

A LOOK AT THE INTERSECTION OF INFORMATION TECHNOLOGY AND FINANCE [Fin-Tech]

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1. INTRODUCTION

Fin-Tech is a distinct sequence of economic services and expertise that has evolved at a breakneck pace over the last decade. It is critical for digital payments, digital commerce, and mobile POS (point-of-sale, making offline payments using digital payment technology). Fin-Tech enables you to increase revenue from digital sales; support decision-making through data analysis; and optimize processes and collaboration. The driving force behind its development is the ever-escalating expectations of customers, who now expect a multitude of features from transaction systems, expecting simple, functional, and convenient solutions that allow efficient management of their financial resources. According to Statista (a database company), there will be 10605 financial technology start-ups in America in February 2021, with the personal finance segment being the region's main specialization. There is a lot of stress in finance departments. After years of overspending, businesses are now more concerned than ever with cutting costs and increasing profits. If they don't, they'll have to deal with the repercussions. "If you get slammed, the business gets tucked in on Friday evening, and you wake up on Monday morning to find you've been put out of business," says Robert Anderson, research director at Gartner Inc. in Stamford, Conn. Therefore, the window for action is quite narrow. Indeed, C-suite executives in both finance and technology are inextricably intertwined, and together they control the company's fate. Someone once said, "They must be speaking in unison, finishing each other's sentences." One of the most useful tools that the Internet has given to the corporate world and the financial sector is financial technology, or Fin-Tech. It gives business owners and managers instant access to the company's financial status. Information technology is crucial to the financial sector. Computers are extensively used in the financial sector, from the trading of financial

instruments to the maintenance of personal budget records and the reporting of corporate results. Some emerging financial service technologies include new concepts such **Hybrid cloud servers, Block chain, Artificial intelligence, Robotic process automation, Data analytics, Cyber security, Conversation user interface and chatbots.** These technologies are going to change the entire face of financial services in the near future and it becomes very important to understand their concept and contribution in the financial sector reforms/innovations. Therefore, in this article we are going to discuss the concept and role of various such Fin-Tech Technologies in boosting the financial sector of the Indian economy.

2. LITERATURE REVIEW

- **M Bofondi, G Gobbi (2017)** "THE BIG PROMISE OF FIN-TECH" research The study covers fintech-bank connections. Fin-tech also challenges conventional banking. The research found fin-tech has improved financial services flexibility and efficiency. Fintech promises savings via digital technology. However, operational risk and insecurity may rise, requiring significant threat protection. Finally, managers and superiors should spend resources and develop skills to grasp how new technology may be leveraged to fulfill objectives and efficiently manage risk. Innovative technology may enhance banking operations.
- **James Guild. (2017)** "FIN-TECH AND THE FUTURE OF FINANCE" research This article discusses technology's influence on finance. This article discusses how fintech has boosted financial access for many in developing countries like India, Kenya, and China. The data show that many rural people lack essential financial and banking services. Some fintech businesses use mobile phone apps to provide banking services to such people. As the author recommends, governments should encourage fin-tech enterprises to create new technology and services to address market needs in regions without banking and financial services. Policymakers' market shaping may hurt financial goals, the studies show.
- **A.Alshehhi, et al., (2018)** in the study titled as "THE IMPACT OF SUSTAINABILITY PRACTICES ON CORPORATE FINANCIAL PERFORMANCE" The paper identifies and concludes that there is a positive relationship between sustainable practices and corporate financial performance. As a result of the analysis, the authors recommend that

more research be conducted to investigate the impact of total sustainability in order to establish a clear combination of all three dimensions.

