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**TECHNOLOGICAL INNOVATION AND
SUSTAINABILITY FOR BUSINESS
COMPETITIVE ADVANTAGE**

FROM DIGITAL DISRUPTION TO DOMINANCE

**LEVERAGING FINTECH APPLICATIONS
FOR SUSTAINABLE GROWTH**

EDITED BY

**MAHA SHEHADEH
KHALED HUSSAINEY**

SERIES EDITORS

ALLAM HAMDAN | REEM KHAMIS

From Digital Disruption to Dominance

TECHNOLOGICAL INNOVATION AND SUSTAINABILITY FOR BUSINESS COMPETITIVE ADVANTAGE

Series Editors: Allam Hamdan and Reem Khamis

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From Digital Disruption to Dominance: Leveraging FinTech Applications for Sustainable Growth

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Foreword

In the post-COVID-19 era, the global shift towards digital transformation and sustainable processes has become increasingly critical across all sectors, including finance. Financial Technology (FinTech) has rapidly emerged as a pivotal force driving this transformation, reshaping the financial landscape and creating new models for sustainable growth. The importance of FinTech is not only in its capacity to improve efficiency and inclusivity but also in its potential to foster long-term economic and social sustainability.

The role of FinTech in achieving sustainable growth is the central theme of this book, 'From Digital Disruption to Dominance: Leveraging FinTech Applications for Sustainable Growth'. This volume offers a detailed exploration of how innovative FinTech solutions are revolutionising financial services. The chapters, written by experts in the field, explore various aspects of FinTech, including mobile banking, AI, financial inclusion and social impact investment. They provide valuable insights into how these technologies are addressing contemporary challenges and creating new opportunities for sustainable development.

The digital transformation of the financial sector, driven by FinTech, aligns closely with the United Nations Sustainable Development Goals (UNSDGs), particularly those related to economic growth, industry innovation and reduced inequalities. By leveraging digital technologies, financial services can become more accessible and equitable, thus promoting financial inclusion and economic resilience.

This book is a crucial resource for academics, practitioners and policymakers seeking to understand the dynamic interplay between FinTech and sustainable growth. The insights presented in these chapters highlight technology's transformative power and capacity to drive positive change in the financial sector.

As you explore the comprehensive analyses and case studies within this volume, you will gain a deeper appreciation of how FinTech innovations are not just disrupting traditional financial models but are also paving the way for a more sustainable and inclusive future. This book serves as a guide to navigating the complexities of the digital economy and leveraging the potential of FinTech to achieve sustainable growth.

Sincerely,
Dr Maha Shehadeh, Al-Ahliyya Amman University, Jordan;
Bangor University, UK
Professor Khaled Hussainey, Bangor University, UK

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Preface

In the dynamic landscape of modern finance, the intersection of technology and financial services, commonly known as Financial Technology or FinTech, has emerged as a transformative force. This book, 'From Digital Disruption to Dominance: Leveraging FinTech Applications for Sustainable Growth', aims to provide a comprehensive exploration of the ways in which FinTech is reshaping the financial sector and driving sustainable growth across various economies.

The motivation for this book came from recognising that while FinTech's impact on daily transactions and consumer behaviour is frequently discussed, its potential to sustain long-term economic, social and environmental growth is less frequently the subject of scholarly inquiry. This gap in the literature calls for a thorough examination, which this book aims to offer through diverse perspectives and a multidisciplinary approach.

The chapters within this book are designed to guide readers through the historical evolution of FinTech, present opportunities and challenges and explore specific applications and innovations that demonstrate FinTech's capacity to drive sustainable growth. Our contributing authors, who are esteemed experts from academia, industry and policymaking, offer extensive knowledge and insights covering the theoretical foundations of FinTech innovations to practical case studies and empirical reviews.

In Part One, the book sets the stage with a foundational overview of FinTech, tracing its historical roots and expanding into its current global landscape. This section aims to establish a solid understanding of the core concepts and frameworks that define FinTech operations and strategies.

Part Two addresses specific innovations and applications within FinTech, including cutting-edge developments in AI, the role of digital payment systems in fostering financial inclusion and the psychological and cultural dynamics influencing the adoption of FinTech services. This section emphasises the diverse applications of FinTech and its potential to revolutionise traditional financial and banking practices.

Part Three shifts focus towards sustainability and future challenges, examining how FinTech not only responds to but also anticipates the needs of the modern economy. It looks at sustainable and social finance, the impacts of global disruptions such as the COVID-19 pandemic and the evolving role of technology in meeting these challenges.

This book is intended for a wide audience that includes financial professionals, policymakers, researchers and students. It seeks to provide not just a snapshot of

current FinTech applications but also a vision of future possibilities. As we present this comprehensive guide to the ever-evolving world of FinTech, we invite our readers to reflect on the transformative potential of technology in finance and consider how these innovations can be utilised to ensure robust, inclusive and sustainable growth for future generations.

