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The Role of **Financial Technology (FINTECH)** in Changing **Financial Industry** and **Increasing Efficiency** in the Economy

Special Report

By:
Ibrahim A. Zeidy
Director, COMESA Monetary Institute

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This paper provides insights on how Fintech changed financial industry and made the wider economy efficient.

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Introduction

Financial technology (Fintech) is used to describe new technology that seeks to improve and automate the delivery and use of financial services. At its core, Fintech is utilized to help companies, business owners and consumers better manage their financial operations, processes, and lives by utilizing specialized software and algorithms that are used on computers and, increasingly, smartphones.

The possibility now looms that, entities driven by Fintech may emerge as competitive alternatives to traditional financial intermediaries, markets, and infrastructures. The widespread adoption of modern technologies offers advantages but also poses risks. Fintech may spur efficiency gains in the financial sector, offer better and more targeted products and services, and deepen financial inclusion in the developing world. However, it may also pose risks, if its application undermines competition, trust, monetary policy transmission, and financial stability.

The objective of this paper is therefore to provide an introductory note on how Fintech changed financial industry and made the wider economy efficient. The paper is divided into seven sections. Section I provides historical evolution of Fintech. Section II discusses historical evolution of the payment system. Section III considers how Fintech has changed financial industry. Section IV provides the impact of Fintech on global economy. Section V elaborates why Big Data is crucial in Fintech. Section VI highlights the regulatory implications of Fintech. The final section offers some conclusions.

I. Historical Evolution of Fintech¹

FINTECH 1.0 (1866-1967)

Fintech history dates to the 19th century and even before that. In 1860, a device called PENTELEGRAPH was developed to verify signatures by banks. Historians accept 1866 as the first valid Fintech footprints. This was the year the transatlantic cables were setup leading to an era of creating network infrastructure & linkages around the world. Setting up of Electronic fund transfer through Telegraph & Morse code in 1918 by Fedwire led to first baby step in digitalization of money. The two World Wars also saw a new set of coders & codebreakers mainly for the military purposes (though this set up the idea of coding & future digital development). The publication of book "The Economic consequences of Peace" in 1919 is treated as the first thought on the fintech driven future.

Generally, Fintech historians miss one important and life altering event of Fintech 1.0 and that is Diner's Card in 1950. This was first honest effort to make your payments cashless and while the beginning was humble and limited to restaurants payments. This was followed by introduction of Credit Card by Amex in 1958. With introduction of Screen based stock data by Quotron in 1960, the Financial Market took the huge stride.

FINTECH 2.0

Fintech 2.0 is considered to begin with the introduction of ATM machine by Barclay's in 1967. Just the year before in 1966, Telex had replaced Telegraph for transferring information across the world; thus heralding an era of connected financial transactions & communication.

The major fintech growth came in 1971 with setup of NASDAQ as the first electronic stock market. It changed the way bidding is done and modernized the Initial Public Offering (IPO) process significantly. This is considered as one of the most important Fintech development of all times. This was followed by introduction of SWIFT in 1973, another revolutionary service standard. The 80's saw the development of electronic trades and online banking systems. Tradeplus (E-trade) introduced the E-trade for the first time in 1982. 1983 was the year, when Mobile phones were launched for the first time too. The development of complex computing systems helped in launching of newer and more dynamic processes & products. One major breakthrough was the evolution of E-commerce during the mid-90's which made the reliance of digital finance much more significant. 1998 saw the launch of PAYPAL, the pioneer of cashless payments in years to come.

The Year 2000 (Y2K) bubble burst and subsequent years saw a rapid development of technology in financial sectors, mainly being deployed by the traditional banks as a support function to their primary channels. The 2008 financial crisis led the fundamental change in the outlook towards the Fintech sector and the need of innovation led to the real boom that unveiled in the coming years.