- **M.Anshari, et al., (2019)** "Digital Marketplace and Fin-Tech to Support Agriculture Sustainability" The study will create a fintech-enabled digital marketplace for sustainable agriculture. Farmers, owners, investors, stockholders, and consumers can promote agriculture transparency, empowerment, and public involvement on a platform. A FinTech-enabled virtual market place can facilitate agricultural commercial transactions 24/7. Agribusiness stakeholders should attend. Fin-Tech allows clients to enter prices, compare agricultural products, and pay online. Fin-tech innovation will increase sustainability and competitiveness for agricultural product suppliers.
- **Vivek Dubey(2019)** "FIN-TECH INNOVATION IN DIGITAL BANKING" in research this article examines AI, blockchain, and AR in digital banking. The survey found that most banks use inefficient, expensive manual methods. Operational costs and information technologies cost the financial markets \$100–150 billion annually. Fin-tech advancements are the best way to cut expenses and increase automation and digitalization. Fin-tech system experience benefits banks and investors. Transaction settlement fintech breakthroughs are quite profitable.
- **Alhadhrani Ahmad and Nobanee Haitham (2019)** "SUSTAINABILITY PRACTICES AND SUSTAINABLE FINANCIAL GROWTH" This article identifies, studies, and categorizes approaches to enhance a firm's financial sustainability and hazards. According to the financial organization's effectiveness and modernity review, the huge percentage of borrowed money in its financing structure generated financial instability. This article suggests using audits and decision-making to track the firm's financial progress.
- **Al Breiki, et al .,(2019)** "The Role of Financial Management in Promoting Sustainable Business Practices and Development" The study shows that proper financial management models boost productivity and reduce financial risks. The results also demonstrate that capital budgeting for sustainable concerns enhances the business's competitive edge and that Islamic financial strategies are professional sustainability strategies. Financial management promotes sustainable and expanding businesses, according to the report. A

high-quality financial organization ensures the financial stability and growth of the entire firm while making significant profits.

RESEARCH METHODOLOGY

Information for this exploratory study was gathered from a wide variety of secondary sources, including scholarly articles, popular periodicals, and the aforementioned websites, and then analyzed, interpreted, and systematically presented for the following purposes:

- I. To study the concept of Fin-Tech.
- II. To study the role and growth pattern of Fin-tech in financial sector.
- III. To study the application and opportunities of Fin-tech in Financial Sector.
- IV. To examine the challenges of adopting Fin-tech in the financial sector.

3. DISCUSSION AND ANALYSIS

3.1 Fin-Tech (Financial-Technology)

The term "Fintech," which is an acronym for "Financial Technology," is used to describe any program that provides access to a variety of financial services, such as digital currencies, mobile payment apps, and online banking. While "financial technology" may mean a wide range of things, it mostly relates to the following: In order to determine what is meant by the word "fin-tech," researchers looked at a variety of scholarly works that used the phrase and came to the conclusion that "fin-tech is a new financial industry that applies technology to improve financial activities." Fin-tech refers to any cutting-edge software, hardware, or business model in the financial services industry. As an end-to-end procedure, fin-tech is offered online and consists of one or more supplemental financial services.

3.1.0 Concept and Role of Various Fin-Technologies in India

3.1.1 Hybrid cloud servers: "Hybrid cloud" refers to the use of both public and private cloud deployment models for specific solutions or workloads. The best examples of this right now are in financial services, where firms want to maintain control over sensitive data while also

leveraging public clouds (and on-premises environments) for other purposes. A hybrid approach incorporates the best of both worlds: the control and flexibility of a private cloud with the ease of access to larger compute and storage resources from public clouds.

Financial services firms are among the most forward-thinking technology users in today's market. They work in highly regulated industries where strict adherence to compliance guidelines is often required. In this environment, a hybrid cloud approach is appealing.

The financial sector has its own set of data storage, processing, and access requirements. These requirements frequently necessitate a hybrid approach to cloud computing, with solutions deployed across both private and public clouds such as Amazon Web Services (AWS), Oracle Cloud Infrastructure (OCI), and Azure.

Risk-based pricing is an example of a system that automatically adjusts prices or loan terms based on an applicant's financial history and other factors. These systems require a large amount of data, such as average credit history by ZIP code, average loan rates by occupation, and the amount of collateral a potential borrower has from various sources. Firms must typically process much of this data in real time and then validate that they are meeting regulatory requirements.

