JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

The Role of FinTech in Social Progress

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Abstract: The term Financial technology (FinTech) is used to describe new technologies engaged in improving and automating the delivery and use of financial services.At its core,Fintech is utilised 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 widespread adoption of modern technologies offers advantages but also poses risks.

Historical Evolution of FinTech:

The historical evolution of Fintech has been broadly divided in to 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 implication of FinTech and Section VII offers some conclusions about the FinTech.

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.However,at the same time,regulatory authorities need to balance carefully efficiency and stability trade-off countries with deeper,more developed financial system will achieve higher economic growth and faster reductions in poverty and income inequality.Cloud computing,loT,AI and blockchain technologies are among the technologies driving change in how consumers interact with retailers and manage their money.Today,FinTech companies are leading the financial industry and taking a leading role in developing financial products and services.

Introduction:

The term Financial technology (FinTech) is used to describe new technologies engaged in improving and automating the delivery and use of financial services.Fintech is a term that has been set to describe the digitalization of the financial sector.At its core,Fintech is utilised 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 widespread adoption of modern technologies offers advantages but also poses risks.

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.However,at the same time,regulatory authorities need to balance carefully efficiency and stability trade-off countries with deeper,more developed financial system will achieve higher economic growth and faster reductions in poverty and income inequality.Cloud computing,loT,AI and blockchain technologies are among the technologies driving change in how consumers interact with retailers and manage their money.Today,FinTech companies are leading the financial industry and taking a leading role in developing financial products and services.

The objective of this paper is to provide an introductory note on how fintech changed financial industry and make the economy wider efficient. The widespread adoption of modern technologies make advantages in many fields but also poses risks. It stimulates efficiency gains in the financial sector,offer better and more targeted products and services, and deeper financial inclusion in the developing world . however; it may also monetary policy transmission, trust and financial stability.

Review of Literature:

FinTech is a company that is using technology to provide financial solutions using the internet and automated processing of information (Gabor & Brooks, 2017; Milian, Spinola, & de Carvalho, 2019; Zavolokina et al., 2016; Alt, Beck, & Smits, 2018; Gomber, Kauffman, Parker, & Weber, 2018; Puschmann, 2017).

This innovation in the financial industry has led to cost reduction, high efficiency, rapidity, innovation, flexibility and improvement in the business processes (Zavolokina et al., 2016; Lee & Shin, 2018; Thakor, 2020).

FinTech also embeds innovations in financial education and literacy, investments, retail banking and cryptocurrencies (Gomber et al., 2018).

The business models have transformed to provide customized services to the consumers without geographic or time-zone barriers as most of the services are automated. In addition, FinTech has helped in disintermediation (Thakor, 2020) and provided online platforms for trading, lending (crowdfunding and peer-to-peer, P2P) and asset management, for instance, robo-advising (Gomber et al., 2018; Alt et al., 2018; Lee & Shin, 2018; Puschmann, 2017). This intermediation is also achieved by infrastructure development, data analytics, big data and mobile devices (Lee & Shin, 2018).

Banks and other financial institutions have limitations due to high regulations imposed on this industry (Leong, Tan, Xiao, Tan, & Sun, 2017; Puschmann, 2017; Alt et al., 2018; Goldstein, Jiang, & Karolyi, 2019; Jagtiani & Lemieux, 2018). The financial institutions include insurance companies, banks, credit grantors and exchanges (Alt et al., 2018; Lee & Shin, 2018). In addition, FinTech is helping its consumers to handle their assets by themselves by providing them with automated platforms. These platforms use robo-advisors and are run based on certain algorithms (Gabor & Brooks, 2017). These are automatic and have replaced wealth and asset managers (Goldstein et al., 2019; Gomber et al., 2018). On the other hand, bankers are very interested in FinTech as they may consider having strategic partnerships with FinTech as a potential strategic direction (Anagnostopoulos, 2018).

