

THE FINTECH EFFECT ON ORGANIZATIONS MANAGEMENT

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Abstract:

The article aims to identify and understand the effects that new financial technologies produce on the management of organizations and analyzes, on the one hand, the evolution over time of these technologies, corroborating the concepts and classifications used in the specialized literature, and on the other hand investigates the factors that influenced their appearance, examining in parallel the possible fields of the most critical technologies existing in the financial industry. This study highlights the production of new Fintech technologies, which results in increased competition for the supply of financial services and products and, in return, potentially disruptive changes in these sectors with a determining effect on the management of financial institutions.

Keywords: *fintech, artificial intelligence, business models, blockchain.*

1. Introduction

The financial policies of social structures at public and private levels have been influenced since before World War I by two main currents. The first trend is the emergence and development of financial institutions that operate with the values of individuals, companies, and states in such a way as to preserve consumer confidence in their products and, at the same time, obtain and retain, based on their business models, various profit lines of institutions. The second trend, which is newer and augmented by people's increased access to information through various media tools, is their need and aspiration and those of various public and private structures to oppose the increasing dependence on the resources and products of large financial institutions.

An extensive range of products and services can be included under the dome of what the word Fintech stands for. The term is used even in areas that are only tangentially related or not expressly related to the financial specialty. A product or service is said to be Fintech if it is distributed over the internet using an electronic device (laptop, smartphone, etc.) and using the latest technology. In turn, companies that produce or intermediate this kind of products and services fall under the title of Fintech organizations (Brandl and Hornuf, 2017; Burlea-Schiopoiu et al., 2021; Dorfleitner et al., 2017).

Fintech was originally invented to eliminate financial institutions and implicit central banks. This intention was generated by people's dissatisfaction with the fact

that governments are forced to expend public funds to help financial institutions on the verge of collapse. This solution defines the democratic character of the fintech concept, generating products and services oriented towards the masses and not just to a small group of connoisseurs (Zavolokina et al., 2016).

Apparently, another property of the fintech concept, exclusivity, conflicts with the democratic character. This derives from the fact that fintech products and services are based on computer languages. Since these cannot be seen or fully understood by the average consumer, all that remains is to trust the producer or intermediary, so those who hold exclusivity (Wulan, 2017).

Primarily, these two characteristics make the study of fintech organizations notably different from that of traditional organizations. For this reason, the present study, detailing its effects on management in these types of organizations, considers these characteristics (Chorev and Anderson, 2008). Fintech companies, whether operating in the financial industry or using innovative technologies, are in a less standardized, highly competitive market, and therefore, determining the impact on management requires identifying the particularities of the industry in which they operate. Therefore, the purpose of the present scientific research was to determine the factors that impact the management of a fintech company and the impact level they provoke.

2. Financial technologies

2.1 Concepts and classifications

Bettinger (1972) elaborates a first definition of Fintech, but because it was enunciated many years before the public use of the Internet, it does not capture the characteristics of the phenomenon encountered today but only predicts them in an incipient way: Fintech is an acronym that derives from financial technology, combining banking expertise with modern scientific techniques and computer capabilities (Bettinger, 1972, p. 62).

Fintech usually refers to companies (most often start-up companies) involved in developing new technologies and the business sectors that comprise those companies. Fintech also characterizes the use of digital technologies to enable, innovate, or dislodge financial services (Gimpel et al., 2018, p. 247). These innovations challenge the traditional business models of current financial service providers. Fintech's initial forms included data processing and automating routine tasks, followed by systems that executed decisions based on specific rules and instructions. It evolved into decision-making applications based on the complex logic of machine learning, where a program can learn how to execute tasks over time.