FINTECH 3.0

The 2008 crisis led to the following requirements among others:

- Post crisis reforms required stricter regulatory compulsions for traditional banks and it opened up a new market for smaller players. This was further helped by mistrust of public in large financial institutions; and

- Overall focus of the industry was on cutting down operational cost using technology

These requirements and developments led to a new era of financial services and to FINTECH as we know it today. Two major events were development of Bitcoin in 2009 as the first cryptocurrency and P2P payment systems in 2011. The western world has been churning new developments and hundreds of new unicorns since then. RegTech, Digital Lending, InsurTech, Wallets and many more segments are seeing growth and innovations on a daily basis.

FINTECH 3.5

The year 2014 onwards saw a non-linear rise of two most populous countries in Fintech; namely China and India. Devoid of large chains of complex physical banking infrastructures, these two countries saw a very fast paced growth in the Fintech sector. This along with Fintech developments in Africa is considered as the growth engine for 2014-2018. This is led by SaaS² developments like financial software by Indian IT companies, M-Pesa in Africa, Payment banks in India, and Alipay in China to name a few.

The following diagram summarises the history of Fintech



² a method of software delivery and licensing in which software is accessed online via a subscription, rather than bought and installed on individual computers.

II. Historical Evolution of Payment System

Buying things and paying for them is something that is part of our everyday lives.

Here is a review of the historical evolution of the payment systems:³

1. **Barter:** Evidence of the existence of a barter system goes back to the Neolithic, starting with the emergence of the agricultural/livestock society (probably before 7000 BC). Barter is exchange of material goods or services for other goods or services.
2. **Coins:** Their first appearance dates from approximately 680 to 560BC in what it is now Turkey. The use of coins was introduced because barter sometimes posed difficulties for transactions, and certain forms of payment were perishable, so they could not be accumulated. The result was the emergence of coins made of precious metals. A circular shape was adopted as being the most practical.
3. **Paper money and banknotes:** Their function was to replace coins, because it was uncomfortable to carry coins in large quantities. Banknotes were first used in China in the seventh century, but it was not until 812 that their use became official. Until the 1970s, each issue of banknotes by a country's authorities had to be backed by a certain amount of gold.
4. **Bills of exchange and checks:** Bills of exchange date back to 12th Century Italy. This document guaranteed that the debtor would pay the creditor, or another person authorised to receive the money in the commercial document. The origin of cheques, on the other hand, dates to around the 18th century, and is linked to the English Crown.
5. **Cards:** The first credit cards arrived in 1914, when the Western Union company created a loyalty card for its most exclusive customers, giving them access to a line of credit without surcharges. However, only from 1958 did banks started offering cards as a payment solution. The first card came to be known as Visa.
6. **Digital payments:** With the arrival of the Internet and the World Wide Web system in 1990s, goods and services began to be sold through this new communication channel. One of the pioneers was

the company *Peapod*, which offered the possibility of buying groceries from home via a computer. After the disrupted digital revolution of recent years, and with the introduction of new technologies, it is now possible to pay by mobile phone or digital watch. Mobile access and the internet have been transformational, allowing the gains from technological progress to be shared directly with billions of individual consumers whose mobile devices are now portals for accessing a full range of financial services. They can also be extended by third parties via Application Programming Interfaces (APIs). This massive decentralization is opening the door to direct person-to-person transactions (P2P), and to the direct funding of firms (crowdfunding). It has profound implications also for financial inclusion by permitting “unbanked consumers in low-income countries to access financial services for the first time.

- 7. Real Time Gross Settlement (RTGS):** These are specialist funds transmission systems where the transfer of money or securities takes place from one bank to any other on a “real-time” and on a “gross” basis. Settlement in “real time” means a payment transaction is not subjected to any waiting period, with transactions being settled as soon as they are processed. “Gross settlement” means the transaction is settled on a one-to-one basis, without bundling or netting with any other transaction. “Settlement” means that once processed, payments are final and irrevocable.

The following are advantages of RTGS⁴:

- (i) It is one of the safest as well as the fastest mode of interbank transfer.
- (ii) It is a paperless transfer of funds.
- (iii) There are no additional charges levied for RTGS transactions.
- (iv) The beneficiary is not required to visit the bank, to deposit the money.
- (v) The funds can be transferred using the internet banking service.
- (vi) This facility is available on all business days, whose timings may vary from bank to bank.
- (vii) It is an immediate fund transfer mechanism.
- (viii) It is now available 24*7 from Monday to Sunday.
- (ix) The facility can be availed either online through mobile or internet banking or offline through the bank branch.
- (x) It does not involve any credit and settlement risk for the recipients as every transaction is

settled instantly.

