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Financial Technology

The Good, the Bad, and the Verdict

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Abstract

Fintech or financial technology is a relatively new thing in the literature but commonly cited as one of the most important innovations in the industry. While the use of the term fintech has proliferated in everywhere, theoretical work on the concept has lagged. This article attempts to capture the discussion on fintech, to provide a critique of the literature, and to propose future research opportunities. In order to do so, a list of peer-reviewed journals was compiled, identified, examined, coded, and classified into high-level themes to be reviewed, analysed, and interpreted. After synthesising the notion of fintech in the literature, this article proposes several potential areas for further exploration, divided into the following themes: definition, attributes, adoption, regulation, and competition. It is expected that this article will help researchers and academics who are interested in studying the phenomenon more broadly.

Keywords: fintech, financial technology, review article

1 Background and Rationale

More than 70 percent of millennials would rather go to the dentist than hear what their banks have to say (Arslanian, 2016). This statement alone, even though quite debatable, raises an important question regarding the role of banking and financial industries in the era of industry 4.0 (Gabor and Brooks, 2017). Indeed, the rise of fintech has inevitably led to changes in the role of technology, consumer behaviour, and ecosystems, as well as the industry and regulation itself (Wonglimpiyarat, 2017).

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A single remark in regard to such development brought down years of thinking that finance and technology were so close as to be sometimes quite difficult to separate (Gomber et al., 2017). The financial services sector is at the forefront of technological innovation and widely recognised as the most extensive IT user among the service sectors (Iman, 2014). What we sometimes forget to appreciate are the marvels of complexity and interaction that go on between service providers, consumers, technology, and regulation. In many ways, this article is an attempt to put ourselves right on that point.

Unfortunately, this line of research has not been well-attended (Ozili, 2018). There are not many studies on fintech to be found in peer-reviewed journals. This can be verified by a simple search of the keyword "fintech" in Google Scholar. Most results can be found in working papers, consulting reports, and policy studies. This research aims to address that gap. Central to this aim are the following questions: What is the current debate on fintech? How does it vary in different contexts? What can we do to take this matter further?

Therefore, the purpose of this paper is threefold: First, I attempt to provide a comprehensive critical review of fintech in the literature, which has not been addressed to date. The second goal of this paper is to report the results of a study designed to examine potential areas for further development of fintech, which has typically not been the focus of previous research. The final, and perhaps most important, goal of this paper is to provide scholars in the field of technology management with a specific set of recommendations aimed at moving the discussion forward.

The outline of this article is as follows. First, this section briefly described the notion of fintech and the relevance of this study. Section 2 elaborates the approach and methodology used to conduct this investigation. Section 3 concentrates on analysing fintech research in the current literature. It focuses on the taxonomies and frameworks, and critically reflects on them. Section 4 contemplates on the findings and proposes further insights. Lastly, section 5 draws a conclusion and offers future research directions to extend our knowledge of fintech.

2 Approach and Methodology

It is both timely and important that we synthesise the literature on fintech (Ozili, 2018). Since fintech is an emerging area, most of the literature available comes in the form of technical reports, consulting reports, working papers, conference papers, policy studies, and news websites. This study attempts to distinguish itself by focusing only on peer-reviewed journals since the major contributions are likely to be in the top journals (Weber and Watson, 2002). Papers from predatory journals and less credible publishers were excluded from this analysis. Editorials, commentaries, teaching cases, and book reviews were also excluded.

