Turkish Online Journal of Qualitative Inquiry (TOJQI)
Volume 12, Issue 7, July 2021:9863 – 9877

A Systematic Review of Academic Research Work on Different Dimensions of FinTech

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Abstract

The term FinTech has been coined by combining two words Finance and Technology. It has gained significant importance and a new area of study for researchers. FinTech includes sub-domains such as Crowdfunding, RegTech, InsurTech, WealthTech, Mobile Wallets, Cyber Security, and similar services.

Increasing the adoption of technology has led to a considerable impact on the financial industry. Enhanced connectivity and computing power to the end-users are supported by continuous change and upgrading the financial sector. New business models have evolved over the last decade, as technology has disrupted how traditional financial institutions work.

In this paper, different dimensions of 'FinTech' as an industry have been reviewed from a research perspective. This paper explains the FinTech-TechFin Matrix that serves as the conceptual base in this review process. Research gaps and new research areas are highlighted in this research.

Keywords: *fintech; crowdfunding; regtech; insurtech; wealthtech; mobile payments; Blockchain Applications.*

1. Introduction

New innovative business solutions in finance were introduced due to technological advancement and new business models. Customer demands for services offered by the financial sector are changing with time. Customers expect innovative and user-friendly services from financial institutions at continuously decreasing costs for their financial transactions from anywhere and anytime.

Academic research on FinTech has developed, along with emerging business models and technologies. Systematic analysis is done in this relatively new field with the help of existing academic literature.

This research paper has been structured based on three central dimensions of FinTech: 1. business functions (domains), 2. Relevant technologies and their concepts, and 3. FinTech solution providers. The derived FinTech-TechFin Matrix helps identify the research gaps by

arranging the previous academic study in the corresponding fields. A systematic search of research articles was applied for analysis on the basis of a selected number of keywords in a short-listed list of renowned international publications (JStor, Wiley, Springer, Taylor and Francis, Science Direct, and a few more) and conferences.

2. Background and Terminology

In subsequent sections, the key terms relating to FinTech have been explained in the context of their usage in literature.

2.1 Fintech

The terms' Finance' and 'Technology,' coined together, form a new word 'FinTech' (also written as Fin-tech/Fintech). Relation between internet-based technologies (like cloud computing, mobile internet) and the financial services industry (like money lending, transaction banking) is expressed with established business activities. A company named KredX, for example, offers small and medium-sized companies the opportunity of selling their invoices to attain higher working capital by not being dependent anymore on the final payment of invoices (Lee 2015b). The last reason, organizations with an I.T. background are moderately more qualified to offer services in a highly innovative environment. The field of ICT is evolving rapidly; this demands the companies in this domain should be agile and adapt to the rapid changes in this industry. As per the experts from the domain, the banks' role in their current form will be limited only to collect and hold the deposits, and all other services will be provided by the Fintech companies(Hemmadi, 2015).

In conclusion, if we visualize this phenomenon as a Venn Diagram', we can see that the intersection point of ICT and Finance domain is where FinTech companies' growth can be seen.

2.2 TechFin

'TechFin' was coined by Alibaba's 'Jack Ma.' which refers to a technology firm that wants to deliver financial products based on existing tech solutions. It begins with technology and moves up the value chain to offer financial services using the technology platform. TechFins, like any other I.T. company, uses data as its starting point and provides an interface to customers. Then it moves up the value chain in the domain of finance by harnessing its strength which is the access to data and interface with customers using technology platforms. TechFins depend on Big Data sets and business models, which have evolved around Bigdata and then apply it to provide financial services.

In this paper, the main focus is on the most disruptive element of FinTech. The following literature reviews' objective summarizes the research work related to FinTech companies and services offered by them.

3. The FinTech –TechFin Matrix.

When studying a research field, it is essential to develop and apply an idea that assists in turning in and steer across the current study and aids in identifying untouched areas.