Another dimension of the Fintech phenomenon is given by Techfin (or Bigtech) companies that innovate in areas such as payments or settlements and compensations that, together with support services, cover over two-thirds of total services and with smaller shares in lending and lending services financial planning, or investment management and other services that address companies concerned with digital identity and cyber security (Zetzsche et al., 2017). They seek to broaden their activity and access the financial services market through customer databases, owned technologies, brands, and other assets (Zetzsche et al., 2017). These giant companies could pursue flooding virtual space and the financial market with new technologies, trying to control this market through the competitive advantage it

already holds, namely, owning the interface and customer database (Navaretti et al., 2017, p. 17).

2.2 Fintech Evolution

As can be seen from Table 1, starting with what has been called Fintech 3.0, the rapid evolution is surprising. This is evidenced both by the number of searches based on Google Trends data and by the number of academic papers taken over on the Web of Science certifying that only since 2015 the term Fintech has aroused interest and since then it has grown exponentially, drawing attention to the transformations in the financial industry (Kou, 2019).

Table 1

Fintech development

Fintech evolution stage	Period	Key feature
Fintech 1.0	1866-1967	Infrastructure (from analogue to digital)
Fintech 2.0	1967 – 2008	Banks
Fintech 3.0	2008 - present	Start-ups
Fintech 4.0	future	Techfin

Source: Own adaptation from specialized literature

Some specialists believe that Fintech 4.0 will be about Techfin (Tanda-Schena, 2019), so with Fintech money is digitized (transformed into data) and with Techfin data is monetized (transformed into money). In support of the above, it can be added that currently, innovations in the payment system are mainly generated by non-banks such as Apple, Google, Revolut or PayPal, and consumers in the age group 14-30 years largely choose these payment methods, finding them easier, faster, more generally accessible and ignoring the data security issues that other age categories signal (The Millennial Disruption Index Report, 2013).

2.3 Factors that facilitated Fintech development

One of the main factors that led to the development of these technologies is the increase in computational power caused by the evolution over time of the cost of the storage unit, Gigabyte, more precisely, its diminishing value from over one million dollars in 1966 to only 2 cents in 2017 (Arslanian-Fischer, 2019).

Financial regulations subsequently facilitated the deployment of financial technologies, and their penetration was determined by Mansilla-Fernández in 2017 through the correlation between investments in Fintech companies and the severity of regulations in the financial sector. In this study, the Financial Regulatory Severity Index was designed based on 18 indicators obtained from the World Bank's Banking Regulation and Supervision Study, which measured the sensitivity of the regulatory system according to the risk accepted by the banking system (Mansilla-Fernández, 2017, p. 38).

Other predominant external factors are social responsibility or impacts caused by crises such as the COVID crisis (Burlea-Schiopoiu et al., 2017). Social responsibility refers to the responsible use of a company's resources and synthesizes its degree of involvement and contribution to increasing society's standard of living through its business model (Mohr et al., 2001).

One of the drivers of the penetration of financial technologies in today's market is changing consumer behavior. The need for a change in the financial industry, also based on the factors described above, is also synthesized by the results obtained from a three-year study called The Millennial Disruption Index in 2013 on the dislocations caused by the industry by the generation called Generation Y, a generation defined by young people aged between 20 and 35 at the time of the study. The study aimed to identify industries most likely to be transformed or on the verge of being displaced by the demands and expectations of this last generation and revealed that most of those surveyed do not trust their bank, do not believe it offers them anything different, and are willing to change it in the next 90 days with the amendment that all banks in the top 4 are among the top 10 less loved. Moreover, almost three-quarters believed that how we access money and make payments will differ in five years, which has been confirmed. At the time of the survey, nearly half expected tech start-ups to change how banks operate (The Millennial Disruption Index Report, 2013); this process has been further accelerated by the effects of the Covid crisis.

2.4 The new technologies and their applications

2.4.1 Big Data Analytics

To discover hidden patterns of interest or other correlations in the studied elements, Big Data Analytics can examine vast amounts of data, obtaining answers almost immediately (ideal for quick decision-making), with much reduced costs compared to traditional business intelligence solutions and with increased skills in identifying new products and services that meet customer needs and expectations. Data scientists use software codes and modern database analytical techniques to determine helpful information for organizations to make more informed business decisions, such as customer preferences or market trends (Davenport and Dyche, 2013).