In reviewing the articles, I followed Webster and Watson's (2002) proposed approach. The review should match the goals of clarity, reliability, accuracy, and brevity so as to let the reader perform a systematic and competent analysis regarding the current state of the phenomena (Hart, 1999). The goal of the review was to provide an overall picture of the current and relevant research

Table 1: Coding Themes

Coding	Description
Actors and players	Investigating economic actors and players in this sector
Fintech definition	Examining the broad definition and classification of fintech
Fintech adoption	Analysing the spread of fintech technologies and innovations
Fintech ecosystem	The dynamic interaction between actors and players in the sector
Impacts and implications	Consequences in terms of fintech implementations across different sectors, countries, and industries
Products and services	Value proposition offered by fintech in terms of products and services
Regulatory realms	The relationship between fintech and governments or regulators
Technologies	Technologies and innovation behind the emergence of fintech
Other	Studies that did not fit into the aforementioned categories

literature that touches on fintech initiatives.

To perform this analysis of fintech, a list of reputable journals was compiled, in the fields of business and management, information systems, technology management, computer science, and law, among others. These journals were then individually searched using the Web of Science, for articles which contained the keywords "fintech" or "financial technology" anywhere within the title, abstract, or keywords. I looked only at peer-reviewed journals written in English and neglected other sources, such as conference proceedings, reports, theses, and dissertations.

This approach generated 216 articles in total, discussing "fintech" or "financial technology" theoretically or empirically. These articles were then scaled down for further manual examination to remove irrelevant and distant matches, and bring the number to a manageable size. When reviewing the literature, I managed to identify a number of publications that met the inclusion criteria. The total number of articles that met this threshold was only 59, and these were then sorted by journal and year.

Content analysis was employed, particularly conceptual analysis to establish the existence and frequency of concepts in the data (Creswell, 2003). This involves quantifying the occurrence in the literature of a particular concept chosen for examination and further analysis, which can be both implicit and explicit in nature. I deemed this overall qualitative approach suitable for this investigation and sufficiently sensitive to offer an understanding of the phenomena.

From there, each and every article was identified, examined, coded, and classified into some high-level themes (Miles and Huberman, 1994). Key