Table. 1. FinTech-TechFin Matrix

Hence, the idea of the FinTech –TechFin Matrix (see Table.1), which applies three central dimensions to construct the field, is proposed. These dimensions are: (i) FinTech business functions, (ii) pertinent technologies and technological notions, and (iii) institutes providing FinTech solutions. This allows for aligning prevailing academic research in the Matrix. For the literature study, the emphasis is on the most vital dimension from a business management perspective: the FinTech business function. The second and third dimensions lie beneath the business function: technologies empower the FinTech function; however, these business functions are performed by institutions in the area of FinTech.

4. Research Methodology

The methodology suggested by Webster and Watson (2002) was used for literature review to classify the condition of research and plausible future research guidelines. The literature review focuses on the areas of precision, consistency, simplicity, and conciseness to aid the scholar to perform an effective examination of the existing research (Hart 1999)

In Figure 2, an outline of measures taken to conduct a literature review in multiple stages is presented. The literature review was done as a multi-stage process. Figure 2 gives an overview of the measures applied. In the first stage, FinTech was defined as the appropriate research subject. Researchers rate FinTech as an area of state-of-the-art, prevailing, and persuasive dynamics that carry more prospective businesses and future research.

Consequently, in the second stage, the area of FinTech was organized with the help of the FinTech – TechFin Matrix. The research objective was to deliver a synopsis of the related and recent research literature that focuses on institutions' specific business domains in the financial sector. Researchers defined the scope that confines the number of publications but certifies to capture the most pertinent and recent research. It is not possible to present every single research work published up to now. This allowed researchers to study research articles in much detail and to come up with significant results and findings. The scope of the study was presented in a detailed framework. e.g., regarding the number of publications and conference events used for the search and the time period.

Fig. 1 Selection process of academic research papers

For this research, the Google Scholar database was used to collect academic literature via the literature database. The articles for the study were searched and selected based on predefined criteria. Only articles that are suitable as per the research subject were selected, and the rest of unrelated articles were rejected. Research articles published in renowned journals and conference proceedings were selected, i.e., articles went through a peer-review process

Referring to FinTech-TechFin Matrix's five business functions, relevant articles with specific keywords within a keyword list were selected. The title, abstract, and text complete research articles were considered for the search of keywords. To maintain the focus on this review study on the significant aspects concerning FinTech was done using these keywords. Articles that included topics that are not part of contemporary FinTech discussion were excluded from the study, e.g., ATMs or credit cards.

Researchers eliminated all irrelevant papers for FinTech research from the papers selected based on these keywords lists in the second step. It was seen that, at times, research study only refers to specific terms without addressing these in detail. Third, papers that do not have complete information and final results were excluded, i.e., all editorial and viewpoint papers, research-in-progress papers of conference proceedings, and teaching cases were excluded. By using this methodology, 80 research articles were selected. Finally, articles were then selected according to the FinTech - TechFin Matrix's first dimension and sub-classified within each business domain according to specified sub-categories of research questions that build baskets of topics (e.g., user behavior).

The selected set of research articles were thoroughly analyzed. The research articles were organized in the Matrix to find the research gaps and future research prospects based on their topic and contents.

Graph 1: Graphical representation of data collected about research articles published during 1961-2020 in FinTech and its related areas.

It was observed that over time there was an increasing number of articles relating to FinTech business topics. Only a few articles addressed one of the 5 FinTech business functions in 1961-1985, whereas, from 1986 onwards, the number began to increase. Already 2,390 relevant articles were published in 2020. Except for InsurTech and RegTech in India, others showed publications in 1961 (Table 1.1)

There is a growing trend that is represented by the trend line. It clearly shows that more interest has been demonstrated by the researchers in the area of Crowdfunding as it is mainly related to fundraising by different people with different motives such as social, economic, investment, business, some more.

Content analysis

To structure analysis, papers within business functions that study similar or connected topics were clubbed together based on sub-categories as per business function. Research results and findings of the corresponding periodicals are furnished in detail within a sub-category.

