



PALGRAVE STUDIES IN
FINANCIAL SERVICES TECHNOLOGY

Disruptive Technology in Banking and Finance

An International Perspective on FinTech

Edited by
Timothy King
Francesco Saverio Stentella Lopes
Abhishek Srivastav
Jonathan Williams

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Palgrave Studies in Financial Services Technology

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ISSN 2662-5083

ISSN 2662-5091 (electronic)

Palgrave Studies in Financial Services Technology

ISBN 978-3-030-81834-0

ISBN 978-3-030-81835-7 (eBook)

<https://doi.org/10.1007/978-3-030-81835-7>

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The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

FOREWORD

As a financial services professional and fintech investor, lecturer, and board member, I was naturally honoured in 2020 when Dr. Tim King asked me to write a chapter and contribute with this foreword for a publication that he and his colleagues were putting together. I enjoyed collaborating with Tim on the UK challenger bank sector, and at the time I noted Tim's insights on the intersection of finance and technology.

Now reading carefully the final draft nearly a year later, I am struck by the timeliness and breadth of this literature and expect its readers will agree with this assessment.

First, this book spans the fintech domain and is well-timed following a pandemic year in which most of us, our co-workers, and our families moved online and went digital. Technology was not only actively used in many health-related endeavours during this period, but it also became fully integrated into financial markets via embedded finance, predictive tools for risk assessment, and open banking applications. This tech-led transformation underscores the strength and reliance of fintech, and this book is a very timely addition as a resource for both practitioners and academics/students alike.

The contribution of this book is not only its timeliness but also its breadth of material from notable thought-leaders and academics in this domain. After revealing historical disruptive trends and a taxonomy of digital innovation, the book then tackles cryptos, insurtech, and

bank/fintech partnerships. To my eyes, these subjects have been absolutely brought to the foreground during the pandemic period and they will change the financial technology intersect going forward for good. The partnership issue is interesting: while commercial banks have scale, they often look to fintechs as an agent of cultural change and innovative solutions, as described in Chapter 6. The final three chapters consider the future for digital disruption in this fast-moving sector.

Given my touchpoints with fintech today, I believe readers will find that this book contributes to their understanding of the exciting and complex developments that are taking place today during these extraordinary times. Enjoy!

London, England

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Introduction

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FinTech has garnered the interest of the public, industry practitioners, regulators, researchers and policy makers worldwide. Its disruptive and transformative potential transcends country borders and is having real impact on the way financial services are provided. FinTech is forcing

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Switzerland AG 2021

T. King et al. (eds.), *Disruptive Technology in Banking
and Finance*, Palgrave Studies in Financial Services Technology,
https://doi.org/10.1007/978-3-030-81835-7_1

existing financial institutions to adapt. Consequently, financial institutions are investing and collaborating with those innovative start-ups who threaten traditional banking models.

An amalgamation of ‘finance’ and ‘technology’, FinTech continues to capture the imagination and interest of consumers of all ages, financial sector firms, governments, regulators, supranational agencies and standard setters worldwide. The word FinTech broadly refers to technological innovations applied to the finance sector and the word has gained entry to major dictionaries over the last few years—albeit no single definition exists. The Merriam-Webster dictionary defines FinTech as ‘products and companies that employ newly developed digital and online technologies in the banking and financial services industries’. As you, the reader, will come to learn throughout this text, FinTech firms have been grabbing headlines worldwide and for good reasons. For example, in November 2020, Chinese FinTech firm Ant Group was very close to an initial public offering (IPO) with an estimated value at listing of \$37 billion United States (U.S.) dollars, only for regulators to intervene merely days before it was to begin trading. Similarly, in April 2021, Coinbase a major cryptocurrency exchange underwent a successful listing on Nasdaq with an initial market capitalization exceeding \$50 billion U.S. dollars. This made Coinbase’s listing the biggest new US stock market entrant since Uber (itself major disruptor in another sector) in 2019. Other areas of FinTech have also attracted much international attention, such as, blockchain and cryptocurrencies, which have been sources of excitement, miscomprehension and concern—almost in equal measures among various stakeholders.

Against this backdrop, this tome provides you, the reader, with a thorough overview of FinTech across multiple geographies and a framework to understand the historical, current and future impacts of disruptive financial technologies for businesses and society. Although FinTech is dramatically transforming the nature of financial services and financial intermediation, its current and future impacts are largely uncertain. For instance, in many jurisdictions regulatory bodies and policy makers are starting to take a keen interest in developments, with recently implemented and future regulations expected to have a big impact on FinTech. For example, European regulators have been advancing new legislation designed to encourage ‘open banking’, which is anticipated to dramatically transform the nature of financial services by providing a more competitive financial industry landscape in which traditional financial

services providers like banks are forced to compete with innovative start-ups and non-traditional industry players. Such changes may increase consumer choice and lower prices but also could undermine financial stability.