With each chapter, we hope to inspire new discussions, ideas and research that will contribute to the thriving landscape of FinTech. This book is evidence of the power of interdisciplinary knowledge and the importance of embracing technological advances in shaping tomorrow's financial services.

Sincerely,
Dr Maha Shehadeh, Al-Ahliyya Amman University, Jordan;
Bangor University, UK
Professor Khaled Hussainey, Bangor University, UK

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We are deeply thankful to everyone who contributed to the making of this book.

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We extend our deepest gratitude to all the contributing authors. Your contributions, enriched with varied viewpoints and creative ideas, have substantially enhanced the quality of this book. Your dedication to rigorous research and scholarly excellence is truly commendable, and it has been an honour to collaborate with such esteemed colleagues.

Thank you all for your invaluable contributions and support.

Sincerely,
Dr Maha Shehadeh and Professor Khaled Hussainey

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Part 1

Foundations and Adoption of FinTech

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Chapter 1

Exploring the Landscape of Financial Technology: Innovations, Regulatory Challenges and the Disruptive Impact of Fintech on Traditional Financial Services

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Abstract

This chapter provides a comprehensive examination of financial technology (fintech) firms, exploring their background, features, products and services. Framed within the themes of financial innovation, disintermediation and disruption, the chapter examines the transformative impact of fintech on the financial industry. Fintech firms leverage advanced technology to offer innovative financial solutions, such as mobile payment systems, robo-advisors and peer-to-peer (P2P) lending platforms, thereby enhancing accessibility and efficiency in financial services. The regulatory environment is highlighted, noting that while traditional banks are heavily regulated, fintech firms often operate with more flexibility, raising potential concerns about regulatory arbitrage and associated risks. The continued evolution of fintech, driven by advances in artificial intelligence (AI), blockchain and data analytics, holds significant potential for further transforming the financial industry. This chapter sets the stage for ongoing exploration of fintech's implications and future developments.

Keywords: Fintech; financial innovation; financial disintermediation; financial disruption; blockchain

1. Introduction

The purpose of this chapter is to present a comprehensive background on financial technology (fintech) firms and review the relevant literature in this

From *Digital Disruption to Dominance*, 3–44

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dynamic field. The review of fintech is formulated within three distinct themes: financial innovation, disintermediation and disruption. In addition, this chapter acknowledges the ‘technology-enabled financial solutions’ adopted by fintech firms to fill gaps in the provision of financial services within the traditional banking model. Fintech leverages the rapid advancement of technology to offer a wide range of financial services. These services include online payment solutions, corporate and consumer lending, asset management, financial consultancy through robo-advisors, equity crowdfunding and alternative financial services (Ajouz et al., 2023, 2024; Alkhazaleh et al., 2023; Alkhwaldi et al., 2022; Brandl & Hornuf, 2017; Cantu & Ulloa, 2020; Philippon, 2020; Rehman et al., 2023). By employing innovative technology, fintech firms are increasing competition within the financial industry. For instance, Brazil’s banking sector, renowned for being one of the most profitable globally, is experiencing significant shifts due to higher mobile internet penetration. According to [Fitch Ratings \(2016\)](#), depositors are increasingly favouring digital-only fintech firms over traditional banks. This trend is pressuring incumbent banks to adapt to the evolving landscape of technology-enabled financial services (S&P, 2018).

The evolution of fintech is a story of the seamless integration of finance and technology, marked by key events that have shaped the current state of this longstanding relationship. Initially, fintech was focused on back-end systems of established financial institutions. Over time, it has evolved to cover a broader spectrum of services directly accessible to consumers and businesses. In the early days, fintech revolved around automating the processes within traditional banks. However, with the advent of the internet and mobile technologies, fintech has expanded its reach, transforming how financial services are delivered and consumed. This chapter aims to provide an overview of fintech firms through the lenses of financial innovation, disintermediation and disruption, highlighting how these firms have redefined the financial services landscape.

One of the core themes explored in this chapter is financial innovation. Fintech firms are at the forefront of developing new products and services that traditional financial institutions have been slow to adopt. For instance, mobile payment systems and digital wallets have revolutionised how people conduct transactions. Services like Apple Pay, Google Wallet and various mobile banking apps have made it possible for consumers to pay for goods and services without needing physical cash or cards. Moreover, fintech has introduced new methods of lending and borrowing. Peer-to-peer (P2P) lending platforms such as LendingClub and Prosper connect borrowers directly with lenders, bypassing traditional banks. This not only reduces the cost of borrowing but also provides more favourable terms for both parties. Additionally, robo-advisors like Betterment and Wealthfront offer automated, algorithm-driven financial planning services with minimal human intervention, making investment advice more accessible and affordable.