- (xi) The customers are enabled to predict the cash flow by knowing when their account will be credited and debited.

RTGS system currently constitute a core component of any national payment system. RTGS in context of Peer-to-Peer lending allows for convenient and instant payment of the loan into the account of the borrower. RTGS represents a critical infrastructure layer supporting Fintech innovations as it operates on the background critical infrastructure layer supporting Fintech innovations and serves as a payment rail.

8. **Cryptocurrencies**⁵: Cryptocurrency is a digital payment system that doesn't rely on banks to verify transactions. It's a peer-to-peer system that can enable anyone anywhere to send and receive payments. Cryptocurrency payments exist purely as digital entries to an online database describing specific transactions. When you transfer cryptocurrency funds, the transactions are recorded in a public ledger. Cryptocurrency is stored in digital wallets. Cryptocurrency got its name from the use of encryption to verify transactions. This means advanced coding is involved in storing and transmitting cryptocurrency data between wallets and to public ledgers. The aim of encryption is to provide security and safety.

The first cryptocurrency was Bitcoin, which was founded in 2009 and remains the best known today. Much of the interest in cryptocurrencies is to trade for profit, with speculators at times driving prices skyward.

Cryptocurrencies run on a distributed public ledger called blockchain, a record of all transactions updated and held by currency holders. Units of cryptocurrency are created through a process called mining, which involves using computer power to solve complicated mathematical problems that generate coins. Users can also buy the currencies from brokers, then store and spend them using cryptographic wallets. If you own cryptocurrency, you don't own anything tangible. What you own is a key that allows you to move a record or a unit of measure from one person to another without a trusted third party.

Although Bitcoin has been around since 2009, cryptocurrencies and applications of blockchain technology are still emerging in financial terms, and more uses are expected in the future. Transactions including bonds, stocks, and other financial assets could eventually be traded using the technology.

5 Kaspersky "What is Crypto Currency and How Does It work" [Kaspersky.com/resource-centre/definitions/ what-is—cryptocurrency](https://kaspersky.com/resource-centre/definitions/what-is-cryptocurrency).

There are thousands of cryptocurrencies. Some of the best known include:

- **Bitcoin:** Founded in 2009, Bitcoin was the first cryptocurrency and is still the most commonly traded. The currency was developed by Satoshi Nakamoto – widely believed to be a pseudonym for an individual or group of people whose precise identity remains unknown.
- **Ethereum:** Developed in 2015, Ethereum is a blockchain platform with its own cryptocurrency, called Ether (ETH) or Ethereum. It is the most popular cryptocurrency after Bitcoin.
- **Litecoin:** This currency is most similar to bitcoin but has moved more quickly to develop new innovations, including faster payments and processes to allow more transactions.
- **Ripple:** Ripple is a distributed ledger system that was founded in 2012. Ripple can be used to track different kinds of transactions, not just cryptocurrency. The company behind it has worked with various banks and financial institutions.
- **Altcoins:** Non-Bitcoin cryptocurrencies are collectively known as “altcoins” to distinguish them from the original.
- **Central Bank digital currencies:** We are also seeing a number of central banks look at launching their own central bank backed digital currencies.

Is Cryptocurrency Safe?

Cryptocurrencies are usually built using blockchain technology. Blockchain describes the way transactions are recorded into “blocks” and time stamped. It is a complex, technical process, but the result is a digital ledger of cryptocurrency transactions that is hard for hackers to tamper with. In addition, transactions require a two-factor authentication process. For instance, you might be asked to enter a username and password to start a transaction. Then, you might have to enter an authentication code sent via text to your personal cell phone.

While securities are in place, that does not mean cryptocurrencies are un-hackable. Several high-dollar hacks have cost cryptocurrency start-ups heavily. Hackers hit Coin check to the tune of \$534 million and BitGrail for \$195 million, making them two of the biggest cryptocurrency hacks of 2018.