In recent years, data has been generated in various forms: video, audio, images, social media, and text, coming from various sources such as the Internet of Things, social media, public authorities, or fundraising, and turning into massive databases. In addition to traditional data such as economic indicators, share prices, and information from companies' financial results, large amounts of data could be collected from less traditional sources (called alternative data) such as social networks, sensor networks, electronic devices, or data generated in the ordinary course of a business (Charoenwong, Kwan, 2021).

The areas where BigData can be used are multiple and diverse. These range from fraud detection and product performance measurement applications (used by manufacturing companies) to campaign analyses and sentiment analytics or virtual social media for marketing or political campaigns, as well as customer segmentation or predictive analytics applications, or customer relationship management and financial risk used in the financial industry (Goundar et al., 2021).

2.4.2 Artificial Intelligence

Artificial intelligence, especially neural networks (programs based on how the human brain learns and processes information), has been used since the 80s in credit card fraud detection systems to identify payment requests or abnormal payments. Since the 90s, artificial intelligence has been used in medical diagnostics, financial analysis, logistics, data mining and processing, and other fields. Tasks that were initially possible only for human intelligence could be performed with the help of artificial intelligence technology that made the development of computer systems

possible, manifesting cognitive and decision-making abilities comparable or superior to those of human beings (Arslanian and Fischer, 2019).

One of the peculiarities of artificial intelligence is that it can be used both in cases where all players involved have equal access to information and, therefore, the information is perfect, such as chess players, but also in situations where players have hidden information. The information could be better, such as about playing poker. Also, examples of the use of artificial intelligence in non-financial areas include virtual assistance (Apple's Siri, for example), translation applications provided by Google, or product recommendation engines on Amazon (Tanda and Schena, 2019).

Machine learning techniques have multiple applications, from predicting market trends or circumstances, such as the probability of a merger or the possible outcome of political choices, to analyzing data through satellite image recognition algorithms. It could aim to provide consumers with information on the state of agricultural harvests, for example, or data on shipping or industrial production facilities, which can be provided on the one hand at a national or global level or, on the other hand, only some local firms in order to obtain competitive advantages that can be used in the financial industry to develop economic models or companies' evaluations (Cho et al., 2021).

2.4.3 Distributed ledger technology (DLT)

A distributed ledger is a database that can be shared between participants (nodes). In this kind of database, each entity in the network holds an identical digital copy of the ledger, made possible by how data is stored, recorded, and distributed to participants through a mechanism they all agree on. This cooperation mechanism involves, on the one hand, the validation of the transaction and the approval by the parties involved in updating the register, thus making the entries in the register inseparable. However, the register is accessible and transparent in real-time for all participants. The nodes of a distributed ledger network are connected, each with access to its identical real-time copy of the ledger, the key to the operation of this system being the consensus whereby all nodes agree on a new transaction and the periodic renewal of the ledger (Hougan and Lawant, 2021).

Distributed ledger technology offers great opportunities to record financial transactions in an efficient, secure, and transparent way. It can be successfully used in faster property transfer or peer-to-peer (P2P) transactions. The disadvantages of this technology are that it could be more secure, data privacy breaches can occur, and it is energy-intensive (Fukuhara and Kaji, 2021).

Other important uses of DLT would be, among other things, cryptography used, for example, to verify the identity and encryption of network participants or intelligent contracts such as escrow custody contracts or contracts to enforce contingent collateral in the case of derivatives or automatic collateral transfer in case of default (Nicoletti, 2017).

One type of distributed ledger technology is blockchain, whereby information (for example, changing ownership of an asset) is recorded sequentially in *blocks chained* together and secured by encryption. In this way, each block contains groups of past and current transactions, as well as a secure link that points to the previous block. The network participants first authorize the new transactions and then introduce them into the chain (Rosati and Cuk, 2019).