Another significant theme is financial disintermediation, where fintech firms adopt methodologies that differ from the traditional approach of prior incumbents. Disintermediation refers to the removal of intermediaries in the supply chain, a phenomenon fintech firms have effectively leveraged. By using technology to connect consumers directly with financial services, fintech firms bypass

traditional banks, thereby reducing costs and increasing efficiency. For example, in the realm of payments, companies like PayPal and Stripe allow businesses and individuals to transfer money and process payments without going through traditional banking channels. Similarly, blockchain technology and cryptocurrencies, exemplified by Bitcoin and Ethereum, offer decentralised financial systems that operate independently of traditional banks. These innovations not only provide faster and cheaper transaction methods but also introduce new paradigms in financial intermediation.

The third theme, financial disruption, examines how fintech firms disrupt the primary functions of incumbents and introduce new risks. Traditional banks have long held a monopoly over financial services, but fintech firms are challenging this dominance by offering superior customer experiences, lower costs and innovative products. Fintech's impact on the financial industry is multifaceted. On the one hand, it forces traditional banks to innovate and improve their services. On the other hand, it amplifies certain risks and introduces new ones. For example, the rise of fintech has led to increased cyber threats, as the digital nature of these services makes them susceptible to hacking and fraud. Additionally, the regulatory landscape struggles to keep pace with rapid technological advancements, creating uncertainties and potential vulnerabilities. Despite these challenges, the disruptive influence of fintech is undeniable. It has democratised access to financial services, empowering individuals and small businesses that were previously underserved by traditional banks. Equity crowdfunding platforms like Kickstarter and Indiegogo enable entrepreneurs to raise capital directly from the public, bypassing conventional funding sources such as banks and venture capitalists. This not only provides new opportunities for funding but also fosters innovation and entrepreneurship.

The chapter underscores the transformative role of fintech in reshaping the financial services industry. By examining fintech through the themes of financial innovation, disintermediation and disruption, we gain a comprehensive understanding of how technology is driving changes in finance. Fintech firms are not merely adapting to existing paradigms; they are creating new ones, challenging traditional banks to evolve or risk obsolescence. The marriage of finance and technology has brought about unprecedented changes, offering more efficient, accessible and innovative financial solutions. As we delve deeper into the intricacies of fintech, it becomes clear that its impact extends beyond mere technological advancements. It represents a fundamental shift in how financial services are conceptualised, delivered and consumed, marking a new era in the financial industry. This chapter aims to provide a thorough understanding of this shift, setting the stage for further exploration of fintech's implications and future developments.

2. Fintech Evolution

The use of technology in the financial industry is not new to the scene. However, the current degree of reliance on fintech through technology-enabled and nonbanks to provide superior and new financial services and products that meet customers' needs and expectations is on an unparalleled level. Although 'fintech' has been widely

appearing in multiple sources such as the press, communication media and the scientific literature, a global consensus among regulators, supervisors, practitioners and researchers about what ‘fintech’ means is yet to be found. Some researchers attempted to tackle the matter and noticed that ‘fintech’ was used in many business contexts and with a lack of consistency and open to many interpretations (Schueffel, 2016). In addition, Gomber et al. (2017) justify the lack of consensus surrounding what ‘fintech’ means as simple neologism.

Moreover, the lack of theoretical foundation, academic literature tackling the issue and structure of scientific knowledge in this area contributes to the lack of consensus (Milian et al., 2019). However, the definitions brought forward so far drew a thick line of distinction between financial innovation and financial disruption, one fitting within the current regulations and the other would require a new set of regulations in place. The literature consists of several different definitions and interpretations of ‘fintech’ many of which developed their own and some have cited or referred to others’ work (Allen et al., 2020; Barberis, 2014; Bettinger, 1972; BIS, 2018; Brandl & Hornuf, 2017; Čižinská et al., 2016; FSB, 2017; IMF, 2019; Maier, 2016; Micu & Micu, 2016; Oxford Learning Dictionary, 2021; Shim & Shin, 2016). Table 1.1 reviews the definitions identified across different sources (journal articles, industry reports, websites and oxford dictionary).

Table 1.1. Summary of ‘Fintech’ Definitions.

