

Project Dissertation Report on

Future of FinTech(DeFi)

Submitted By

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CERTIFICATE

This is to certify that Ashutosh Narain Saxena, Roll No. : 2K19/EMBA/510 student of Masters of Business Administration (Executive 2019 – 2021) at Delhi Technological University, Delhi has accomplished the project titled “Future of FinTech(DeFi)” under my guidance and to the best of my knowledge completed the project successfully, for the partial fulfilment of the course in second semester of the course Executive MBA.

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ABSTRACT

The main aim of the project is to share knowledge about Fin-tech trends which are evolving and transforming the financial markets. Fin-tech is flourishing at an ascending rate, the world of Finance will not extensively be using the physical banks or investment organisations. A digital-first methodology, not only has Fin-tech produced novel and ground-breaking ways of networking with prevailing and probable customers to outspread banking services, such as speculation assistance typically kept for the wealthy, to everyone, but also arisen as a existence upgrade for most today. Fin-tech is primarily a non-intermediation potency where disruptive technologies are the drivers. The report will concentrate on new and emerging Fin-tech trends, as well as De-Fi (De-centralized Finance) is a Fin-tech company that has pass in the revolution. The training De-Fines De-Fi, locates it within the traditional financial industry, connects De-Fi to Open Banking, and concludes with advice for financial firms on how to capitalise on these trends.

1. INTRODUCTION

What is Fin-tech ?

The term "financial technology," or "Fin-tech ," denotes to financial resolutions that are enabled by technology. Fin-tech encompasses the complete set of amenities and goods usually supplied by the finance industry, rather than being limited to certain sectors (e.g. financing) or business prototypes (e.g. peer-to-peer (P2P) lending). (Arner, Barberis, & Buckley, 2015)

Fin-tech is a term that refers to original technology that aims to expand and automate the transport and usage of financial service station. Fin-tech , at its heart, is designed to assist businesses, moguls, and consumers better manage their financial procedures, procedures, and lives finished the use of dedicated software and algorithms that run on computers and, increasingly, smartphones.

The expression 'finish technology' was recently introduced in business publications to describe the disruptive challenge to the financial sector by introducing quicker, cheaper, more personally oriented financial services. Individual and hedge funds spent over USD 50 billion in the industry between 2010 and 2015, thereby becoming a keyword for it (Accenture, 2015). The precious assertion by Bill Gates in 1994 that "banking is necessary, banking is not" is a self-fulfilling prophesy with 6,000–7,000 Fin-technology companies today struggling for a part of the rich income of the banking sector. The looming financial crisis has already been assessed by strategic consulting companies.

Fin-tech is a notion with specific antiques or time series data with statistical significance data to be analysed, taken off or funded with cheaper numbers by major consulting companies. The legitimacy of research in the numerous sectors of Fin-tech and the financial industry is clear as there are already signs that such capital markets are capable of drastically modifying the way individuals at the bottom of a pyramid are used, existing financing and ways of doing business.

Fin-tech also covers cryptocurrencies like bitcoin development and usage. While Fin-tech is most attentive to this section, the biggest money is still in the traditional global banking business with a market cap of several trillion dollars.

Fin-tech now refers to a variety of financial actions such as currency transactions, smartphone checks, home loan filling without visiting banking sector, looking for start-ups, or managing your assets that lack the support of any human. According to EY, one third of clients utilise two or more Fin-Tech goods in the 2017 Fin-Tech Consumption Index, with Fin-tech gradually becoming more conscious throughout their daily lives.

What is De-Fi?

The much more elementary kind of de-centralized finance is a system that makes financial goods transparent to everybody without the requirement of intermediaries, such as banks or brokerages, on an uncontrolled de-centralized block-chain infrastructure. Unlike a bank or broker profile, De-Fi does not require an ID or a proof of address provided by government. De-Fi is a system that allows users, suppliers, creditors and borrowers of software imbedded in block-chains to talk to peers or to entirely software intermediaries rather than to the large markets or institutions that enable a transfer.

A variety of technologies and protocols are used to achieve the decentralisation objective. For example an open-source technology, block-chain and proprietary software could be a de-centralized system. Smart contracts that automate contractual terms between buyers and sellers and borrowers make these financial products possible. These financial products De-Fi solutions are intended, regardless of the technological or the platform used, to eliminate intermediaries between transactants.

Despite the continued rise in the volume of trading token and cash trapped in intelligent contracts in the ecosystem, De-Fi is still a young enterprise with an emerging infrastructure. De-Fi is regulated or controlled little or no way. De-Fi, however, is expected in the future to take the rails of modern banking and replace them.