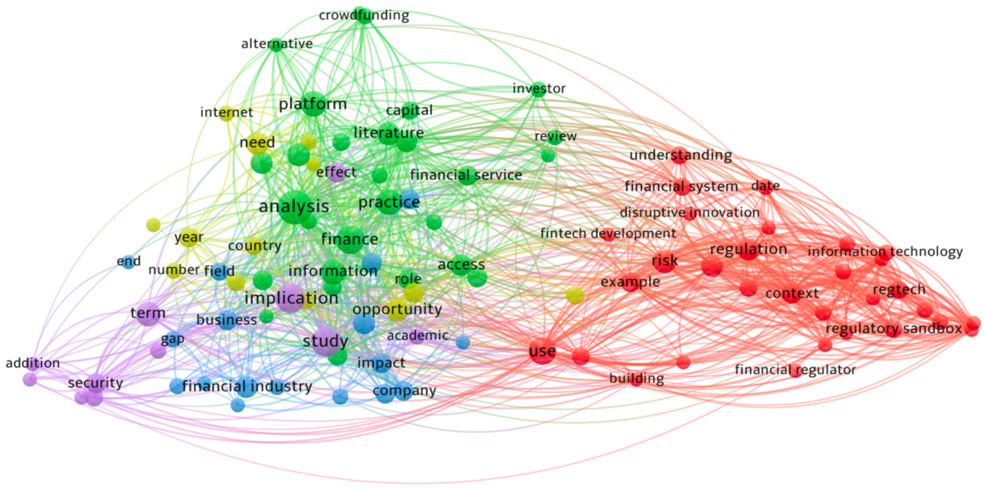

Figure 1: Network Mapping of the Literature

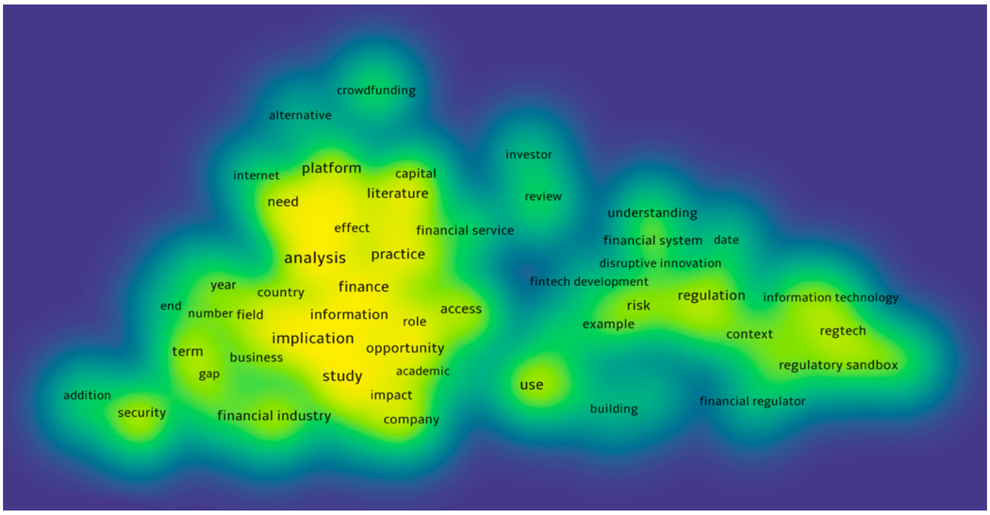

Figure 2: Heat Map Analysis of the Literature

articles encountered during this examination, not already in the data set, were also reviewed. Some papers were excluded from coding due to data saturation having already been reached. With the themes coded and captured, an exercise was performed to consolidate the codes (Table 1). These were then reviewed, analysed, and interpreted. Thus, the broad trends in the conceptualisation were identified, upon which analysis this paper is based.

I ran the network analysis by taking into account every keyword in the title and abstract fields and ignoring structured abstract labels and copyright statements. I performed binary counting using VOSviewer, using the minimum number of occurrences of a term is 3. This counting resulted in 1563 terms, in which 135 of them meet the threshold. The numbers of terms to be selected in this network mapping is 100 (see Figure 1).

As can be seen from Figure 2 above, most literature concerning fintech is focusing on the analysis, (business) practices, and the implication of such technologies in the market and society. These areas seem to be in constant growth while at the same time extending the reach to certain aspects of fintech such as platform, crowdfunding, security, as well as industries. On the right-hand side of the figure, there is also an active discussion regarding the regulatory aspect of fintech. Areas that become the focus are regulation, sandbox, the financial regulator, and regtech.

In the following section, I will provide what needs to be considered a tentative overview of this trend, organised around some of the most important issues and topics examined in the analysed publications.

3 What is Fintech and Why Does it Matter?

As seen above, analysing technological innovation, such as fintech, is quite challenging, if not impossible, through the lens of traditional or neoclassical economics. Technological artefacts and intellectual knowledge have peculiar attributes that distinguish them from other resources (Galende, 2006). Furthermore, financial intermediation has now shifted from conventional banks to "shadow" banks, those non-depository financial institutions that do not have to comply with traditional banking regulation (Buchak et al., 2018).

With the above backdrop, the emergence of fintech has thus given rise to "financial service disintermediation" as well as to the need for a new form of protection for consumers and investors (Guo et al., 2016; Giudici, 2018). Fintech start-ups are able to avoid the intermediation costs and minimum capital requirements usually associated with traditional banking services. The use of big data analytics and data science have also changed how data are captured, processed, and analysed, which has in turn reduced search costs significantly (Giudici, 2018).

Joining these studies, Gomber et al. (2017) define fintech as a neologism coming from "financial" and "technology" and referring to the connection between modern Internet technologies and established business activities of the banking sector. Meanwhile, Hung and Luo (2016) identify five dimensions that can change the dynamics of the fintech market: players, added value, rules, tactics, and scope. In much of the literature, fintech is used in a purely functional way, providing variation in terms of the subject (Alt et al., 2018; Gai et al., 2018; Lee et al., 2018).