Unlike government-backed money, the value of virtual currencies is driven entirely by supply and demand. This can create wild swings that produce significant gains for investors or big losses. Besides, cryptocurrency investments are subject to far less regulatory protection than traditional financial products like stocks, bonds, and mutual funds.

9. **Developments in cryptography**⁶ have facilitated a variety of applications including smart contracts (a set of promises specified in digital form, to be executed following certain procedures and if certain conditions are met - such as selling an asset at a certain price) and have combined with sensing technologies and biometrics to create more robust security systems.⁷
10. **Artificial intelligence (AI) and Big Data capture:** This is the parsing of vast databases containing the characteristics and transactions of billions of economic agents through advanced algorithms to derive patterns used to predict behaviour and prices, and in the end mimic human judgement in automated decisions. Related applications can automate credit approvals, facilitate regulatory compliance and fraud detection, and automate the trading of financial assets.⁸

These innovations feed-off each other, driving rapid change. Fintech innovations are characteristically overlapping and mutually-reinforcing. For instance, distributed computing relies on Big Data as well as AI and cryptography for effective distributed ledgers, used by online applications such as digital wallets, to transform cell phones and/or wearable devices into points of sale for payments. These strong complementarities reinforce the potential for disruption of the financial sector. The adoption of new applications could also grow non-linearly, given the network effects (the more people are linked through a network, the more valuable is the network to each member) common to finance, but also to communication technologies.

Distributed ledger technology (DLT), in particular, could spur change in the financial sector. The concept of DLT is that ledgers records of transactions or ownership of assets and liabilities can be maintained and updated securely (called "validation") for an entire network of users by users themselves, rather than by a central agency.

III. How has Fintech Changed the Financial Industry

Fintech Revolution have the following huge impacts on all banks and financial institutions globally:⁹

6 IMF, "Fintech and Financial Services: Initial Considerations". Prepared by IMF staff team. [Imf.org/en/publications/staff-discussion-notes/issues/2017/06/16/Fintech-and-financial-services-initial-considerations-44985](https://www.imf.org/en/publications/staff-discussion-notes/issues/2017/06/16/Fintech-and-financial-services-initial-considerations-44985)

7 *ibid*

8 *ibid*

9 Nikunjji Gundaniya "What is Fintech and How-It has Impacted Banking." [digipay-guru/blog/the-impact-of-fintech-on-banks-and-financial-services/](https://digipay-guru.com/blog/the-impact-of-fintech-on-banks-and-financial-services/)

- 1. Smart Chip Technology:** Smart chip ATM cards have significantly helped in minimizing the financial loss that occur in the case of mishaps. It comes with EMV technology (Europay, MasterCard, and Visa) that is embedded in the chip. This technology uses a one-time password for each transaction which increases the security since the code is valid only for one transaction and hence cannot be used even if stolen.
- 2. Biometric Sensors:** Fintech in banking industry has given birth to many innovations and biometric sensors is one of them. Biometric sensors along with Iris scanners are two technological advancements that ATMs are witnessing. Moreover, these advancements are path-breaking since they eliminate the need to carry plastic cards. Furthermore, one will not need to remember personal identification number. Apart from providing convenience and ease, these advancements will also make ATMs secure than ever since one will be able to access personal account without any password. The biometric ATMs use integrated mobile applications, fingerprint sensors, palm, and eye recognition to identify the account's owner. To make the identification more accurate and secure, ATMs also use micro-veins which completely eliminates the errors made by ATMs in customer recognition. The usage of biometric technology brings a huge sigh of relief for all the customers who are anxious at the thought of losing their ATM card. Hence, one would be able to access funds in the event of losing their ATM card.
- 3. The Automated Clearing House (ACH):** This assists in efficient processing of all the electronic interbank payments taking place in a country. These electronic payments include insurance premiums, social security, salary, dividend payments, bill, and direct debits of mortgage.
- 4. Omni-channel & branchless banking:** Fintech financial service is transforming the entire banking system from a branch-specific process to various digital channels such as online and mobile phones. It also reduces the bank's dependency on its brick-and-mortar branches to function. As a result, many banks are reducing their number of branches by adopting the omni-channel banking. In the European Union alone, around 9100 bank branches were shut down by the end of 2016.
- 5. Customer service chatbots:** Fintech providers have also come up with customer service chatbots that have become popular. Chatbots are bits of software that use machine learning and