Blockchain technology has great potential for applicability for services in the financial industry as well as for those in medicine, science, and research in the public

domain (governments) or the business environment. Countless opportunities can be exploited in the financial industry by distributed ledger technology, such as payments, foreign exchanges, technology-assisted insurance (Insurtech), crowdfunding, digital banking, mortgages, virtual currencies, tokenization process, or post-trade clearing and settlement (Nicoletti, 2017).

2.4.4 Robots in the financial industry (Robo-consulting)

By using technology or technological processes based on robots, activities that previously could only be completed by humans can now be performed by machines. One of the leading disruptive innovations introduced to the financial services industry by Fintech companies is in the field of virtual robotics. For financial services, this comes mainly in the form of robo-advisory services, defined by the New York Times as a distinct class of financial advisors providing online services with minimal human intervention (Lieber, 2014). Until today, this type of service has mainly been limited to portfolio management and heritage management services.

A 2016 CFA Institute study revealed that 37% and 40% of correspondents responded that among Fintech technologies, robo-consulting will have the most significant impact on the financial services industry in a one- and 5-year timeframe, respectively. At the same time, the survey also showed that 70% of respondents believe investors will be positively affected by cost reductions, improved access to advisory solutions, and better product choices, and this confirms that robo-advice is addressed explicitly to the passive investment market and that a much larger number of retail investors can be accessed at much lower costs than the traditional advisory methods could provide (Preece, 2016).

The robo-consulting sector in the financial industry presents two main types of wealth management governance (Nicoletti, 2017):

- Fully automated digital heritage management generally provides a low-cost investment solution and does not depend on the assistance of a human financial advisor. This model recommends a portfolio generally composed of exchange-traded funds (ETFs), and the product package includes automated direct deposit services, dividend reinvestment options, and automatic periodic rebalancing.
- Digital-assisted wealth management is a model that provides automated investment services alongside a financial advisor available over the phone for investment planning advice or periodic revaluations. Assisted digital managers can provide advisory services that involve a holistic analysis of the client's assets and liabilities.

Therefore, the strengths of robo-consulting services can be characterized by low commissions and minimal investment level, decisions made without negative emotional involvement, portfolio construction and automatic rebalancing through algorithms, capitalization from tax optimization, and weaknesses, lack of personalized human contact, a potential conflict of interest and poor risk tolerance analysis. As far as the business environment is concerned, it presents opportunities to take advantage of the ubiquity of digital services, the possibility of standardization and integration of financial products by offering investment services based on targets concretely defined by the client, and the possibility of complementing traditional consulting methods. In contrast, for now, the environment remains quite hostile, with the acceptance rate still low, in a highly competitive environment, with possible future adverse changes from regulators or resulting from future financial crises (Jung et al., 2018).

3. Management implications

To measure Fintech firms' impact on the financial industry, we can compare this phenomenon with previous waves of innovation (such as electronic payments, the introduction of ATMs, or the emergence of Internet banking). Many of these innovations have been successful, leading over time to shorter transaction times, switching to extended working hours of bank branches, or reducing their number or that of bank employees in general. Although the capital invested in Fintech companies has continued to grow over time, the apparent decrease in recent years, both in terms of capital and the total number of firms traded (Ketabchi, 2019), leads to the conclusion that enthusiasm regarding the Fintech phenomenon has reached the initial ceiling of the hype cycle as defined by Bosch and Fenn, in their 2018 study *Understanding Gartner's Hype Cycles*.

The hype cycle describes the evolution of innovation, from excessive enthusiasm to understanding the role played in the market, through periods of disillusionment, a cycle through which the technology goes through various stages to production. It can be seen from this analysis that the stages in which technologies such as the Internet of Things (IoT), Deep Learning, or Blockchain were, although still viewed with skepticism a few years ago, only 5-10 years away from reaching productivity, while Virtual Assistants (including Robo-consulting) were only 2-5 years away (Bosch and Fenn, 2018), assumptions already confirmed today.