For example, Puschmann (2017) forcefully argues that fintech is "[...] incremental or disruptive innovations in or in the context of the financial services industry induced by IT developments resulting in new intra- or inter-organisational business models, products and services, organisations, processes and systems" (p74). Meanwhile, Gomber et al. (2017) describe fintech as initiatives in the financial sector that are challenging established roles, business models, and service offerings by introducing technology-based innovations.

With a rather similar main theme, Ng and Kwok (2017) classify fintech organisation into four different categories: efficient payment processs, robo-advisors, peer-to-peer load and deposit platforms, and crowdfunding. Meanwhile, Lee and Shin (2018) identify five different elements of fintech ecosystems: fintech start-ups, technology developers, the government, financial customers, and traditional financial institutions. Two markedly interesting views of fintech lie within the scope of this general definition and classification:

first, technology plays an important role; and second, fintech encompasses existing government policies and regulations.

While, traditionally, banks have always been the vanguard sector in the use of IT (Barras, 1990), this situation has forced banks and traditional financial institutions to increase their capabilities and expertise. Under these circumstances, fintech companies can choose to be disruptors or collaborators (Hung and Luo, 2016). A co-opetition strategy, where competition and cooperation exist at the same time (Brandenburger and Nalebuff, 1996), might be of interest for players in this niche and profitable market.

Yet, at the same time, government regulations could play a more pivotal role in the emergence of fintech start-ups. Their policies could significantly shape the way industry develops (Arner et al., 2017). What needs to be stressed here is that, in introducing such regulation, we should proceed with caution. If governments requested all banks to engage in innovation, the results would probably not be as expected; however, if they encouraged fintech start-ups to enter the regulated market, there would be too many limitations and requirements that could perhaps not be fulfilled (Hung and Luo, 2016).

In some developed countries, the regulatory regime may favour fintech start-ups (see Arner et al., 2016, 2017; Stern et al., 2017; Zetzsche and Preiner, 2018). However, some other countries tend towards protectionism. For example, Taiwan's government encourages traditional banks to invest in fintech companies for collaboration purposes, rather than giving incentives to fintech start-up entrepreneurs to develop new innovative products and services (Hung and Luo, 2016). Along the same lines, Iman (2018) presents the complexities of government regulation regarding fintech in Indonesia, and the overlaps between the central bank and the financial services authority.

Table 2: Examples of Research on Fintech

Authors (Year)	Key Findings
Adhami et al. (2018)	Analyse the initial coin offering (ICO) phenomenon
Anagnostopoulos (2018)	Reviews the development of fintech used by banks and regulators
Ashta (2018)	Describes the European microfinance fintech innovations
Begenau et al. (2018)	Analyse the role of big data and the growth of large firms
Brammertz and Mendelowitz (2018)	Demonstrate and promote the adoption of a cash-flow-generating standard at the financial contract level
Brody et al. (2017)	Describe the developments in fintech regulation in the US and the UK towards facilitating responsible fintech innovation
Chen (2016)	Posits that integration between finance and real-life needs is mandatory in developing fintech
Drasch et al. (2018)	Propose bank-fintech cooperation taxonomies