- **Some key benefits of hybrid cloud environments for financial services institutions**

- i. **Security:** - Many organizations are looking for ways to improve their security posture while also discovering opportunities such as online customer interactions that are well-suited to the public cloud. They can then create secure integration paths into applications that manage customer transactions and holdings behind firewalls and layers of encryption. Data has been migrated back into private cloud environments and data centers by some banks and insurance companies. Hybrid cloud environments allow for easy migration between cloud platforms while minimizing data loss.
- ii. **Compliance and Audit Readiness:** - **Hybrid architecture** enables data to reside in multiple private and public cloud servers while supporting a centralized reporting and monitoring system. Though hybrid cloud services ease migration between clouds, it also enables administrator's greater control over what information is sent to public cloud resources.
- iii. **Continuous Development, Deployment, and Integration:** - Hybrid development and integration environments help financial institutions to develop new functionality for their internal and customer-facing systems without impacting production systems. To keep pace

with industry disruptors banks, exchanges, and insurers need cloud platforms that can enable (continuous_development)_deployment, delivery, and integration.

- **Block chain:** Transactions are recorded in a distributed, decentralized ledger called a block chain that exists on a network of computers. Due to its architecture and qualities, a block chain is inherently safe, open, and almost difficult to tamper with. Financial transactions may now be made with absolute certainty because of this underlying technology.

The benefits of block chain come from the following properties:

- i. **Distribution:** There are several copies of the ledger spread over the network. When a new transaction or block is added to the network, a copy is sent to everyone on the network. The ledger is not controlled by a single organization, but the system is meant to offer the same information to everyone.
- ii. **Immutability:** Transactions are recorded in a comprehensive chronological order in a block chain. Since every node in the network has a copy, it's exceedingly difficult to alter or remove transactions or add unverified data. A successful assault would take hundreds of thousands, if not millions, of computers to work together, which are very improbable.

Here are some examples of how financial institutions are leveraging the power of block chains:

- Money transmission services.
 - Economical, direct payments.
 - Contract details.
 - Economic inclusion.
 - Decreased fraud.
 - Crypto currency.
- **Artificial intelligence (AI):** The financial sector makes extensive use of AI and ML for things like chatbots assistants, fraud detection, and automated tasks. Most banks (80%), according to a survey by Insider Intelligence (Source: AI in banking), are aware of the

potential advantages of AI. Financial institutions (FIs) will use artificial intelligence (AI) more quickly because of technological development, rising user acceptability, and changing regulatory environments. By giving their customers access to their accounts and financial advisory services around-the-clock, banks that employ AI may significantly enhance the client experience. The estimated \$447 billion in cost savings from AI applications by 2023 has banks looking for new ways to integrate the technology into their offerings. The banking sector is currently utilizing AI in several areas, including electronic trading, fraud detection, fraud prevention, consumer and corporate finance, customer relationship management, predictive analytics, and credit risk management. Artificial intelligence (AI) has been rapidly embraced in the financial sector due to its ability to analyze vast amounts of data, spot trends, and reach reliable conclusions. Here are a few of the most significant applications of AI in the prevention and identification of fraud.

- Taking precautions and managing risks.
- Automated trading systems.
- Services and support for customers.
- In-depth, individual financial guidance.
- Automation of Procedures.
- Conformity with regulations.

3.1.2 Robotic Process Automation (RPA): The banking and finance business has expanded greatly in recent years as a consequence of the widespread adoption of technical innovations that have made banking and financial transactions quicker, safer, and more dependable for customers. In order to survive in a highly competitive market, particularly in light of the widespread use of online banking, financial institutions have had to figure out how to provide their consumers with the greatest possible user experience. According to Gartner, digital solutions are the future of banking services since the epidemic has increased company activities to react to employee and consumer needs. The internal pressure to achieve optimal efficiency and minimal expense while retaining the highest feasible safety standards has intensified. In response to these needs, RPA has matured into a potent and efficient technology. By 2025, the market for robotic process automation (RPA) in the

banking industry is projected to grow to \$1.12 billion. RPA has a plethora of different applications in the BFSI sector to free up manpower for more critical tasks. Among these processes are:

• Consumer support	• Obedience
• Check account Payable	• Credit Card Processing
• Second mortgage Processing	• Fraud detection
• KYC	• General Ledger
• Information Automation	• Checking account Closure Process
• Current account Commencing & Receivable	• Renunciation
• Assortment	• Sponsor Support

RPA's future in the banking and financial industry seems bright. Intelligent automation may handle more complicated jobs, such as evaluating past client data to detect fraudulent transactions and issuing warnings, while basic chatbots can conduct highly repetitious operations like enabling consumers to purchase new bank cards and alter PIC codes. Robotic process automation in the banking and finance industry is ongoing. You can't automate everything at once, so choose your targets wisely.