natural language processing that enables them to constantly learn from human interaction. They are highly efficient as they streamline customer interactions like query handling and directing customers to the required departments. Chatbots can also perform other functions such as providing investment advice to its customers, as provided by the Bank of America's chatbot Erica. Another example is the chatbot used by UBS bank to scan customer emails autonomously thus reducing the total time taken in the task from 45 minutes to mind-boggling two minutes. Similarly, a chatbot used by Japan's leading bank can help customers to find relevant piece of information on their website. Chatbots have become an integral part of all the banks since it not only reduces costs and enhances the customer satisfaction but also allows agents in the call centers to focus on value addition.

6. **Artificial intelligence (AI):** Over the years, AI has become an integral part of the Fintech banking services. AI along with Machine learning is vital for fraud detection. The software that banks use for fraud detection generates alerts whenever there is a potential fraudulent transaction. Later it is backed up by the human investigation that finally determines if the attack was real or false. However, with time the detection of attacks is becoming difficult since they are becoming increasingly more sophisticated, taking too much time and money. Moreover, the risk of customer data loss is always there. To combat this threat, banks are now adopting AI technology. According to McKinsey, the adoption of machine learning-driven statistical modelling, data aggregation platform, and process automation can totally transform the anti-money laundering (AML) operations by simply infusing new efficiencies. For example, the data aggregation platforms can account for data and mine unstructured transaction to offer 360-degree customer view. This view assists in faster transaction validation. Moreover, with machine learning algorithms, the banks can leverage historical data to predict and determine patterns of a fraud attack. This reduces the manual effort by approximately 50%.
7. **Electronic Wallets:** The immense growth of e-wallets is another indicator of the rise of Fintech financial services. Samsung Pay, PayPal, Android Pay, and Apple Pay are some of the major e-wallet companies in the world. These wallets are used for a plethora of purposes namely (person to person) P2P payments, top-up and utility bills, international remittances and booking tickets. There are also some standalone wallets such as Starbucks and Walmart Pay. E-wallet

has attracted users due to their tempting offerings which includes lucrative cashbacks, and reward points. Due to their huge success, many banks are now realizing its importance and are recognizing e-wallet as a collaborative measure to embrace technological advancements.

8. **Mobile Banking:** The increase in the use of smartphones has forced banks to come up with mobile applications that offers convenient Fintech banking services. Today, most of the banks have mobile applications which have user-friendly interface. Banks have also come up with mobile apps that recognizes the fingerprints of the user. The application performs this function without any biometric software or hardware and provides quick access to funds. With a mobile application, the user can perform several banking functions such as quick bill pays, check deposit, account balance, statements, and many more.

The above cutting-edge technologies coupled with customer's demand for safe and more user-friendly banking experience have led banks and financial services to readily adopt Fintech. Many establishments in the past two years have also recommended payments through electronic means due to COVID-19 Pandemic. Today Fintech is bigger than ever and is set to grow with retail banking software, financial core banking software, and many other components coming under it.

IV. The Impact of Fintech on the Global Economy

Financial innovations are unlike other inventions in that they can directly impact the efficiency of the financial sector, which is how savings and investment are intermediated in an economy - and which then affect growth. Fintech is part of the digital economy that has produced innovations that have transformed the way we live, even as productivity growth has been slowing across advanced economies for decades.

So far, it is the more open financial markets that have seen Fintech develop rapidly. One example is the e-payment system M-Pesa, which operates in Kenya, Tanzania and elsewhere, and is one of the biggest Fintech success stories since its emergence just a decade ago. By effectively transforming mobile phones into payment accounts, M-Pesa has increased financial access for previously unbanked people and is a perfect example of how Fintech has disrupted the financial sector and increased efficiency across the economy.