Continued on next page

Table 2 – *Continued from previous page*

Authors (Year)	Key Findings
Ferretti (2018)	Studies the current EU legal framework regarding fintech and big data
Gai et al. (2018)	Produce a survey of the emergence of fintech
Gimpel et al. (2018)	Analyse fintech start-ups and propose taxonomies
Huang (2018)	Examines the opportunities and challenges of peer-to-peer (P2P) lending in China
Jagtiani and Lemieux (2018)	Measure the impact of LendingClub in expanding credit access for consumers
Jun and Yeo (2016)	Study the effects of fintech entry into the retail payments market
Langley and Leyshon (2017)	Scrutinise the concept of ecologies in the crowdfunding economy
Larios-Hernandez (2017)	Offers causal factors and informal practices targeting the unbanked population
Leong et al. (2017)	Analyse the development of fintech companies in China that offer microloans to college students
Li, Spigt et al. (2017)	Clarify the role of fintech start-ups in the US financial industry
Li, Dai et al. (2017)	Analyse the trend of Korean fintech based on text-mining
Martinez-Climent et al. (2018)	Investigate crowdfunding as a financial instrument using bibliometric analysis
Nakashima (2018)	Discusses the approach required to create products and services using fintech and internet of things (IoT)
Ng and Kwok (2017)	Uncover the strategic approach used by the global financial centre in responding to fintech
Puschmann (2017)	Examines the digitalisation of fintech and its industry dynamics
Qiu et al. (2018)	Propose a Privacy-Preserving Smart Storage (PS2) model to solve the privacy leakage issue in fintech
Ryu (2018)	Exposes the determining factors of users' adoption of fintech
Stern et al. (2017)	Provide a descriptive examination of P2P lending in China
Stewart and Jurjens (2018)	Examine the key factors that influence the adoption of fintech in Germany
Stoeckli et al. (2018)	Analyse insurtech innovations and transformational capabilities
Thompson (2017)	Proposes the use of fintech in benefit distribution for payment ecosystem services and REDD+

Continued on next page

Table 2 – *Continued from previous page*

Authors (Year)	Key Findings
Todorof (2018)	Introduces the emergence of fintech in Shariah and Islamic banking
Topfer (2018)	Discusses the actors, power, and agency of fintech in global financial networks
Tsai and Peng (2017)	Investigate the dynamics of regulatory sandboxes for online supply-chain-financing fintech firms
Wonglimpiyarat (2018)	Shows the challenges and dynamics of fintech in the US, Europe, and Thailand
Yoon and Jun (2018)	Analyse the effect of antifraud investment in fintech payment services
Zavolokina et al. (2016)	Reflect the media perspective on fintech and digital innovation
Zetzsche et al. (2017)	Explore the possibility of a new fintech regulatory response
Zetzsche and Preiner (2018)	Examine the harmonisation of cross-border crowdfunding in Europe

From the analysis, it is evident that fintech is a broad, complex, and rich phenomenon, and can manifest in any number of different ways (see Table 2). With that said, it is important to note that my examination is not the only, or even the first, study of its kind in the academic domain.

4 Discussion and Analysis

My review of the extant literature has provided us with useful insights into the dynamics of fintech. However, both the growing presence and the unexplained absence in some areas provide opportunities for further strengthening and possibly a re-shaping of the literature. We are currently perhaps in the limbo of purgatory and yet to come to grips with the idea of fintech. It is important that we classify fintech in a more robust way (see Table 3).

As this overview has shown, there have been quite a number of studies published in business management and technological innovation journals that do take fintech seriously. These can be found clustered around a number of important subthemes, such as the rise and transformation of fintech, its peculiarities, consumer adoptions, regulations, and market competition.

4.1 Universal Definition of Fintech

In order to be able to clearly define fintech, it is important to appreciate it and the historical roots of its origin. However, as my following review will show, studies of this kind, where the origins of fintech are considered as an extension of financial service provision (see Table 4), have, almost invariably, been qualitative and have included very little or no historical research (Schueffel, 2016).

Table 3: Fintech Taxonomies

Classification	Categories
Relationship	Business-to-business (B2B)
	Business-to-consumer (B2C)
	Consumer-to-consumer (C2C)
Subsector	Back-end and infrastructure
	Banking infrastructure
	Business lending
	Consumer and commercial banking
	Consumer lending
	Consumer payments
	Crowdfunding
	Data and market research
	Equity financing
	Institutional investing
	International remittance
	Personal finance
	Point of sale
	Retail investing
	Security
	Small and medium enterprise (SME) tools
Underlying technologies	Artificial intelligence
	Bio-recognition
	Big data
	Blockchain
	Cloud-based services
	Internet
	Machine learning
	Mobile communication
Service offered	Crowdfunding
	Financial advice
	Human resources
	Insurance
	Investment management
	Loan
	Market supply
	Pension planning
	Research and development (R&D)
	Risk management
Key actors	Customers
	Suppliers
	Competitors
	Complementors
Contexts	Developed countries
	Developing countries
	Least developed countries
Industries	Financial services industry
	IT industry
	Start-ups

