Exploring the Diverse Landscape of Fintech: An In-Depth Analysis of Fintech Types and Innovations

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ABSTRACT

One of the main features of human nature is the desire to improve the quality of life. Human civilizations can be told apart by how creative and innovative they are, or at least by how well they can adapt to new ideas. Nowadays, the world is witnessing a daily evolution in communication technology, which has expanded to various economic sectors. The financial sector is one of the most affected sectors by these innovations. As a result, one of the most interesting global trends in both developed and developing countries is the use of new technologies in the financial industry. The current time is considered a critical era for all workers and users of the financial sector services due to the number of technologies they must adapt to, the changes in financial services, and the amount of money transferred daily. It is easier and cheaper to use advanced technology compared to the traditional method. Despite that, the government globally provides huge support for financial technology services to transform from traditional methods to technological ones. Therefore, this study defines what the catchword "Fintech" means. Moreover, it illustrates the various types of financial and technological services.

Keywords: FinTech, Financial Sector, Financial Economics.

1-Introduction

"Fin-tech" represents the marriage of two fields: finance and information technology, and it refers to financial service technologies provided by financial institutions. Scholars and industry experts have different ideas about what the term "fintech" means.

Some perspectives define fintech as computer technologies. For example, Oxford Dictionary (2015) [1] defines FinTech as "computer programs and other technology used to support or enable banking and financial services. Porter (2009) [2] defined FinTech as technology-driven financial innovation.

Another approach views FinTech as a collection of businesses rather than a phenomenon. For example, Fergus c & Maltas, (2019) [3] define FinTech companies as those that "provide technologies for banking and corporate finance, capital markets, financial data analytics, payments, and personal financial management." Furthermore, Wesley-james et al., (2015) [4] defines FinTech firms as those that "provide solutions for banking and corporate finance, capital markets, financial data analytics, payments, and personal financial management.

Besides that, there are other perspectives which define fintech as a technological service, such as Jünger & Mietzner (2020) [5]. They used the Fintech term "to refer to the services of various high-tech startups that feature innovative business and digital platform models". Moreover, LEE & Teo (2015) [6] use the Fintech term as the "innovation of financial services which delivered through technologies". Furthermore, according to Sangwan (2019) [7], "FinTech refers to the application of computers and related digital technologies in financial services and is substantially redefining the work of financial entities".

Other perspectives focus on describing fintech as an industry or a sector, such as Schueffel (2017) [8], who defines the FinTech industry as "a new financial industry that applies technology to improve financial activities." On the other hand, Vasiljeva & Lukanova (2016) [9] define fintech as "a sector that concentrates on arranging financial services for private individuals and businesses with the goal of offering customer-centric solutions most efficiently and cost-effectively possible, utilizing innovation and technology to do this".

Moreover, Navaretti et al. (2017) [10] classify FinTech according to the type of business, such as FinTech payment companies and FinTech lending companies. However, Magnuson (2018)

[11] argues that fintech has brought fundamental changes across all aspects, "from the way that banking works to the way that capital is raised, even to the very form of money itself".

As mentioned, the definition of fintech differs across the literature, but overall, a new definition can be derived from what has been mentioned above. It can be defined as a new market that combines finance and technology to replace the traditional financial system with a new technology-based one, and financial firms and new entrepreneurs leverage it to provide financial services. Using current revolutionary technologies (software), like artificial intelligence technology, blockchain technology, cloud computing technology, big data technology, machine learning technology, and internet technology.

