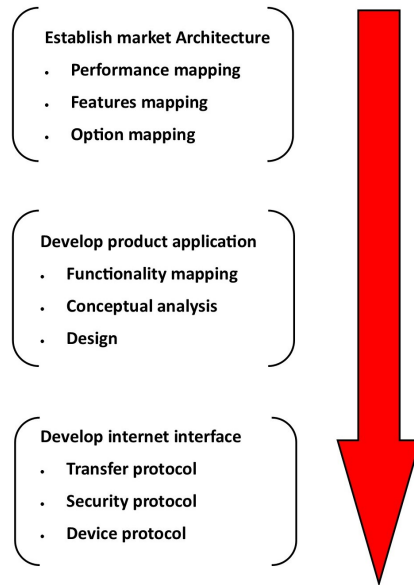
Digital financing supports the digital economy and makes risk capital available to a wider audience. A good summary of current research and future directions of research in digital finance can be found in Koch et al (2017). The ability to price credit risk more effectively will also have a transformative effect on the cost of capital of small and medium companies. The Internet can create liquidity buy connecting counterparties. The Internet Of Things (IoT), a concept explained by Gubbi et al (2013), facilitates a combination of financial processing with the whole digital supply chain. Figure 4 details this *Strategic Fintech* digital supply chain. The first step in the process is to establish a mapping criteria, the second to develop a product application and internet interface. This requires analysis and formal protocols.

6 | NEW BUSINESS MODELS

The *Fintech* revolution is generating a whole host of new digital business models as a result of advances in financial technology. A summary of these can be found in Bharadwaj et al (2013). The strength of the *Fintech* business case can be seen in the speed and durability of financial transactions, as well as the customer empowerment that can come through data analysis. The old financial system is built on legacy computing, and as such the technological platform that *Fintech* brings is superior to what currently exists. This presents both opportunities and challenges.

The weakness of the *Fintech* business model is typically in the unproven technology and the lack of regulatory oversight to accommodate it. Many of the start ups are either small and/or under capitalized. Financial markets, due to the amount of money involved, tend to attract undesirable business practices which can result in the treatment of assets in a less than fiduciary way. This manifested itself, for example, in numerous initial coin offering scams in the crypto currency space.

The opportunity that such innovation laboratories address in *Fintech* are very scalable due to the disruptive business models. These replace the traditional financial mediation channels. Roy et al. (2004) confirm this approach, pointing out that innovation is a successful outcome of interaction. According to this view, participation in laboratories and alliances

FIGURE 4 The digital development process

are routes to idea generation and success.

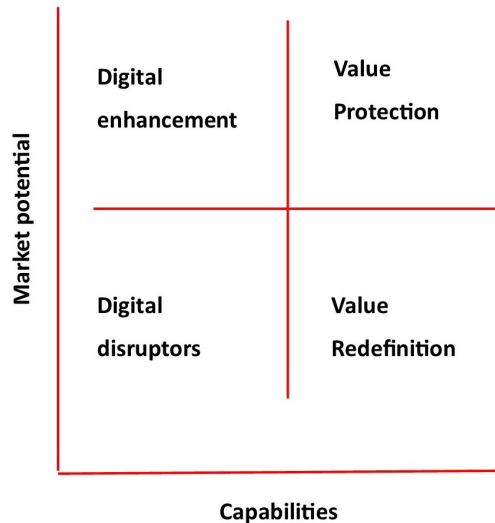
The threat from *Fintech*, also the subject of this thought process, can be seen clearly by examining the banking business model has traditionally been one where a loan book generates a margin, whereby the net income is a function of the cost to the income and what delinquencies are generated on that loan book. The non interest income, meanwhile, has been a function of the mediated services that the bank offers ancillary to its banking business. *Fintech* changes this in as much as a loan can be crowd-sourced, thereby negating the margin.

The costs of doing business over the Internet are substantially lower than through branches, thereby lowering the cost income ratio for comparable scale businesses. The use of analytics on data should lower delinquencies, or at least price for them in a more efficient manner. The non interest income from mediation services, meanwhile, looks set to be disintermediated.

7 | INCUMBENTS VERSUS CHALLENGERS

The battle between the incumbents and challengers is at the core of *Strategic Fintech* teaching. The average bank customer is currently more likely to get divorced than change bank account. This will change. Already, initiative like open banking, which gives customers the ability to take ownership of their financial data, are reducing the friction involved in changing financial service providers. Unless incumbents have a customer retention strategy, the market share implications for those with poor satisfaction levels are profound. The trade off between challengers capabilities and market potential is depicted in Figure 5. The incumbents are typically positioned in the top right hand quadrant and the challengers in the bottom left.

The incumbents are taking a variety of approaches to address the *Fintech* phenomena. The more advanced strategies

FIGURE 5 Challengers versus incumbents

are pursued by those in economies with sound internet and/or mobile infrastructure. The number of people using mobile banking in such jurisdictions has increased dramatically in the last five years as quantified by Demircuc-Kunt et al (2108). Customers are not only becoming more familiar with the technology but their confidence levels and expectations have also risen. This is facilitating a new wave of cross selling on such platforms.