Table 4: The Development of Banking and Fintech

Year	Development of Banking and Fintech
1600s	Establishment of banking system
1700s	Cheque-clearing systems
1950s	Diners Club, American Express
	Chemical Bank, New York
1970s	Credit card, VISA and MasterCard
	ATM/cash card, along with spreading network of Plus, Cirrus, Maestro
1980s	Electronic fund transfer at point of sale (EFTPOS)
	Switch and Visa debit card
	Prudential Banking Plc.
1990s	Smart card with chip technologies
	Internet card
	Visa cash, Mondex cards
2000s	Vodafone's near field communication (NFC) mobile wallet
	Online banking
	Mobile banking
	Digital payment systems
2010s	Peer-to-peer (P2P) internet payment
	Digital banking system

However, it appears that we do not have a unified definition of fintech just yet. Some of the literature is focusing on roles and structures (e.g. Arner et al., 2017; Lee and Shin, 2018), while other researchers are emphasising attributes and (product and service) provision (e.g. Iman, 2018; Ng and Kwok, 2017). In addition, there are a number of more isolated studies that have demonstrated that most fintech companies have their origins in the IT industry instead of the traditional banking sector (Gomber et al., 2017). Similarly to Iman (2018), King (2014) finds that fintech founders are often former bank employees. This is due to their capabilities in creating new solutions and tasks, work that was previously dominated by banks and financial institutions.

In his extensive review, Schueffel (2016) maintains that the term "fintech" is standing on shaky ground and suffering from semantical problems. The term is already producing offspring (Alt et al., 2018; Gai et al., 2018; Lee et al., 2018), with derivatives such as regtech, insurtech (Stoeckli et al., 2018), and wealtech, without there ever having been an established common definition of fintech in the first place. Taking this a step further, Schueffel (2016) posits that, due to its lack of definition, what an English speaker means by fintech could be very different to what a Frenchman or German means by it – let alone the rest of the world. Thus, it is especially important that we come up with a universal definition of fintech that can be adopted and turned into a business standard.

4.2 Fintech and its Peculiarities

Unarguably, fintech has grown rapidly in many different contexts, offering new innovative products and services using contemporary technologies (e.g.

Alt et al., 2018; Gomber et al., 2017). However, the directions and magnitudes of the products and services delivered by fintech firms vary widely. Some studies have pursued this route by focusing on the adoption and diffusion of fintech products and services (consumer side), but to the best of my knowledge, there are very few studies focusing on what happens behind closed doors (producer side). This is seemingly at odds with what one might expect, since understanding what lies beneath such innovations would in no way destroy the magic; if anything, it would only deepen our appreciation and teach us about our technological development.

With regard to managing innovation, Wonglimpiyarat (2017) proposes a systemic approach to managing the tension between the complexity of innovation and the capabilities of the innovators to manage such innovation. Banks have traditionally been recognised as the most intensive users of IT (Barras, 1990) and perhaps the most innovative (Iman, 2014) in the service sector. However, the blossoming fintech penetration has opened up a new landscape of financial industry. It has also bridged the gap to enable cross-network payment and transfer services (Shim and Shin, 2017; Thompson, 2017). Thus, it is no wonder that the relationships between the fintech firms and the other actors and players in the industry are quite complicated.