2. Types of FinTech

Fintech can be classified into ten different types, depending on the services provided. This classification is shown in Figure 1.
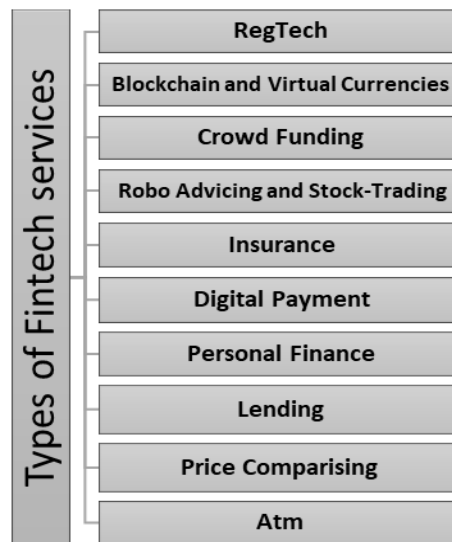

Figure 1 .Types of Fintech

2.1 RegTech

RegTech, emerging as a subset within FinTech after the 2008 financial crisis, focuses on leveraging technology to enhance regulatory procedures. This sector encompasses companies dedicated to tackling challenges stemming from increased data breaches, cyber threats, money laundering, terrorist financing, and other fraudulent activities prevalent in today's technology-driven economy. (Arner et al., 2016, p. 35; Arslanian & Fischer, 2019, p. 45) [12][13].

The RegTech software is built with cloud computing and SaaS (Software as a service) technology. Machine learning and big data technologies are used by these businesses to assist organizations in complying with regulations more efficiently and cost-effectively, decreasing risks and ensuring compliance. The primary responsibilities of RegTech include compliance, reporting, and regulatory monitoring.(Arner et al., 2017, p. 2)[14].

However, despite the theoretical classification of RegTech services, it has been found that RegTech applications use the three duties in an overlapping manner that is difficult to distinguish. Such as financial fraud detection and financial risk management programs.(Baba et al., 2020, p. 15; Barone & Masciandaro, 2018, p. 8)[15] [16].

Finally, this sort of Fin-Tech software had many advantages, such as Streamlining development, maintenance, and support costs, enhancing the overall operational efficiency of the company, optimizing audit procedures for better outcomes, minimizing operational risks and expenses, and enabling access to real-time analytics and data.

On the other hand, there is a problem with the traditional regulations, which have a large number of regulations to comply with, and new regulations are always being created. Unfortunately, not all companies have the ability to provide a compliance department or to take advice. RegTech has solved all of these problems. (Mills, 2018, p. 40) [17].

2.2 Blockchain & Virtual Currencies

Blockchain technology (DLT) is a type of fintech innovation that has gained prominence since its development in 2009. It functions as an electronic payment system that ensures payment security independently of the parties involved. Cryptocurrency, such as Bitcoin, is one of the most prevalent applications of blockchain technology.(Chen et al., 2019, p. 2067; Sangwan, 2019, p. 72) [18].

A blockchain consists of interconnected blocks within a peer-to-peer network linked together using cryptographic hash codes. This design eliminates single points of failure, ensuring the system's reliability even if some nodes in the network cease to function. As a result, blockchain technology offers a highly dependable method for management and maintenance.(Rabbani, 2021, p. 72)[19].

Blockchain has attracted significant attention globally due to its potential to revolutionize financial services. It is recognized as the fastest-growing fintech innovation and is expected to have a transformative impact, particularly in the era of the fourth industrial revolution.

Additionally, blockchain has contributed to reducing the costs associated with monitoring and enforcement.(Sangwan, 2019, p. 82)[7].

One of the key advantages of blockchain technology is its resistance to manipulation and fraud, along with its ability to offer less costly, more efficient, and more democratic solutions compared to traditional monetary and financial systems. Many fintech products and services utilize platforms that rely on blockchain technology.(Cai, 2018, p. 965)[20]. Cryptocurrencies utilize decentralized control through blockchain technology, removing the need for traditional financial intermediaries like banks. Initial coin offerings (ICOs) are one innovation that allows blockchain startups to generate funds online by distributing digital assets or tokens, often using the Ethereum blockchain.(Thakor, 2020, p. 5)[21].

2.3 Insurance

Technology giants like Google and Microsoft have collaborated with fintech startups to introduce new or enhanced solutions in the retail financial services market. This partnership has expanded into various areas, including insurance telematics and wearables, such as car black boxes and sensors that monitor agent activity or provide premium comparison services. These innovations aid firms in better predicting claim likelihood and improving customer service. Additionally, the integration of insurance customer relationship management (CRM) software streamlines client interactions and facilitates commission processing and other business operations. The overarching aim of these tools is to enhance client interactions, automate business processes, and improve overall efficiency. (E&Y, 2017, p. 14)[22].