Research on FinTech

The integration between finance and technology to serve customers' real-life needs is one of the reasons for the successful growth of FinTech in China. This leads to the development of financial innovation, and especially inclusive finance (Chen L. , 2016). The Digital Finance Cube helped explore and determine the potential research areas and research gaps for future research possibilities(Gomber, Koch, & Siering, Digital Finance and FinTech: current research and future research directions, 2017). Analysis of innovative mechanism system of the FinTech startups was done that took part in the SWIFT' Innotribe competition(Gozman, Liebenau, & Mangan, 2018); From the security perspective, use of FinTech products and services was studied in Germany (Stewart & Jurjens, 2018).

A web-based survey was done to study the adoption of Robo-advisory by customers through FinTech(Belanche, Casalo, & Flavian, 2019). Thus, the influence of automation on innovative approaches in value creation of FinTech services(Boratynska, 2019). As FinTech was seen as an emerging market, funding was influenced by angel investors, seed-stage investors, and founders(Giaquinto & Bortoluzzo, 2020). Financial literacy and responsible finance raised a question on the capabilities of FinTech and posed challenges in front of FinTech(Panos & Wilson, 2020).

Research on TechFin

Alibaba's Jack Ma firstly used the term 'TechFins' to describe Ant Financial – the financial services arm of the Alibaba ecosystem in 2016(King & Nesbitt, 2019). In this paper, the author has given a brief about the possible threat to banks and financial institutions from TechFins like Alibaba and Tencent and, not FinTechs. The author highlighted how Alibaba and Tencent started as TechFin companies and provided financial solutions and services. The rise of TechFin companies like Alipay and Ant Financial by Alibaba, with these two examples, the author highlighted that FinTech is not the actual threat to the financial services industry, but TechFins and BigTech can be real threats.

Research on Crowdfunding

The research was done from different perspectives. Crowdfunding was studied from the cultural, economic perspective(Langley, 2016).The growing popularity of online Crowdfunding grabbed more attention from researchers, which led to the reduction of research on offline crowdfunding, and thus suggested including offline crowdfunding methods and practices in academic research work(Gras, Nason, Lerman, & Stellini, 2017). In order to increase crowd participation in equity crowdfunding, the effects of a distinct variety of updates were studied (Block, Hornuf, & Moritz, 2018). The entrepreneurs of creative initiatives focused their tone comparatively more on themselves and introduced their names more regularly on their Kickstarter pages than technology initiative entrepreneurs(Gafni, Marom, & Sade, 2019).A Chinese crowdfunding platform was examined to study the financing performance of two crowdfunding projects with respect to factors such as lifecycle influencing factors and the effects of the funding goals(Chen, Zhang, Yan, & Jin, 2020).

Research on RegTech

Only two papers were found, one each from Springer and Elsevier. The study reviewed articles on computerization and the merits and demerits of combining the technology with legislative law. It then enlightened the conversation from a more comprehensive viewpoint. It scrutinized regulatory technology through standards developed in the conventional regulatory debate. It contributes to that discussion by expecting complications that will appear as the automation develops(Micheler & Whaley, 2019). The article touched on introducing LegalTech in the classroom(Ireland & Hockley, 2020).

Research on InsurTech

Only two papers were found, one each from Springer and Taylor & Francis. In their empirical study, the former clarified how InsurTech triggered firm-level value creation and indicated that disruptive capability evolves from planning the innovative effectiveness and three uniformly relying events. The latter described the introduction of computerized representatives and their roles in the personal insurance market(Stoeckli, Dremel, & Uebernickel, 2018). The study concluded by surveying the significance of InsurTech for future understandings of personhood. While there is a span for new classes of personhood to come out, it showed that there are also essential continuities between past and present regarding the challenge of bringing persons, parts of persons, equipment, and financial interests into profitable arrangements(McFall & Moor, 2018).