Borrowing the Schumpeterian (1937) view of creative destruction, this phenomenon will unarguably raise a question: Should we promote the emergence of fintech start-ups to stimulate economic growth? Or should we deliberately limit the growth of incumbents since innovations do not usually come from them? Wonglimpiyarat (2017) argues that fintech innovations require high systemic characteristics due to the network of ownerships and externalities that becomes an important factor during the diffusion stages. Yet, the peculiar characteristics of fintech firms are not all at the same level, and nor indeed are their innovative capabilities and resources.

4.3 Adoption Pattern

Analysing fintech will lead to path dependencies in terms of ownership (banks vs. non-banks), of structure (fintech vs. techfin), of regulation (or rather a lack thereof), and of scope (from payments/simple products to more complex products). Most of the literature is focusing on either diffusion of innovation theory (Rogers, 1983) or the technology acceptance model (Davis, 1989). A couple of papers, however, deserve a special mention here since they are using rather "unpopular" theories, such as regulatory focus theory (Higgins, 1998), in analysing fintech adoption.

In this particular market, fintech offers new products and services that satisfy customers' needs not previously addressed by traditional financial service firms (Gomber et al., 2017; Pousttchi and Dehnert, 2018). Companies in the market are capable of developing innovations and creating novel opportunities, utilising state-of-the-art technologies and contemporary concepts. Thus, their products and services are usually relatively better-suited to and better-performing in today's high-speed environment (Alt et al., 2018). These companies are agile and innovative enough that they are expected to take over the traditional banking sector, leaving banks with very limited services they can still offer to customers (Hemmadi, 2015).

Thus, another future direction this research points the way towards would be to examine the dynamics of existing consumers as well as the response of traditional incumbent firms. Fintech consumers will obviously form new digital habits, and change their values and loyalty (Pousttchi and Dehnert, 2018). On the other hand, since the time consumers spend on their decisions will increasingly be shortened, it is important that incumbent firms not only speed up their innovation, but also utilise data-driven approaches to compete with new fintech firms (Lee et al., 2018). Such remarkable interdependencies between consumers, incumbent firms, and new fintech firms promise fruitful areas for further exploration.

4.4 Regulatory Regimes

Departing from Hung and Luo (2016)'s analysis, traditional banks that have been protected for too long will not offer a friendly environment for fintech start-ups. Here, they will face high barriers to entry, tough competition, and a market that already enjoys services from existing banks. Government intervention in this sector is less likely, since the government will not want to damage the foundations of these traditional financial institutions or stimulate systemic risk (Chen, 2016). This might suggest that a more systematic and consequential interaction between management scholars and (business) laws might be of benefit.

Admittedly, fintech is pivotal not only in increasing the accessibility and diversity of services, but also in stimulating financial sector development (Gabor and Brooks, 2017; Haddad and Hornuf, 2018). Thus, a better understanding of fintech and regulatory realms is mandatory for this and the democratisation of financial services. Indeed, the regulatory realms, as well as the institutional logics that prevail, represent a critical force shaping every economic actor involved in the fintech industry (Zetzsche et al., 2017).

What we should not forget is that the intersection of functionalities, consumers, technological platforms, and emerging business models, defined by the rising fintech firms, has challenged the regulators in many different ways (Arner et al., 2015, 2016, 2017). Regulation usually trails behind technological innovation and is often tardy in responding to new business models and practices (Gozman and Currie, 2014). Thus, it is necessary that we analyse the problems these new fintech firms will face in pushing further against so many jurisdictional boundaries at once.

4.5 Market and Competition

Gomber et al. (2017) sum things up nicely when they say that fintech refers to innovators and disruptors that offer more security, flexibility, opportunities, and efficiencies. Thus, the innovator can either be a new fintech start-up, a technology company, or an established service provider. The pursuit of a collaborative strategy may lead down some fruitful avenues (Wonglimpiyarat, 2017), but in some other countries the market has become a zero-sum game (e.g. Hung and Luo, 2016). This suggests that future studies aiming towards further holistically cognisant theorising should be set up in ways that allow us to specifically examine this dynamic conditionality.