The services provided by FinTech are in collaborations with the mobile network operators, software and technology providers, mobile device manufacturers, IT developers (Lee & Shin, 2018; Shim, 2016)

with limited regulations by the government and the regulators (Zavolokina et al., 2016; Leong, 2017; Lee & Shin, 2018; Goldstein et al., 2019). The regulators, government agencies and public sector entities keep a track of the quality of the innovation, come up with laws and track sales practices (Au & Kauffman, 2008; Zavolokina et al., 2016; Anagnostopoulos, 2018; Gomber et al., 2018;Gabor & Brooks, 2017;Ozili,2018).

Keywords: FinTech,AI,Cryptocurrenies,ATMs,Cards,Financial institutions,Banks

Objectives:

1.To study the historical evolution of Fintech in banking sector.

2.To analyse the impacts of Fintech on the economy and society and

3.To study the potential products that significantly change the financial sector and various regulatory frame work to safeguard it.

Research Methodology:

The study primarily based on the secondary data alone.The secondary data are collected from the journals,newspaper and internet.The collected data are compiled and presented in a systematic manner to achieve the objectives of the study.

I.Historical Evolution of Fintech

A. FINTECH 1.0 (1866 – 1967)

Fintech history date goes back to the 19th century and even before. A device called **PENTELEGRAPH** was developed and used to verify signatures by banks in Historian accepted it as a first valid Fintech footprints in 1866. Followed by transatlantic cables were setup loading to an era creating network infrastructure & lineages around the world. In 1918, Fedwire set up Electronics fund transfer through telegraph & Monse code was a baby step in digitalization of money. The two world wars also make a coders and codebreakers mainly for military purposes. One important and life altering of 'Diner's card in 1950. It was first honest effort to make your payments cashless limited to restaurants payments. Credit card was introduced by Amex in 1958 and screen based stock data by Quotron in 1960, the financial market reached its great height.

B. FINTECH 2.0

This period begin units the introduction of ATM machine by Barclay in 1967. Telox had replaced telegraph for transferring information across the world and heralding an era of connected financial transection & Communication in 1966.

The major Fintech growth cane in 1971 with Setup of NASDAQ as the first electronic Stocle market. It changed the way of bidding is done and modernized the initial Public Offering (IPO) process Significantly. In 1973, SWIFT was introduced and helped the financial. Institutions to quickly, accurately and securely send and receive information, Such as money transfer instructions. It is the largest and most streamlined method for international payments and settlements. The 80's Saw the development of electronic trades and online banning

systems. Trade plus (E-trade) introduced the E-trade for the first time in 1982 and mobile phones were launched for the first time too in 1983. One major breakthrough was the evolution of E-Commerce during the mid – 90's which made the reliance of digital finance much more significant. In 1998 saw the launch of PAYPAL, the pioneer of cashless payments in years to come.

In the year 2000 saw a rapid development of technology in financial sectors and 2008 financial crisis let the fundamental change in the outlook towards the Fintech sector and the need of Innovation led to the real boom in the introduction of financial technology the unveiled in the years to come.