2.4 Investments: Robo-Advisor and Stock Trading Applications

The emergence of financial technology (Fin-Tech) is revolutionizing how people trade, manage their money, and receive financial advice. One significant aspect of Fin-Tech is Robo-advising, which utilizes computer systems or applications to provide automated investing advice.(Chen et al., 2019, p. 2067)[18].

Studies indicate that Robo-advisers and non-advisers share similar demographic characteristics, but Robo-advisers tend to be more engaged and manage larger asset portfolios. Investors using Robo-advice benefit from diversification, leading to increased returns and reduced volatility. Early adopters of Robo-advising are shown to make fewer mistakes, such as disposition, trend-chasing, and rank effect biases.(Thakor, 2020, p. 5)[21].

Robo-advising has also made portfolio management more cost-effective, allowing financial advisers to assess multiple portfolios in less time. The availability of Robo-advisors eliminates the need for personal visits to stock exchanges, as trades can be executed quickly through stock-trading applications. Despite their importance, Robo-advisors have been slow to be adopted by the public.(Abraham & Schmukler, 2019, p. 2,3)[23].

They are particularly useful for young families with low financial resources, but adoption may be hindered by suspicion of financial institutions, high transparency standards, and reluctance to engage in investment activities. Therefore, increasing the availability of Robo-advisors to these families is crucial. (Agarwal, 2020, p. 11) [24].

2.5 Crowdfunding

Crowdfunding, stemming from the concept of crowdsourcing, involves seeking financial support, ideas, reviews, and solutions for business projects from the "crowd." It is categorized into reward-based, donation-based, lending-based (debt), and investment-based (equity) crowdfunding (Navaretti et al., 2017, p. 52)[1].

1-Reward-based Crowdfunding:

Contributors support projects in exchange for rewards, typically receiving products or services tailored to their preferences. Platforms like Kickstarter exemplify this type.(Magnuson, 2018, p. 1138) [1].

2-Donation-based Crowdfunding:

Individuals or nonprofits seek financial support for specific causes, with campaigns varying widely in scope. Contributors may donate to help others or enhance their public reputation. Platforms like GoFundMe and JustGiving operate in this space.(Gomber et al., 2018, p. 21)[25].

3-Lending-based Crowdfunding:

This type involves raising funds through peer-to-peer financing or invoice crowdfunding. Lenders earn interest on loans, making financial gain the primary motivation. Platforms like Funding Circle are examples of lending-based crowdfunding.(Block et al., 2018, p. 241)[26].

4-Equity Crowdfunding:

Entrepreneurs publicly offer shares or bond-like shares in their company via online platforms, allowing investors to seek profits. Equity crowdfunding platforms such as CrowdBank facilitate this type.(Block et al., 2018, p. 241).

Crowdfunding, along with blockchain technology, has the potential to challenge traditional financial intermediation by providing alternative platforms for financial transactions. Crowdfunding platforms have gained popularity, reducing the reliance on traditional banks and expanding to include a wide range of supporters, from relatives to online investors. Platforms like Kickstarter, Patreon, and GoFundMe demonstrate the broad reach of fintech beyond traditional banking.(Cai, 2018, p. 965)[2].

2.6 Lending

Fin-Tech lenders leverage innovative financial technology to streamline and simplify previously complex, expensive, and inefficient processes. The latest advancements in Fin-Tech lending have facilitated faster payment processing and clearer rule sets for lenders. Moreover, these innovations allow lenders to tailor their services to the specific needs of individual loan and mortgage applicants.

Among the various types of financial technology (FIN-TECH) loans, Small Business Administration Loans (SBA Loans) stand out as crucial. Small businesses utilize SBA loans for a variety of purposes, including working capital, payroll, real estate purchases, debt consolidation, refinancing, and growth initiatives. Recent Fin-Tech innovations have sped up obtaining SBA loans, with approval possible in as little as a few days. One notable digital type of SBA loan is the mid-prime loan. (Mills, 2018, p. 62)[1][7].