The emergence of fintech has also redefined the roles of conventional financial intermediaries (Gai et al., 2018; Haddad and Hornuf, 2018). For example, in the fintech lending market, the increasing lending volume will give rise to commission revenue, which could then lead to an underestimation of the credit risk of the counterparty (Giudici, 2018). This is where the insurance sector could hopefully take part. Unfortunately, most of the articles are focusing on the main players and have neglected those at the supporting and back-end level, such as security, insurance, IT infrastructure, and others.

In the context of developing countries that are not financial centres such as Hong Kong or Singapore, there will probably be no significant consequences in terms of direct job losses as a result of fintech innovation (Chen, 2016; Iman, 2018; Tao et al., 2017). However, I speculate that there will be job shifts in related industries such as law firms, accounting firms, technology vendors, and consultancies. While the number of them is perhaps substantially smaller, very different skill sets are required of today's bankers and financiers than were required of those in the industry 10 years ago (Arslanian, 2016).

5 Conclusion and Future Directions

This paper is concerned with the novelty of fintech that has not been well-addressed in peer-reviewed journals. It shows the extent to which fintech is being discussed in the academic literature. The research findings suggest insightful implications such as that we are still trying to come up with a universal definition of fintech. Its attributes and characteristics, especially its interaction within the ecosystems, along with market competitions, are interesting and worth of further scrutiny. Its adoption pattern, especially in developing countries and in combating financial inclusion, is of importance. Moreover, regulatory regimes in different contexts represent a promising area that could contribute to the literature.

Having said all that, we are well aware that fintech is an engaging topic and has not yet been over-researched. The main contribution of this paper is to outline promising areas for further research. It presents opportunities to be explored in the future (see Table 5). This research also demonstrates a practical approach to managing fintech innovation and overseeing its current development. The analyses also offer practical implications on the innovation management of fintech, as well as insights for policy makers and governments.

Deep criticisms remain. One of the most troublesome is that this review focused only on the keywords of "fintech" and/or "financial technology", while in reality there are several equally important keywords that could have been looked for, such as "blockchain", "cryptocurrency", "crowdfunding", "big data analytics", and "near field communication", among others. This method turned out to be rather inclusive by ignoring those related keywords. Another criticism is that, due to its fast-growing development, by the time this article is published, its relevance and timeliness might have lessened. Thus, this paper should be considered as the first step in our research area and to serve as a stepping stone to moving the literature forward.

Table 5: Research Issues in Fintech

Research Areas	Examples for Future Directions
Fintech definition	Universal definition and taxonomies of fintech
	Characteristics and attributes in different settings
Regulatory realms	The role of the regulator in overseeing the industry and protecting consumers
	Comparison of different regulatory regimes in different countries
	Preventing fraud, identity theft, money laundering, and other potential crimes
Market competition	The relationship dynamics between fintech and traditional incumbent firms
	Decoupling between profit-seeking motives and social motives (e.g. increasing access, combating financial inclusion)
Technological innovations	User experience and customer convenience
	The use of emerging technologies (e.g. artificial intelligence, machine learning, etc) on fintech development
Impact and implications	Consequences for financial centres such as London and Hong Kong
	Job losses, job shifts, and job creation, not only in the financial industry but also in law, accountancy, IT, consulting, etc.

All in all, this article has brought into view a quite extensive research base in business and management that employs fintech in a variety of ways. It has also identified a growing number of studies that display what we call "fintech transformation", by considering its peculiarities, attributes, dynamic complexities, and contingencies. Heeding the above suggestions will, I believe, strengthen, and expand both of these and, ultimately, transform fintech from what appears to be an outsider status into an integral part of (empirical) research and theorising in business and management studies. While I understand that many holes can be found in my review and proposition, it hopefully makes for interesting fodder nevertheless.

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