3.1.4 Data Analytics: Data analytics are becoming more and more significant in banking. Data analytics is being used by more and more companies globally to enhance internal processes. Additionally, they use data analytics to better understand their clients. Organizational leaders are able to make better business decisions as a result of this. The question "What is data analytics?" may arise. Data analytics, in a nutshell, is a technique that aids experts in deciphering data for practical use in business settings. Financial institutions now routinely employ data analysts. Data analysis is too important for any bank to disregard. A recent post published by soft web Solutions claims that data analytics is revolutionizing the banking and financial sector. One way it achieves

this goal is by decreasing the potential for fraud in routine monetary dealings. The use of data analytics in finance has also changed the sector for other reasons, such as:

- Finance executives can use data analytics to transform structured or unstructured data into insights that help them make better decisions.
- Data analytics assists finance teams in gathering the information required to gain a clear picture of key performance indicators (KPIs). Revenue generated, net income, payroll costs, and so on are examples.
- Using data analytics, finance departments can analyse key KPIs, gain insight into financial health, and spot revenue theft. This is helpful because in 2020, digital fraud increased dramatically in the financial sector.

The future of data analytics in finance is assured since effective data analysis is fundamental to the functioning of financial institutions. After all, with the ongoing digitization of the financial sector, more raw data will be available for organisational executives to understand. They can put the data to good use with the help of data analytics. Only 0.5 percent of companies, per *Data and Analytics in Financial Services*, Analysts with a focus on finance can help businesses make better use of their data. Obtaining your **CompTIA Data+** certification is a great first step towards a career in financial data analytics.

3.1.5 Cyber Security: When it comes to cybercrime, banks, and other financial services are usually the primary targets. Attacking banks allows cybercriminals to make money in several different ways, including extortion, theft, and fraud, while nation-states and cybercriminals also attack the financial industry to gain political and ideological influence. New cyber risk controls are being implemented by regulators to counter this growing threat to the banks they oversee. Research conducted by the Strategic Technologies Programme examines the development of cyber threats to the financial system and the legislative and regulatory initiatives made to bolster its defenses. With attacks being more and more dangerous and frequent, finance security leaders are increasing their efforts to protect their organizations. The majority of companies polled in VMware's study said they planned to

increase their cyber security budget by 20% to 30% in 2022. Today's threat landscape has become increasingly difficult to navigate, especially as financial institutions compete for candidates in a competitive cyber security talent market. Meanwhile, the financial industry has become even more competitive, and the rate of innovation has reached an all-time high. To keep up with change, it is critical to have powerful, flexible tools that can streamline and automate security processes. These tools are critical for banks and finance organizations to achieve the level of visibility required to innovate while keeping their systems secure.

The 6 Biggest Cyber Threats for Financial Services in 2023

- Phishing.
- Ransomware.
- SQL injections, Local file inclusion, Cross-site scripting &OGNL java injections.
- DDOS Attacks (Distributed Denial-of-service.
- Supply chain attacks.
- Bank drops.

Cyber security has now become progressively significant in the financial sector. It is especially critical because the very foundation of banking is based on trust and credibility.

Here are five reasons why cyber security is critical in the financial sector and why it should concern you

- Everyone appears to be ditching paper currency in favour of plastic payment methods like debit and credit cards. Having adequate cyber security in place to safeguard your information and privacy is of paramount importance in this regard.
- Data breaches might make it hard to put money in a bank. Financial institutions have a critical problem here. Customers may decide to take their business elsewhere if the company's cyber defenses are weak and their personal information is compromised.