The permissive stance of the Central Bank of Kenya allowed the sector to develop rapidly in the country. This

is consistent with a study by the Bank for International Settlements that found Fintech is most prominent in countries with less stringent banking regulations, higher incomes and less-competitive banking systems. If Fintech can improve financial inclusion elsewhere as it has in Kenya, then it would more efficiently channel savings into investment in industry, infrastructure, and human capital – the kind of capital needed for economic growth

A report by McKinsey Global Institute concluded that widespread adoption and use of digital finance could increase the GDPs of all emerging economies by 6%, or a total of \$3.7 trillion, by 2025—which could provide market access to 1.6 billion unbanked people, enable an additional \$2.1 trillion in loans to individuals and small businesses, increase government tax revenue, and increase the balance sheets of financial services firms by as much as \$4.2 trillion.¹⁰

V. The Role of Big Data in Fintech¹¹

Big Data is a term that describes large, hard-to-manage volumes of data, both structured and unstructured, that inundate businesses on a day-to-day basis. Big Data can be analyzed for insights that improve decisions. The role of technology in financial services has been a transformative one thanks, in part, to the vastness of data pools, or Big Data, available for Fintech to mine and analyze. Without data, our increasingly tech-dependent world would not move the way it does.

The following are the key roles of Big Data in Fintech:

1. **Better customer segmentation:** In the era of modern technologies, delivering outstanding customer service goes hand-in-hand with having robust data mining and analysis techniques. These techniques are fed by Big Data and, ideally, provide insights that are translated into detailed user profiles and powerful customer segmentation strategies. This is one of the most effective ways Fintechs can know their customers on a more profound level and understand their needs better and target them;
2. **More Customer-Centric Services:** Fintechs must enforce in-depth, holistic strategies that target user needs from every angle and get to know them on an almost personal level. They can only achieve this in-depth knowledge by leveraging on Big Data available to them and gaining insight

¹⁰ Harrist, Margaret. "How Fintech is Powering the Global Economy", forbes.com/sites/oracle/2017/03/14/how-fintech-is-powering-the-global-economy/?sh=2e4d5792/bse

¹¹ . Sera Alexa "The Role of Big Data in Fintech" foonkiemonkey.co.uk/the-role-of-big-data-in-fintech/ September 14, 2021.

by using robust data analysis techniques.

3. **Fraud Detection and Security Protocols:** Big Data is starting to place itself at the forefront of the sector's advancements in security protocols and fraud detection initiatives. This way, it is helping Fintech firms and start-ups to create better fraud detection algorithms, more robust security protocols, and impenetrable payment systems to withstand hacking attacks and fraud attempts.
4. **Optimizing Operations:** Fintech firms and start-ups can gain exceptional competitive advantage by applying Big Data to push their operational effort forwards. Core operations such as risk assessment, loan servicing, human resources, and even legal departments can significantly benefit from Big Data applications. Big Data in Fintech also helps employees have the necessary data always at hand, helping them to handle individual customer cases better. Having readily available information improves operations and pushes efficiency forward in customer service, marketing campaigns, and other processes.
5. **Credit Risk Scoring:** One of the most lengthy, tedious, and expensive processes Fintechs have to deal with is credit risk scoring. Operationally speaking, credit risk scoring has always been one of the most inefficient, protracted processes in banking due to the absence of data, the lack of knowledge about data analysis, and the shortcomings in the availability and access to data management tools. Furthermore, since most modern Fintech firms have to give out loans and credit cards to expand their portfolios, they must have the proper data management and analysis tools to regulate their risk exposure, and keep it as low as possible. However, with modern technologies demanding faster response times, the key to performing efficient credit risk assessments and eclipsing traditional banking's drawn-out assessment processes lies in the quality and speed provided by Big Data and AI-powered technologies.