2.7 Personal Finance

This technology highlights the availability of internet resources for accessing financial aid and managing personal finances effectively. It emphasizes the importance of budgeting and provides trustworthy advice on saving money. Additionally, it discusses the significant innovation of e-wallets in the realm of personal financial technology (Fin-Tech). These digital wallets offer various functions, including peer-to-peer payments, utility bill payments, international remittances, ticket booking, and more. The passage suggests that e-wallets like Haweshly, Khazna, and Noqood have the potential to revolutionize the existing payment system in the future. (Thakor, 2020, p. 9) [21].

2.8 Marketplace for Comparing Prices

Price comparison marketplace applications aim to provide consumers with comprehensive information about products, encompassing not only price but also features, store availability, ratings, reviews, and more. By aggregating data from various sources, these platforms enable users to compare different aspects of products or services in one place. It's important to note that these applications do not sell goods themselves; instead, they act as intermediaries, facilitating informed decision-making by presenting relevant information. Examples of such applications include Safqa and Kan Bkam. (Mills, 2018, p. 88; Shankar & Rishi, 2020, p. 5)[17][27].

2.9   Digital Payments

The recent advancements in online payment gateways have revolutionized the way payments are made, making them more convenient, efficient, and readily available. These innovations have eliminated the need to involve a bank in every transaction, resulting in various advantages and cost savings for consumers by avoiding expensive bank fees.

Payment gateways play a crucial role in making business transactions safer by encrypting critical information and expanding businesses' reach to clients worldwide. Transactions processed through payment gateways are significantly faster than traditional bank processing, allowing customers to make payments conveniently and securely from any location at any given time. Mobile payment and point-of-sale terminals are two popular types of digital gateways.

Mobile payments involve conducting financial transactions using a smartphone, allowing users to access various mobile wallets, digital payment applications, and other services provided by banks. Point-of-sale (POS) terminals, traditionally used in stores for credit or debit card transactions, have now evolved to include physical POS terminals, mobile POS terminals compatible with tablets and smartphones, and virtual POS systems for web-based transactions.

Companies like Jumia Pay, Paymob, and Fawry E-wallet offer digital payment acceptance services, allowing different acquirers to integrate a wide range of digital payment methods and systems into their businesses. These advancements in digital payments contribute to the overall convenience, efficiency, and security of financial transactions in today's digital economy.

2.10   Automated Teller Machines "ATMs"

Automated teller machines (ATMs) are widely recognized as one of the most prominent financial technology services offered by banks, particularly commercial banks. ATMs leverage technology to provide efficient, secure, and cost-effective services compared to traditional methods, leading to savings in time, money, and market share. According to the Bank for International Settlements, ATMs are electromechanical devices that enable authorized users to perform various banking transactions, including cash withdrawals, balance inquiries, fund transfers, and deposits, typically using machine-readable plastic cards. ATMs can operate either online, providing real-time access to an authorization database, or offline. The primary objectives of banks deploying ATMs are to reduce expenses and enhance accessibility for customers. The concept of ATMs dates to the late 1960s, with the initial version set up in London in 1967. However, it was not until 1971 that the first modern ATM was introduced, shaping the landscape of banking services. (Bank for International Settlements, 2003, p. 6; Konheim, 2016, p. 4) [28][29].

The previous illustration of fintech types can be summarized in the following table.