The rise in *Fintech* has occurred in a low interest rate environment. Traditional banks make better net interest margin when rates are higher. As markets mean revert to more normal rate environments, the incumbents will benefit from their ability to attract deposits, something which the challengers find hard to do. This results in disintermediation, a process that was identified early by Schmidt et al (1999). Those start up *Fintech* companies that plan to exploit the changes in the financial ecosystem are called *challengers*. They have attracted a great deal of start up capital. Many are promoted by fairly senior former bankers in collaboration with technologists.

The public perception of *Fintech* is focused on the *challengers*, the small and nimble start ups. It largely overlooks the fact that the *incumbents* have long and strong relationships with their customers and larger technology budgets. It is these well established companies that are deploying *Strategic Fintech* insights. Many are incubating start ups as a way to understand the changing nature of financial services. Others are partnering with universities in order to better understand the technological change. Warschauer (2002) underlined the role of universities in the development of the financial profession.

The application of *Strategic Fintech* concepts can be a force for good and for innovation. The sector has the capacity to deliver efficiency improvements to the established financial sector, small businesses, banking and insurance customers, as well as the the disadvantaged and vulnerable.

Accenture (2018) found that in pure numerical terms some 17 percent of the global financial sector had been incorporated in the 13 years prior to their study. The United Kingdom had the highest number of new entrants during that time, some 63 percent. This is particularly poignant given the concentrated market share. In the UK the top four banks hold an 87 percent share of turnover. In the US the top five hold just 44 percent. Many challengers adopt

an intuitive and simplified customer interface, they are digital disruptors. Challengers benefit from lower operating costs, no legacy systems, and an ability to leverage network effects. Their solutions are incorporate with social and e-commerce platforms using application interfaces. In this way, they offer more streamlined and timely services. Incumbents typically focus on digital enhancements to their existing offering. They provide, for example, instant account opening.

8 | IMPACT ON SOCIETY

Advances in financial technology will have profound changes on society. The internet's ability to match buyers with sellers, savers with lenders, and fund raisers with investors, will disrupt existing market models. It will cut into both the margin and the fees of the incumbent participants. It will replace central market places and modes of money transmission. These changes will democratize financial markets, and make transactions both cheaper and easier. Indeed, the implications and business opportunities of blockchain and other financial technology innovations have far broader applications.

The biggest beneficiaries of the impact of financial technology are the financially illiterate and the currently unbanked. Academics such as Gabor and Brooks (2017) have focused on this impact on financial inclusion, arguing Fitnech is a force for good. An insight into this can be drawn from the impact of the Kenyan mobile money transfer system, MPESA. There are now more people in Kenya with MPESA accounts than have bank accounts. In a similar vein, remittances from the diaspora will cease to attract punditry fees as money transfer will become a quick and simple online process.

Crowd-funding and peer to peer lending will support many more enterprises, addressing the funding gap that currently exists for small and medium sized enterprises. Not all of these will be successful and therefore in the early days risk will be mispriced. There remains, therefore, a role for the incumbents who understand both the risks and the various counter-parties better. That said, those incumbents will have to embrace the new platforms in order to maintain their market position.

The much-hyped *cryptocurrencies*, that *blockchain* and *distributed ledgers* facilitates, are essentially prototypes of a digital replacement for paper money. It is uncertain how this will roll out but it is clear that there will be big societal implications. There are different models based on either public decentralised, those promoted by central banks or those driven by the need to deliver internet payments. Although uncertain which of these will dominate, Strategic Fintech thinking allows those concerned with market stability and integrity to prepare for the coming changes.

In the envisaged all digital future, monetary transmission will be seamlessly integrated into mobile wireless devices with distributed storage and accessibility. Banks will have to evolve their deposit role from that of trusted savings partner to trusted verification and platform access. The core bedrock of banking will still be trust, and as such a role exists for them as providers of privacy privacy and aggregation. As a result, lawmakers need to address the impact of Financial Technology on the digital world. Walker (2017) say this is merited due to counter-party fragmentation, and the subsequent regulatory and supervisory dislocation. This he believes will result in legal disconnection, division, depletion, and distraction

9 | CONCLUSION

It is clear that *Fintech* is changing the nature of financial services. As a result, participants need to think more strategically. This paper detailed how this can be done in a methodological way utilizing *Strategic Fintech* concepts. It shows how

Fintech, the application of innovative technology in finance, is disruptive. It concludes that the incumbents, established banking and insurance companies, have to think more strategically.

The nature of the financial mediation is fundamentally changing. Financial companies have to either adapt or lose both market share and margin and the best way to do this is through *Strategic Fintech* planning. Meanwhile, the consumer financial service experience is being digitalized. With the ability to analyze and process digital financial data, the financial clients are being offered customization. The mode of delivery of financial services is changing, moving to mobile devices. *Strategic Fintech* allows incumbents to address such issues, which providing a framework for the innovative start ups to operate in.

Some view the changes that *Fintech* herald through a technological lens, others through a financial lens. Regardless of which perspective one has, there is a clear difference between the agile approach and the *Strategic Fintech* approach. Obviously, there is room for both but the latter should be the dominant focus of senior management. The insights gained from *Strategic Fintech* facilitate managed change. It allows all members of the financial ecosystem to benefit by developing shared platforms, protocols and methods. It helps create the backbone of the future, with inter-operability at its core.

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