Across ten chapters this book will help answer the question is disruptive technology a force for good? As will be explained, on one hand, disruption, especially during times of heightened uncertainty, can represent a positive force for change that challenges established norms, improves efficiencies and helps to increase social and economic prosperity. On the other hand, technological disruption can have negative implications, for instance, concerns over risk management in FinTech firms and over the environmental impact of Bitcoin. Yet dear reader, as you will come to learn, disruption is often associated with both positive and negative effects, or, what we refer to later in this book (in Chapter 10) as ‘light’ and ‘dark’ sides. One salient example of this apparent ‘double-edged sword’ is the effect of increased competition in the market for funeral services in Germany during the 1990s.¹ In this case the entry of new digital entrants into the industry led to aggressive pricing strategies that focussed on low prices but at the expense of a more personal, and arguably sensitive, service. Moreover, a strong online marketing focus by these industry ‘disruptors’, forced many ‘traditional’ industry players to follow suit. The net result was a fall in the average cost of funeral services at the expense of a more personal and more reputation-based service.

While the term FinTech has only really gained prominence since the Global Financial Crisis (GFC) of 2007–2009, you will discover in this chapter and subsequent chapters, and come to appreciate that FinTech is not a new phenomenon. Instead disruptive technology, applied to financial, banking and insurance sectors, has origins much earlier. More recently, in the latter half of the twentieth century, revolutionary technologies, such as the invention of the World Wide Web, were a catalyst of the now fully realized and so-called ‘digital revolution’. This crucial technology, which has its direct origins in a networked messaging system to facilitate communications between nuclear scientists worldwide, which itself utilized a United States (U.S.) government platform operational since the 1960s and then simply known as the ‘internet’, has come a long way since it was invented by computer scientist Sir Timothy Berners-Lee in 1989 while working at the European Organization for Nuclear Research (CERN). As the world increasingly realized its potential to disrupt societies and economies, the internet of things (IoT) has evolved

from humble roots to become a key enabler of the Fourth Industrial Revolution, and a delivery channel for many of the FinTech developments we are experiencing today.

The slightly provocative title of this book, *Disruptive Technology in Banking and Finance: An International Perspective on FinTech*, aims to highlight the fact that FinTech, almost by definition, encompasses the concept of ‘disruption’. Across ten chapters this book provides an in-depth treatment as to how FinTech, and related concepts such as BigTech, InsurTech and RegTech, among others, are disrupting the finance, banking and insurance sectors. This book shows how traditional players, or ‘incumbents’ are increasingly facing new challenges from disruptive technological innovations. For example, as discussed in Chapter 4, the Fourth Industrial Revolution (technological innovation) is transforming business models and enabling new ways of communication and information sharing in the insurance sector. As explored in Chapter 7, one challenge being faced by traditional banking intermediaries relates to the emergence of so-called new Challenger Banks, which are disrupting the banking sector by focussing on the digital delivery of more streamlined and customer-focussed banking and financial services. These Challenger Banks either offer the same digital solutions and products as traditional incumbent banks or specialize in specific products or services.

The book has been written in such a way so as to build a framework in which FinTech can be better understood from the perspectives of the main drivers and enablers of technological disruption in the banking, finance and insurance sectors, while considering the GFC and the recent Covid-2019 pandemic. It is our intention that the ‘tool-kit’ and framework we develop in this book will itself be a driver and enabler of further ‘innovation’—in this case a desire to expand your reading further and become involved, or further involved, in the exciting FinTech industry and revolution.

1.1 FINTECH: COVID-19 AND THE GLOBAL FINANCIAL CRISIS (GFC)

The world fundamentally changed in the year 2020. On 31 December 2019, the World Health Organization (WHO) first reported the existence of a new and serious virus caused by a newly discovered coronavirus called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)

(World Health Organization, 2020).² This virus, now commonly known as Covid-19, has spread rapidly across the world with seemingly no regard for country borders and continues to impact countries in all regions—emerging and developed alike. At the time of writing in spring 2021, the Covid-19 pandemic continues to impact economies and societies worldwide. It is widely thought that its effects will be long-felt and deep, and undoubtedly form the basis of much interdisciplinary future study and research. Even before the Covid-19 pandemic, FinTech had been radically transforming the nature of economies and societies across the globe. As we will discuss throughout this book, the pandemic has already acted to accelerate some pre-existing FinTech trends as well as creating areas of new growth and innovation. The trend is towards a more ‘digitalised’, decentralized and borderless world, which, arguably, makes the future potential of FinTech even more significant.

1.2 ORGANIZATION OF CHAPTERS IN THIS BOOK

The remainder of this chapter offers a short overview of the topics covered by each of the ten chapters.

Chapter 2: *A Historical Perspective on Disruptive Technologies*. This chapter sets the scene by providing the reader with historical context, and a framework to understand current and future Fintech directions. It explores the origins of the ongoing FinTech revolution by examining the evolution of FinTech from its early stages in the late 1860s until today, and finally by discussing future directions.