- Time and money are often lost when a financial institution's data is breached. Recovering from such an experience can be time-consuming and difficult. It would require revoking cards, checking statements, and watching out for problems.
- If personal information ends up in the wrong hands, it can be quite harmful. Even if the cards are cancelled and the fraud is quickly dealt with, your data is sensitive and may reveal a lot of information that could be used against you.
- Banks and other financial institutions need to keep an extra eye out for potential threats. That's the price you pay when your bank keeps your very sensitive data. Your bank's information could be stolen if you aren't safe from cybercriminals.

3.1.6 Conversation user interface and chatbots: Artificial intelligence (AI) is becoming more significant in the financial services sector as a means of keeping up with customer expectations. Numerous banks are exploring the use of chatbots for customer support and the delivery of innovative financial products and services. User satisfaction and financial institutions' ability to control costs both benefit greatly from the introduction of chatbots. Providing excellent service and making sure your customers are happy should be your top priorities. It is, therefore, essential to build these pillars into your business's structure. By using AI chatbots in the financial sector, chatbots can handle common customer queries like balance inquiries and payment details, lightening the burden on contact centre personnel so they can concentrate on more complex tasks and tactics. Forrester found that 90% of C-suite executives believe that personalised experiences are crucial to the success of modern businesses. This is the wave of customer experience automation's future. Chatbots have shown to be invaluable in every sector, helping companies to increase customer value while cutting costs.

How chatbots are being used in financial services

Chat-bot technology is being used by an increasing number of financial institutions to improve their operations and customer service. The primary advantages are as follows:

- i. **Reducing Costs**: Chatbots are less expensive than hiring, training, and retaining human workers. They require coding, data, and storage, all of which are becoming more affordable as demand grows
- ii. **Quick and easy**: Clients can use chatbots on mobile, desktop, or within apps for quick access without having to pick up the phone or send an email.
- iii. **Conversational**: Chatbots provide a more personalized experience than emails or forms. They can create a real-time customer experience using data.
- iv. **Financial Advice**: Chatbots can quickly access data and provide financial advice and recommendations to customers. They have the ability to analyze spending habits faster than the human brain.
- v. **24/7 Support**: Whenever customers require them, chatbots provide personalized assistance.

4.0 Technology has always played a significant role in the financial sector; key periods in the fin-tech timeline are:

- **Fin-Tech 1.0 (1886-1967) is about Infrastructure**

The time to talk about globalisation in the banking sector has finally come. The advent of the telegraph, railways, and steamships paved the way for the first instantaneous communication of monetary data across international boundaries. Timelines of technological developments, including the invention of the telegraph and Morse code, the first transatlantic cable (1866), and Fedwire in the United States (1918), the first electronic cash transfer system, are included. Credit cards were first widely used in the United States in the 1950s as a convenient alternative to carrying cash. Credit cards were initially issued by Diner's Club in 1950, followed by American Express in 1958.

- **Fin-Tech 2.0 (1967-2008) is about Banks**

Mainstream banks are leading the financial sector into the digital age. A new era in banking technology began in 1967, when Barclays Bank released the first portable calculator and the first automated teller machine. The contemporary functioning of financial markets may be traced back to the introduction of NASDAQ in the early 1970s and other innovations at the time.

NASDAQ was the first electronic stock exchange. The most popular system for communicating between banks, SWIFT has been around since 1973 and has facilitated many billion-dollar wire transactions across borders. The advent of mainframe computers in financial institutions in the 1980s ushered in the era of online banking, which had its heyday in the 1990s with the emergence of e-commerce and other Internet-based business models. Because of the convenience of internet banking, people's perspectives on money and their relationships with banks have altered.

Internal banking procedures, external contacts, and retail clientele were all digitised by the turn of the century. The worldwide economic collapse of 2008 heralded the end of this era.