Fintech business models have produced and are producing a structural change in the financial sector and a new model of customer reporting with the financial services provider. However, players offering intermediation services will likely retain a significant function in the financial markets due to the need for large amounts of information and data security. Intermediation factors will transform from traditional banking to digital platforms that can process complex information through Big Data. Indeed, many organizations will transform and resist the financial market, some will disappear, and the greatest vulnerability will probably be at the level of less developed or less innovative banking structures (Tajimi, 2021, p.76).

Moore (2015) suggested four areas where companies should structure their investments: innovation, transformation, performance, and productivity. The management of all four business areas should be performed distinctly. Thus, it could have greater flexibility and resilience, whether the company is on the offensive side by introducing its financial technology products or is in a defensive position due to the technological innovations of its competitors. In this way, the defensive trend of traditional companies in the face of the disruptive trend created by Fintech companies could be changed and diversified.

4. Conclusions and proposals

As a result of the revolutionary products and services offered by Fintech, companies acting in the financial industry, mainly existing banks, are strongly affected, and in terms of expected changes from management, several possible scenarios take into account the ratio between companies that manage to control their relationship with customers and those that finally assume the risk and provide the services, in other words, the result of the conflict between maintaining the customer relationship and preserving the customer database (Burlea-Schiopoiu and Balan, 2021).

Another important aspect is that many Fintech companies operate at regional or national levels, especially those focused on lending and investment activities. However, there are FinTech firms, especially those specializing in cross-border payments and return transactions, which already operate in multiple multinational jurisdictions and have the potential to expand their portfolio in an international environment. Given that these cross-border financial technology companies interfere with the activity of the classical banking industry and bring an additional risk factor to the stability of the global financial market, there is a need for global regulatory institutions to supervise coordination and exchange of information to maintain transparency and stability of financial markets.

In order to identify and understand the effects that financial technologies produce on the management of organizations, this study analyzes, on the one hand, the evolution over time of these technologies, as well as the concepts and classifications used in the specialized literature and on the other hand investigates the factors that influenced their appearance and also examines the possible areas of use of the most critical technologies in the financial industry such as Big Data Analytics (Big Data), Artificial Intelligence (including machine learning), Distributed Ledger Technology (including Blockchain) or Robo-consulting.

The innovations in the financial fields should encourage the development of a fairer and more inclusive economy for the various categories of clients, management aiming at growth-friendly capital formation for companies, accumulation of deposits for the pension system for individuals, distribution of risk factors judiciously according to the financial instruments accessed and according to the category of clients, all to develop stable, secure, and balanced economic systems.

New technologies and business models have profoundly altered the financial services industry, and this trend will be accentuated in the future. However, the optimal development of financial innovations will require all participants in the financial system to work together to integrate current and future financial technologies and adapt to the core objectives of the industry. Achieving this balance and integration is complex, as innovations bring new opportunities and challenges. Accessing large amounts of data by various partially or inexperienced entities, unrestricted access to various financial instruments, the need for organizations through new business models to be competitive and conquer new market segments, the tendency of classical banking systems to retain or capture customers to maintain competitive advantages, all are of course risk factors and destabilization of financial markets that management and founders must take into consideration.

However, these new technologies are meant to transform the balance of the financial industry and the relationship between the customer and the provider of financial products and services. If management, innovators, regulators, customers, and traditional institutions find collaborative solutions through an effective partnership, the financial industry, the economy, and its beneficiaries will benefit.

Future research could aim at a systematic and comparative approach to possible scenarios imposed using the new technologies for financial services and products. It should also analyze the strategic implications of the Fintech process, the possible business models adopted, and their effects on the management of financial organizations.

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