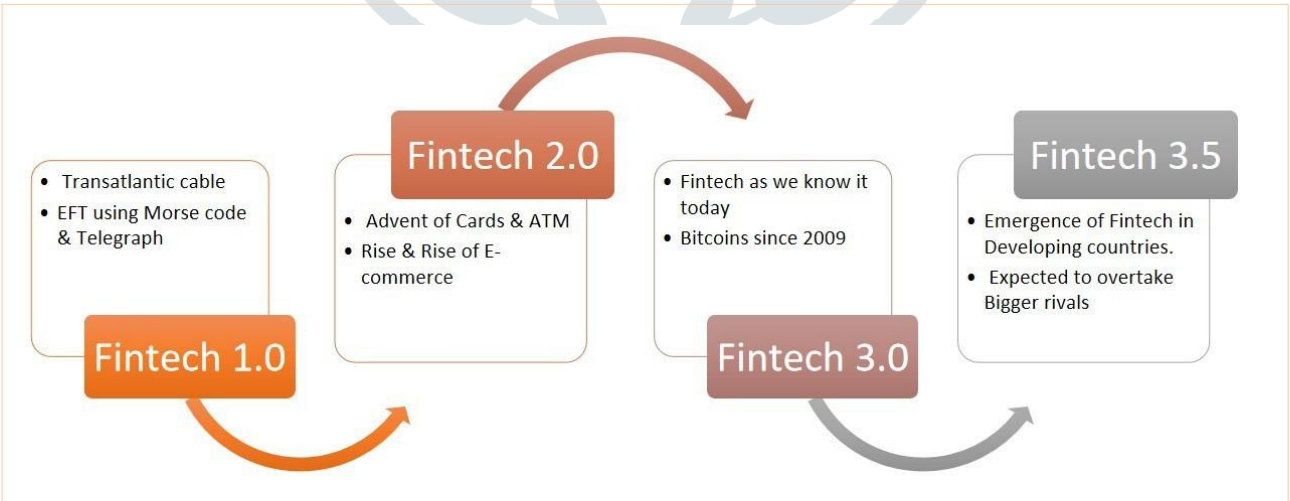
C. FINTECH 3.0

The post 2008 crisis reforms required stricter regulatory compulsions for traditional banks and it opened up a new market for smaller players. The overall focus of the banking industry was on cutting down operational cost by using technology. This led to the development of a new era of financial services. Two major events were development of Bitcoin in 2009 as the first crypto currency and P2P payment system in 2011. The western world has been witnessed new development in the field of Fintech like Ray tech, during this period.

D. FINTECH 3.5

The year 2014 onwards saw a remarkable achievements in the field of Fintech by two countries namely India and China. Fread from large Chains of complex physical banking infrastructure, 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 SaaS- a method of software delivery and licensing in which software is accessed online via a subscription, rather then bought and installed on individual computers by Indian IT companies, M. Pesa in Africa, Payments banks in India, and Alipay in China are few among them.

The following diagram summarizes the history of Fintech



II Historical Evolution of payment system:

Buying things and Paying for them is something that is part of our everyday lives. The followings are the historical evolution of the Payment systems.

1.Barter:

The existence of a Barter system goes back to the Neolithic, Starting with the emergence of the agriculture/livestock society (Probably Before 7000 BC) when people does not have a medium of exchange. Barter is exchange of material goods and services for other goods and services.

2.Coins:

It's appearance period goes back to 680 to 560 BC in what it is now Turkey. The use of coins was introduced because barter sometimes posed difficulties for transactions, divisibility, multiplicity of want end certain forms of Payments were Perishable. 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 Banknote:

Banknotes were first used in China in the seventh century, but it was not until 812 that their used became official. Their main function was to replace coins, because it was uncomfortable to carry coins in large quantities. Until the 1970s, each issue of Banknotes by a countries authorities had to be blacked by a certain amount of gold.

4. Bills of exchange and cheques:

This document guaranteed that the debtor would pay the creditor or on commercial document another person authorised to receive the memory. The origin of bills of exchange date goes back to 12th century in Italy. On the other band, the origin of cheques, goes back to 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 to access to a line of credits without surcharges. However, In 1958 only banks started offering cards as a payment solution. The first card came to be known as **VISA.**

6.Digital Payments:

In 1990s with the arrival of the internet and the world wide web system, good and services began to be sold through this new communication channel, One of the pioneers was the company peapod, which offered computer. After disruption is digital [revolution in 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 Portels for accessing a full range of financial services.

7. Reel Time gross Settlements (RTGS):

1. 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 anywaiting 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 RTGS:

(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 in to 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:

Cryptocurrency is a digital payment system that does not rely on banks to verify transactions. It is a Peer-to-Peer system that can enable anyone everywhere to send and receive payments. Cryptocurrency payments exist purely as digital entries to an online database descripting 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 and advanced ceding is involved in storing and transmitting cryptocurrency data between wallets and to public ledgers. The aim of encryption is to provide security and safety. Cryptocurrencies run on a distributed Public ledger called blockchain, a record of all transactions updated and bold 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.

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.

9.Developments in Cryptography:

It have facilitated a variety of applications including smart contracts and have combined with sensing technologies and biometrics to create more strong security systems.