- **Fin-Tech 3.0 (2008-2014) is about Start-ups**

The public's distrust in the old banking system increased as the reasons of the Global Financial disaster, which swiftly evolved into a global economic disaster, were more publicly acknowledged. This, along with the fact that many formerly employed financial professionals found themselves out of employment, led to a paradigm change that eventually gave rise to Fin-tech 3.0. This age is distinguished by the coexistence of new actors (such as banks) and the long-standing ones. The publication of Bitcoin version 0.1 in 2009 was another watershed moment in financial history, ushering in the era of various crypto currencies (and later, the big crypto crisis of 2018). Another major aspect that has molded fin-tech is the proliferation of smartphones, which has expanded internet access to hundreds of millions of individuals across the globe. Smartphones have also surpassed desktop computers as the most common way for consumers to connect to the internet and utilise monetary services. Google Wallet was first introduced in 2011, and Apple Pay followed in 2014.

- **Fin-Tech 3.5 (2014-2017) is about Globalization**

The globalisation of digital banking is taken into account in "fin-tech 3.5," which also signifies a departure from the Western financial system. It examines buying habits and internet access in third-world nations. Countries like China and India, who never had the chance to build up a physical banking infrastructure on par with the West, were more receptive to innovative

approaches. A large number of new entrants with early-mover advantages have emerged in recent years.

- **Fin-Tech 4.0 (2018-today) is about Disruptive Technologies**

The development of new financial services is being propelled by open banking and block chain technology. Changing the game in this industry, neobanks provide streamlined, digital-only client experiences with minimal or no costs, posing a direct challenge to conventional banks' pricing and complexity. For its part, machine learning is revolutionising customers' experiences with financial institutions by making it possible for them to get tailored recommendations and assistance. For instance, in 2019, N26 reintroduced its premium account, which now includes perks like discounts at coworking spaces and trip booking sites, to better meet the requirements and preferences of its customers. In 2018, British Revolute presented a new AI solution to fight card fraud and money laundering, which uses ML (Machine Learning) to generate deep insights and predictions surrounding consumer behaviour in order to dynamically uncover new card fraud trends with no human interaction. This time period has also seen the rise of integrated payment providers, whose platforms may provide payment services as an extra thread inside an existing complete company management system. In recent years, NFTs have found widespread use in a variety of contexts, including as digital representations of material to help creators make more money, as a means for artists to guarantee royalty payouts, and as tickets and membership cards.

- **Fin-Tech Today**

Fin-tech solutions pose a threat to the traditional financial system as more services adopt new technology paradigms, such as making payments using a mobile wallet rather of carrying real credit cards. As technology continues to play a larger role in the financial sector, we expect to see banks and fin-tech startups battling for market share. The opposite is true. However, fin-tech businesses that get money from banks often work with other institutions to provide services such as banking, insurance, and back office support. In contrast, banks have been acquiring or investing in fin-tech companies to enhance their current operations and offers via the use of cutting-edge technology and fresh perspectives. This historical perspective on the development of financial technology should serve to highlight our progress so far and provide some

perspective on the challenging times ahead. The financial technology industry is undoubtedly growing.

5.0 Conclusion

In conclusion, fintech's (financial technology) revolutionary effects on financial institutions have completely altered how these businesses function and relate to their clientele. In the realm of finance, new developments in AI and data analytics have enabled breakthroughs in areas such as efficiency, customer service, and risk management. Fin-tech is the future. Fin-disruptive tech's potential has the potential to modernize the traditional finance sector. It has the potential to further reduce the costs involved. Fin-tech, with features such as mobile wallets and UPI, has the potential to expand the banking population. Despite government and private sector initiatives to use technology in financial services, it will take time for it to reach every corner of the country. Indians, on the other hand, are rapidly adopting smartphones and the internet. As a result, new digital methods of conducting financial processes are currently being investigated. The Fintech environment, however, is not without its obstacles. Data protection, cyber security, and meeting government regulations are still top priorities. Ethical concerns around AI usage, algorithmic prejudice, and the effects on the labour market must also be addressed. The banking sector has been radically altered by Fintech and the advent of AI. Financial institutions that use these technologies and adapt to the new environment will be better able to satisfy customers, increase productivity, and maintain a competitive edge in the dynamic digital economy. The chapter describes the financial services provided by fin-tech firms using cutting-edge technologies, compares their benefits and drawbacks to those of traditional financial sector firms (banks, insurance firms, institutions engaged in asset management and investment, etc.), and assesses how ready consumers are to use fin-tech services. This presents a promising future for the fin-tech sector in India.

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