Chapter 3: *A Taxonomy of FinTech Innovation*. This chapter builds on the theoretical framework established in this chapter, to convey the excitement and buzz surrounding FinTech, while demystifying some of the typographies and processes within FinTech. It offers detailed discussions of the various FinTech technologies and their applications and potential. It is organized in two main parts. First, the chapter outlines the importance of technological innovation in driving economic change through the discussion of several seminal works that shed light on the role of technological and financial innovations as driving forces of economic growth. The second part of the chapter uses data on filed FinTech patents to identify key areas of FinTech development. Four main categories of FinTech are identified and explored.

Chapter 4: *Cryptocurrency Mining Protocols: A Regulatory and Technological Overview*. The chapter focuses on cryptocurrencies and digital

currencies. Beginning with a background to the digitalization of money, their origins are explored, as well as current and future applications. Current issues, such as regulatory concerns are also explored in the first half of the chapter. The second part examines blockchain technologies and the algorithms employed to secure and validate cryptocurrency transactions.

Chapter 5: *The Development of InsurTech in Europe and the Strategic Response of Incumbents*. This chapter introduces InsurTech as an increasingly important area of digital innovation that is transforming key processes and business models in the insurance industry. Just as FinTech is radically transforming the banking and finance sector, new technology-advanced entrants are challenging and collaborating with incumbents in the insurance sector who so far have largely struggled to adapt to their entry and new technologies. This chapter discusses such issues in the context of the European insurance sector, providing a detailed treatment as to how technological innovation is strongly impacting all phases of the insurance value chain, providing new opportunities and posing new risks.

Chapter 6: *FinTech and Banking: An Evolving Relationship*. Given the degree of overlap between FinTech and Banking, this chapter lays the foundation of how these two streams are inter-related. It discusses how FinTech is disruptive to the banking sector, while also explaining that a collaboration between the two has the potential to yield social welfare benefits. The final part of the chapter puts forward likely scenarios for future banking and financial services providers, and how relations between FinTech and banking will continue to evolve in the future.

Chapter 7: *FinTech Cultures and Organizational Changes in Financial Services Providers*. Building on Chapters 4 and 5, this chapter offers a sociological perspective on how the development of innovative technology results in the transformation of financial institutions. It discusses how FinTech cultures emerge, linked to organizational designs, and enable and/or constrain a financial institution's capacity to operate and compete successfully. One of the key areas of discussion is how banks are responding to outside FinTech threats through open innovation and collaboration, which are serving to enhance the extent and quality of banks' product offerings and customer service.

Chapter 8: *Digital Disruption: How the Financial Services Landscape Is Being Transformed*. This chapter gives a practitioners' perspective on how FinTech is shaping financial sectors and economies worldwide. Written by a leading practitioner, Dr Walt Gontarek, the chapter draws his insights

as well as those from other leading practitioners to deliver industry-led insights into the main challenges faced by incumbent financial institutions, reporting on the digitalization of several financial services sectors before exploring the role of key stakeholders, including the regulator.

Chapter 9: *FinTech and Regulation: From Start to Boost—A New Framework in the Financial Services Industry. Where is the Market Going? Too Early to Say.* This chapter discusses the role of regulation and supervision in the European banking and financial sector. It begins by offering an insight into the heavily regulated nature of the banking sector, before discussing the regulatory concerns of how FinTech can affect banking institutions. It explores recent regulatory initiatives, including the introductions of the General Data Protection Regulation (GDPR) and Payment Services Directive 2 (PSD2) in Europe. Moreover, key policy discussions and reports are introduced to the reader, facilitating understanding as to how regulations may evolve in the future. The chapter concludes by exploring the challenges regulators will face in the future as to how best to balance innovation, financial stability and customer trust.

Chapter 10: *Bigger Fish to Fry: FinTech and the Digital Transformation of Financial Services.* Building on discussions of regulations in the banking and financial sector, as well as how and to what extent to regulate FinTechs from Chapter 8, this penultimate chapter provides a comprehensive economic analysis of regulatory policies and initiatives designed to support FinTech start-ups. It makes the crucial point that although regulatory policies can deliver benefits, to date they have lacked coherence. From this perspective, the chapter calls for policy makers to deliver policies that focus on the broader and more significant challenge of digital transformation using digital technology to address market and organizational failures across financial services, taking into account governance challenges that undermine digital transformation of finance.

Chapter 11: *Conclusion: FinTech—A Perfect Day or Walk on the Wild Side?* The book concludes by examining the ‘light’ and ‘dark’ sides of FinTech through the lens of the supranational regulatory agencies responsible for monitoring the impact of developments in market structure on the stability of the global financial system. A goal of this chapter is to review and synthesize some of the key discussions from prior chapters as to how FinTech is challenging incumbent financial institutions and identifies benefits and risks associated with the democratization of financial services. Finally, the chapter outlines the state of current knowledge of