VI. The Need for Fintech Regulation

One of the objectives of new fintech regulations is to combat the criminal activity fintech may provide the opportunity for. As technology evolves, so do those looking to cheat the system. As technology alters financial service attributes and market structure, financial regulation must therefore, adapt to remain effective. After 2008 global financial crisis, regulators have been trying to balance the objectives of innovation and growth with

considerations of financial stability and consumer protection, and as a result, they are developing an increasing number of experimentation-based approaches. Some involve regulators establishing contact points to meet with new entrants to learn about technologies in order to be able to develop appropriate regulatory responses. Others have developed what are called sandboxes.

What is a Regulatory Sandbox?¹²

- A regulatory sandbox is a regulatory approach, typically summarized in writing and published, that allows live, time-bound testing of innovations under a regulator's oversight. Novel financial products, technologies, and business models can be tested under a set of rules, supervision requirements, and appropriate safeguards.
- A sandbox creates a conducive and contained space where incumbents and challengers experiment with innovations at the edge or even outside of the existing regulatory framework.
- A regulatory sandbox brings the cost of innovation down, reduces barriers to entry, and allows regulators to collect important insights before deciding if further regulatory action is necessary.
- A successful test may result in several outcomes, including full-fledged or tailored authorization of the innovation, changes in regulation, or a cease-and-desist order.
- The first regulatory sandbox was launched in 2015 in the U.K. and generated great interest from regulators and innovators around the world. At the beginning of 2018, there were more than 20 jurisdictions actively implementing or exploring the concept.

The key objectives of Fintech regulation are the following:¹³

- (i) Address vulnerabilities and imperfections in financial markets that weaken financial stability, undermine market efficiency, and expose consumers to risk;
- (ii) Provide incentives for institutions to take into account systemic risk;
- (iii) Protect consumers where information is hard or costly to obtain; and
- (iv) Support competition and prevent oligopolistic behaviour.

¹² UNSGA "Briefing on Regulatory Sandboxes" by the UNSGA's Fintech Sub-group on Regulatory Sandboxes, https://www.unsgsa.org/sites/default/files/resources-files/2020-09/Fintech_Briefing_Paper_Regulatory_Sandboxes.pdf

¹³ IMF, "Fintech and Financial Services: Initial Considerations". Prepared by IMF staff team. [Imf.org/en/publications/staff-discussion-notes/issues/2017/06/16/Fintech-and-financial-services-initial-considerations-44985](https://www.imf.org/en/publications/staff-discussion-notes/issues/2017/06/16/Fintech-and-financial-services-initial-considerations-44985)

To ensure effectiveness of regulations, Regulatory Technology (Regtechs) are being introduced in a number of jurisdictions. Regtech is a community of tech companies that solve challenges arising from a technology-driven economy through automation. The rise in digital products has increased data breaches, cyber hacks, money laundering, and other fraudulent activities. With the use of Big Data and machine-learning technology, Regtech reduces the risk to a company's compliance department by offering data on money laundering activities conducted online -activities which a traditional compliance team may not be aware of due to the increase of online underground marketplaces. Regtech tools seek to monitor transactions that take place online in real-time to identify issues or irregularities in the digital payment sphere. Any outlier is relayed to the financial institution to analyze and determine if fraudulent activity is taking place. Thus, Regtech helps in identifying potential threats to financial security and financial stability and can minimize the risks and costs associated with lost funds and data breaches.

VII. Conclusion

The advent of cutting-edge technologies coupled with customer's demand for safe and more user-friendly banking experience has led the banks and financial services to readily adopt Fintech. This paper demonstrates that Fintech firms have the potential to significantly change the financial sector landscape by providing innovative products and services that respond to user's needs for trust, speed, low cost and security. However, at the same time, regulatory authorities need to balance carefully efficiency and stability trade-offs. They need to be assured that risks to financial stability and integrity, which result from cyber-attacks, money laundering, terrorism financing can effectively be managed without stifling innovation, Rules and standards, will need to be developed to ensure the integrity of data, systems procedures, and platforms. International cooperation is therefore essential to ensure that effective regulatory frameworks are developed to address the challenges posed by Fintech.

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COMESA SECRETARIAT
COMESA Center
Ben Bella Road
P.O. Box 30051



+260 211 229 725



www.comesa.int



info@comesa.int



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