Source	Definition
Bettinger (1972, p. 62)	‘Is an acronym which stands for financial technology, combining bank expertise with modern management science techniques and the computer.’
Barberis (2014, p. 5)	‘Fintech refers to the application of technology within the financial industry. The sector covers a wide of activities from payments (e.g. Contactless) to financial data and analysis (e.g. Credit scoring), financial software (e.g. Risk management), digitised processes (e.g. Authentication) and perhaps most well-known to the wider public, payment platforms (e.g. P2P lending).’
Čižinská et al. (2016, p. 461)	“‘Fintech’ is an economic industry composed of companies that use technology to make financial services more efficient.’
Micu and Micu (2016, p. 380)	‘Financial technology also known as Fintech, is a new sector in the finance industry that incorporates the whole plethora of technology that is used in finance to facilitate trades, corporate business or

Table 1.1. (Continued)

Source	Definition
Maier (2016, p. 143)	interaction and services provided to retail consumer.’ ‘Driven by technological advances new service models have developed in the financial industry which offer additional opportunities to customers. Under the common denominator “fintech,” these businesses aim to challenge existing financial institutions by using technology to deliver value to the customer in an alternative way.’
Shim and Shin (2016, p. 170)	‘Fintech is an emerging financial services sector that includes third party payment, MMF, insurance products, risk management, authentication and peer-to-peer (P2P) lending.’
Schueffel (2016, p. 45)	‘Fintech is a new financial industry that applies technology to improve financial activities.’
Brandl and Hornuf (2017, p. 2)	‘An acronym for start-ups that commercialise technological financial innovations.’
FSB (2017, p. 7) and BIS (2018)	‘Technologically enabled financial innovation that could result in new business models, applications, processes, or products with an associated material effect on financial markets and institutions and the provision of financial services.’
IMF (2019, p. 8)	‘Advances in technology that have potential to transform the provision of financial services spurring new business models, applications, processes and products.’
Allen et al. (2020, p. 3)	‘A form of intermediation that is characterised by a shift from reliance on the balance sheet to instead utilise information technology in order to allocate capital, i.e. a shift from a dealer to a broker model of financial intermediation.’
Oxford English Dictionary (2021) ^a	‘Computer programs and other technology used to support or enable banking and financial services.’

^aSee Oxford Learner’s Dictionaries. <https://www.oxfordlearnersdictionaries.com/definition/english/fintech#:~:text=fintech-,noun,provide%20banking%20and%20financial%20services>

The IMF/World Bank came up with their own definition of fintech due to fintech being a very broad term that covers so many aspects regarding banks, supervisors and other industry participants. To the best of my knowledge, the most used 'fintech' definition was established by the Financial Stability Board (FSB, 2017). The definition was also adopted by the Basel Committee on Banking Supervision (BIS, 2018) and appeared in various institutional and academic papers (Agarwal & Zhang, 2020; FSB, 2019; Wang et al., 2020). Both IMF/World Bank, Financial Stability Board and Basel Committee on Banking Supervision definitions contain a handful of commonalities, most importantly is the focus of technology being the first part of the definition and the core inceptor to financial innovation/financial transformation. In addition, both definitions agree that it is not with complete certainty that the development in technology can lead to stimulating new business models inclusive of new products, services and processes. Hence, the words 'could result' and 'have potential' are used. However, FSB's definition defers marginally in highlighting the fact that there could be a material effect on the financial markets and the participants of these markets, perhaps such addition to the definition is a result of FSB's role in monitoring the global financial system and providing recommendations that are very much concerned with enhancing financial stability.

The most simple and inclusive definition was proposed by Schueffel (2016): 'fintech is a new financial industry that applies technology to improve financial activities'. This scientific definition captures new/improved financial services (device independent technology, e-trading, etc) and new disruptive technologies (blockchain, robo-advisors, cryptocurrency, etc). Yet, this definition differs widely from others mentioned above by overlooking certain words such as new products, services, processes and business models. Nonetheless, BIS (2018) emphasised on the fact that no umbrella definition is needed but perhaps what matters the most is a clear definition of the related products and services. As a result, regulators would be able to establish an approach for regulation. Still, definitions evolve over time and only an agreed upon and a shared definition will bring in significance to the word and that is highly necessary to science, reduction of miscommunication and eliminating misperception among users (regulators, practitioners, researchers, etc) (Waugh, 1997). It is also important to point out that there are substantial differences in defining fintech in the literature and perhaps it is due to the swappable use of the word 'fintech' in practice.

The association of finance and technology is widely regarded as 'fintech' and is very much misunderstood, especially when fintech is assumed as solely an outcome of the global financial crisis (GFC) of 2007–2010 rather than the crisis continue to act as a catalyst to the rapid growth of this very long-established relationship (Agarwal & Zhang, 2020; Choi, 2020). Certain events across history, dating back to 1866, set the foundation for the current state of this relationship: First, the transatlantic cable, the exogenous shock with immediate impacts on financial market operations at that point of time.¹ That said, bills of exchange

¹See *The Struggle for Control of Global Communication, The Formative Century*, 2002. <https://www.jstor.org/stable/10.5406/j.ctt2ttcks>