Research on WealthTech

This paper from Taylor & Francis by(Kim B. , 2017) revealed that WealthTech is authorized not simply by risk determination per se but also by pain sentiments. Therefore, the financial subjects organized in this WealthTech pedagogy feel hurt, and in this sensitive state, they are led to think from the understanding of the rich.

Research on Mobile Wallets/Payments

To tap into the learning from self-checkout implementation and combine it with available information relating to mobile scanning and mobile point-of-sale was the study's objective(Taylor, 2016). The researchers (Singh, Srivastava, & Sinha, Consumer preference and satisfaction of M-wallets: a study on North Indian consumers, 2017) examined the mobile wallet adoption behaviour by buyers; researchers examined 204 buyer representatives in North India. The research study aimed to find research work done on mobile services targeting financial inclusion in developing countries. The idea was to find existing research contributions in the area and potential research gaps for the future research study(Kim, Zoo, Lee, & Kang, 2018). The researchers tried to determine how smartphone addiction acted as a motivating factor in driving mobile wallet payment adoption behavior in emerging economies like India(Shaw & Kesharwani, 2019). The researchers examined the factors that ease and restrict users' intention to use mobile payments continuously; these factors are essential to understanding technology sustenance and its future in enabling financial inclusion(Pal, Herath, De, & Rao, 2020).

Research on Blockchain Applications

The study mentioned different benefits of blockchain technology, and it helps regulators know about market conditions; it also helps regulatory activities in managing investors and fighting money laundering(Zhu & Zhou, 2016). The study addressed the problem of behaviour pattern clustering in blockchain networks by formulating and proposing an original BPC algorithm for this problem(Huang, et al., 2017). The systematic review of literature explored the blockchain system's present-day condition and its user applications and highlighted how this innovative technology's specific characteristics could revolutionize "business-as-usual" practices(Casino, Dasaklis, & Patsakis, 2019). The key observation showed that electronic properties do not respond identically and must not be seen as one group or market. Currencies appeared linked to the FIAT currency market and stay associated with traditional FIAT banks' policy-making decisions (Federal Reserve)(Corbet, Larkin, Lucey, Meegan, & Yarovaya, 2020).

5 Future Research Directions

The literature review permits us to find research gaps in the areas already researched and find the new areas where the subject is not yet addressed by research work so far. By applying FinTech-Techfin Matrix to the above literature following points were determined (i) possible future studies relating to each FinTech domain, (ii) regarding fusion among FinTech domains, automation, and innovative ideas as well as organizations, and (iii) probable future studies vis-à-vis FinTech beyond the Matrix.

(i) Several remarkable findings are discovered within the dimensions of business functions. Researchers in any top-ranked paper have not addressed digital wallet platforms and providers. Also, there are prospects for upcoming research concerning the business domains RegTech, WealthTech.

(ii) Research on the use of NFC for mobile payments can be done. Similarly, research on WealthTech can include points of social networks that influence investment decision-making.

(iii) The set up of "Regulatory sandboxes" makes it possible for organizations and FinTech companies to experiment and test their solutions under one roof securely and systematically, e.g., UK, India, Singapore, or Hong Kong, an essential topic for the current debate. The future of FinTech regulations can be determined by comparative academic studies of the national FinTech ecosystem; initially, supporting lighter rules for FinTech organizations would be highly applicable.

6 Conclusions

The business design of established institutions is being tested by different factors such as digitalization of business, new automation techniques, and more I.T. literate customers covering all age groups. In financial institutions, all related business domains saw two things: disruptive models of disintermediation and modern players.