Table 1. Fintech Types and Advantages

FinTech	Factors	Advantage	Example
RegTech	• tradition's high cost • speedier transactions	• simplifying development, maintenance, and support costs • optimizing operations • improving audits procedures • lowering operational risks • real-time analytics and data	• Verified • Neqabty • Quantexa • Comply Advantage
Blockchain and cryptocurrencies	• The need to decentralized payment systems	• resistive to fraud • cheaper safer money transfer	• Bitcoin • Ethereum
Insurance	• Technology-	• Helping firms	• Carsurance

	enabled retail financial services innovation.	predict claims. • Analyze consumer behavior	• Collective health
Investment advising	• Financial advice behavioral biases. • Trend-chasing	• Diversity, better returns, lesser volatility. • Cost and time-effective. • Transparency,	Thndr Drive wealth
Crowdfunding	• Funding creative ideas	• Allow small entrepreneur and startups to compete with big companies	• Kickstarter • GoFundMe • JustGiving • Funding Circle • CrowdBank
Lending	• Complexed regulations • Expensive rates	• Easier • Faster • Rules clearer.	• VALU • Money fellows • Happy money
Personal Finance	• Money-saving • Financial advice	• Provide reliable financial advice.	• Haweshly • Khazna • Noqood
Price Comparison	• Crowded market with different costs	• Prices • Features • Store availability • Ratings • Reviews	• Safqa • Kanbkam
Digital payment	• Costly bank fees	• Simple • Easy • Fast • Safe	• Jumia pay • Paymob • Fawry
Automated Teller Machines	• Customer growth • Service challenges	• Cost effective • Efficient • Secure	• Commercial Banks ATMS

Source: (Magdy et al., 2023, pp. 2469, 2470)**[30].**

3-Results and Discussion

As a result of the study's presentation of the types of financial technology services, the study concluded that they are divided into ten different types. Each type has special factors that helped create the need for this innovation, and each type differs from the others, with special features that distinguish it from the traditional methods by which it was provided these services before.

4. Conclusion

After conducting a comprehensive review of various definitions of fintech from existing literature, as well as categorizing them into ten distinct types, several conclusions and results can be drawn.

1. Diverse Definitions: The study reveals that fintech is a broad term encompassing various financial technologies and innovations. Definitions vary across literature, reflecting the evolving nature of the field and the diverse perspectives of researchers and practitioners.

2. Ten Types of Fintech Innovations: Through the review, ten distinct types of fintech innovations have been identified. These types include (but are not limited to) peer-to-peer lending platforms, robo-advisors, blockchain-based solutions, mobile payment systems, crowdfunding platforms, and insurance technology (insurtech).

3. Special Factors Driving Innovation: Each type of fintech innovation is driven by unique factors that have created the need for its development. For example, the rise of peer-to-peer lending platforms may be attributed to dissatisfaction with traditional banking services or the desire for more accessible lending options.

4. Distinguishing Features: The study highlights that each type of fintech innovation possesses distinguishing features that set it apart from traditional methods of delivering financial services. These features may include increased accessibility, lower costs, faster transaction speeds, or greater transparency.

5. Overlapping Applications: It is noted that the applications of fintech innovations can overlap with one another. For instance, a mobile payment platform may incorporate elements of peer-to-peer lending or blockchain technology. This overlapping nature demonstrates the interconnectedness and versatility of fintech solutions.

6. Impact on Financial Services Industry: The proliferation of fintech innovations is reshaping the financial services industry. Traditional financial institutions are facing

increased competition from fintech startups, prompting them to adapt their business models and embrace technological advancements.

7. Challenges and Opportunities: While fintech presents numerous opportunities for enhancing financial inclusion, efficiency, and convenience, it also poses challenges such as regulatory compliance, cybersecurity risks, and concerns about data privacy. Addressing these challenges is crucial for the sustainable growth of the fintech sector.

8. Consumer Adoption and Trust: Consumer adoption of fintech innovations is influenced by factors such as ease of use, trustworthiness, and perceived value. Building consumer trust through transparent practices, robust security measures, and effective communication is essential for widespread adoption of fintech solutions.

In conclusion, the study underscores the diverse nature of fintech innovations, driven by unique factors and characterized by distinct features. While fintech presents significant opportunities for transforming the financial services landscape, addressing challenges and fostering consumer trust are critical for realizing its full potential. Ongoing research and collaboration between academia, industry, and policymakers are essential for fostering innovation and ensuring the responsible development of fintech solutions.

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- **Conflict of Interest**

The authors declare that there is no conflict of interest related to the article.

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