10. Artificial intelligence (AI) and Big Data Capture:

This is the analysing of vast database containing the characteristics and transactions of billions of economics agents through advanced algorithms to derive patters used to predict behaviour and prices, and in the end mimic human judgement in automated decisions. Related applications can automated credit approvals, facilitate regulatory compliance and fraud detection, and automate the trading of financial assets. These innovations feed-off each other, during rapid change. Fintech innovations are characteristically overlapping and mutually-reinforcing.

III.How has Fintech changed the Financial Industry:

Fintech revolution have produced for reaching changes on all banks, financial institution and society domestically and globally. By way of technology it's increased efficiency in the economy.

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,Mastercards 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 withoutany 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 incustomer 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 toaccess funds in the event of losing their ATM card.

3.The Automated Clearing House: (ACH)

This assists in efficient processing of all the electric inter bank 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:

Financial technology 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.By the end of 2016,the European union alone,shut down around 9100 bank branches.

5.Customer Service Chatbots:

Fintech also provides 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 inter-action.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.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 Intellience: (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 the fraud detection generates alerts whenever there is 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 of 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.

7.Electronic Wallets:

The Immense growth of e – wallets is another indicator for the rise of Fintech financial services. Samsung pay, Pay pal, Android Pay, and Apple Pay are some of the major e- wallet companies in the world. These wallets are used number of purpose namely P2P (Person to Person) 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 measures to adopt technological advancements.

8. Mobile Banking:

The above cutting-edge technologies coupled with customers demand for safe and more user – friendly banking experience have led banks and financial services to reality adopt Fintech.

IV. The Impact of Fintech on the Global Economy:

Financial innovations are unlike other inventions in that they can directly affect the efficiency of the financial Sector, which is how savings and investments are inter related in an economy-and which then affected 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.

Financial technology is the more often financial markets and have been developed 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 affectively transforming mobile phones into Payment account, 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 Central bank of Kenya allowed the sector to develop rapidly in the country. The Bank for International settlements fount that Fintech is most prominent in countries with less competitive banking systems. If Fintech can improve financial inclusion as did 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 GDP 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.

V.The Role of Big Data in Fintech:

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 analysed for insights that improve decisions.The role of technology in financial services has been a transformative in nature,in such a way that pools,mine and analyse.Without data our increasingly tech-dependent world would not move the way in which it will does.

1.Better customer segmentation:

By using robust data mining and analysis techniques Fintech helps to deliver outstanding customer service quickly.

2.More customer-centric services:

Fintech must enforce in-depth,holistic strategies that target user needs from every angle and came to know them personal level.It is possible to achieve this by in-depth technonogy by leveraging on Big data available to them and gaining insight by using robust data analysis techniques.

3.Fraud Detection and security protocols:

Big data is considered as a forefront of the sector's advancements in security protocols and fraud detection iniatives.This way,it helps Fintech firms to create better fraud detection methods,more robust security protocols and impenetrable payment system to withstand hacking attacks and fraud attempts.

4.Optimising operations:

Big data in Fintech also to gain competitive advantage like risk assessment,loan servicing,human resources and even legal departments can significantly benefit and optimizing their operations.It also help the employees have their necessary data always at hand and helping them to handle individual customer services better.

5.Credit risk scoring:

It is one of the most lengthy,tedious and expensive processes Fintech have to deal with it.It is one of the most inefficient,protracted processes in banking due to the absence of data,lack of knowledge about data analysis,short comings in the availability and access to data management tools.Modern Fintech firms have to give out loans and credit cards to expand their portfolios and they must have the proper data management and analysis tools to regulate their risk exposure.

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 it.As technology develops,so do those looking to cheat the system.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.As a result they developed increasing number of experimentation based approaches.Some established contact points to meet with new entrants and others have developed sandboxes.

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 requirement and appropriate safeguards.

The key objectives of Fintech regulation are the following:

(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.

To ensure effectiveness of regulations,Regulatory Tecchnology (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 of 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.Thus,Regtech helps inidentifying potential threats to financial security and financial stability and can minimise 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-friently banking experience has led the banks and financial services to readily adopt Fintech.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,system procedures and platforms.

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