In researchers' view, research has not yet thrived in uncovering the exact functions of FinTech and established financial institutions. The study could research two kinds of organization's perspectives and signify how they will contend and cooperate individually. FinTech organizations' fate will be decided both by novelty at the automation level and by the response of government officials and controllers to the new turns of events. Customers will accept innovative solutions that ease utilization and lower exchange costs. The usage of mobile phones in monetary transactions increased due to the international system of peer-to-peer transfer of funds. The facility to use wearables for money exchange is inspiring research subjects and preparing the future FinTech business design layout. Beyond this, given the high elements in this field and the need for quick, still, logical government answers, any scholarly understanding on the effect of government measures in the domain of FinTech will be most valued.

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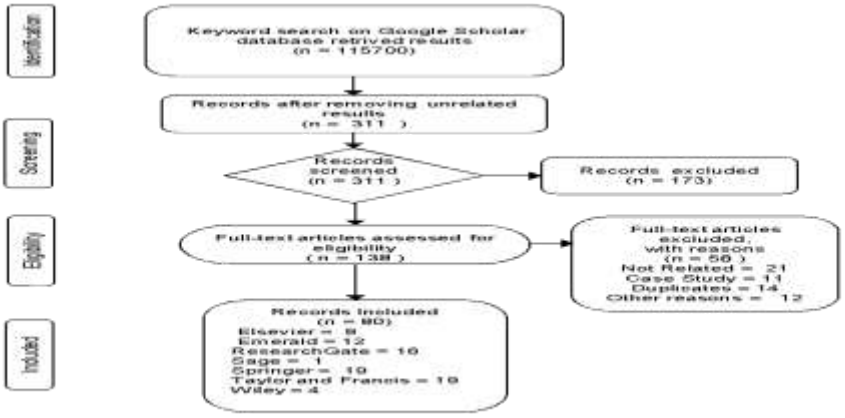
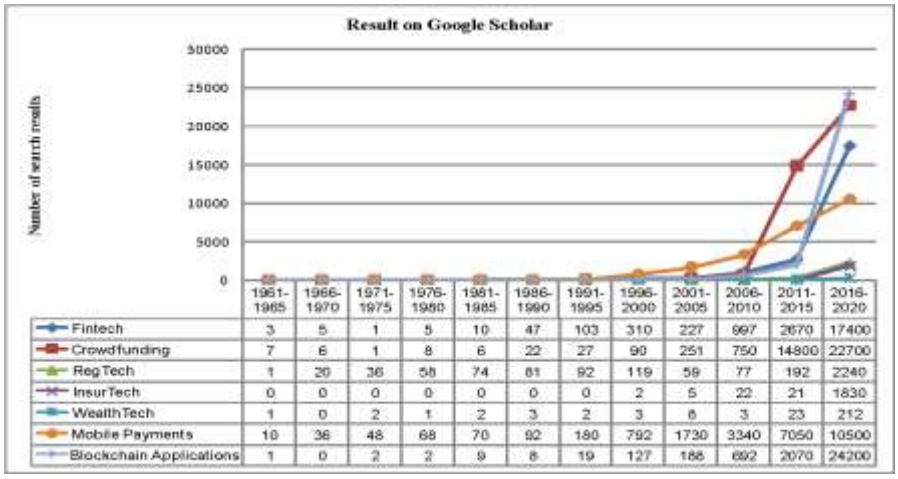
Table. 1. The FinTech-TechFin Matrix

Fig. 1 Selection process of academic research papers



Graph 1: Graphical representation of data collected about research articles published during 1961-2020 in the area of FinTech and its related areas.



	1961-1965	1966-1970	1971-1975	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2010	2011-2015	2016-2020
Fintech	3	5	1	5	10	47	103	310	227	997	2670	17400
Crowdfunding	7	6	1	8	6	22	27	90	251	750	14800	22700
RegTech	1	20	36	58	74	81	92	119	59	77	192	2240
InsurTech	0	0	0	0	0	0	0	2	5	22	21	1830
WealthTech	1	0	2	1	2	3	2	3	6	3	23	212
Mobile Payments	10	36	48	68	70	92	180	792	1730	3340	7050	10500
Blockchain Applications	1	0	2	2	9	8	19	127	188	692	2070	24200