1.1 Objective of the Study

The following are the objective of this study:

1. The new forthcoming drifts in the Fin-tech industry
2. How the technology works?
3. What is De-centralized Finance (De-Fi)
4. The viability of the Cryptocurrency in Indian Context

2. Literature Review

Fin-tech research usually begins with a review of both the social and ethical consequences of robotic use (including machinery and financial instruments) and of Fin-tech. Fin-tech is also considered to modulate financial technology because financial services can have value. In order to reach effective targets in the financial sector, the monitoring, management of and control of financial services must focus on compliance and reporting in order to advance technology and its utilisation in the design and delivery of financial products. A lot was studied in terms of technology and user views with Fin-tech adoption.

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3. Research Methodology

The study has come out of curiosity about future trends, such as Block-chain and De-Fi in the areas of financial technologies. Different sources of information were then asked for the keywords. The most relevant and useful journals, papers and white papers have been drawn up. This study was compiled and summarised in this report after a systematic review by the best professionals in the fields.

4. De-Fi Focussed

This study shall be focussed upon the Block-chain Technology and its use to De-Fine a De-centralized Financial system.

4.1 Block-chain

- A block chain is a kind of database that differs from an old database by storing data in block-chained organized.
- When innovative info is available, it is move in into a new block. When the block is complete of data, the data is chained in chronological order.
- A blockset can hold a numerous of types of data, even if it is a transaction ledger that is the most popular application to date.
- Decentralized block chains are irreversible, which does not change the data input. All Bitcoin transactions are recorded and nearby to anyone forever.

4.2 De-centralized Finance

In addition to Fintech's digital currencies and digital assets, De-Fi or DeCentral Financial has taken a prominence as one of the most extensively discussed upcoming technology breakthroughs in international finance. The effectiveness of traditional financial regulations and oversight might be negative for decentralisation through traditional policy frameworks. In a separate portion of the value chain for financial services (but maybe less controlled, less obvious and less transparent), the recovery will take place at a time as the other portions of the product lifecycle are decentralised.

The word 'de-centered finances' is not legal or technical. (or 'De-Fi'). However, the future of finance and its regulation is being discussed more frequently. The examples of common usage are (1) decentralisation, (2) distributed ledger and blockchain technology, (3) smart contracts, (4) disintermediation, and (5) open banking. 1 While DLT and block-chain (DLT) distributed ledger technology is used to support de-centralized ecosystems, DLT or block-chain systems are not the only methods for decentralisation.

Decenterisation, too, isn't really a precondition for decentralisation, but decentralisation can be one outcome of decentralisation (side-down), since in a world were services may be spread or decentralised, costs of constructing center architecture. Decentralized financing entails, in turn, multi-participant, intermediary and middle interactions that facilitate and frequently infect technology via several countries.

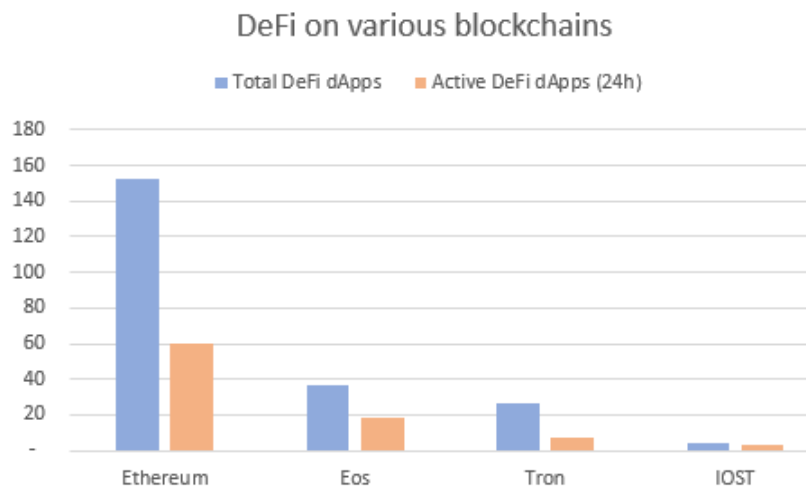
- De-Fi promotes network impacts; true innovation is created through the unique combination of apps.
- While it can be hard to determine which block-chain protocols and apps are most widely used, Ethereum is currently leading through advanced decentralisation, programmatic flexibility and the genuinely enthusiastic development foundation.
- For Ethereum, the destiny of adopting De-Fi is linked to Ethereum's scalability and usability.
- • De-Fi must yet prove to be an upgrade. The usability is now intuitive, there are no risk-adjusted prices and no central alternatives can compete for liquidity.
-

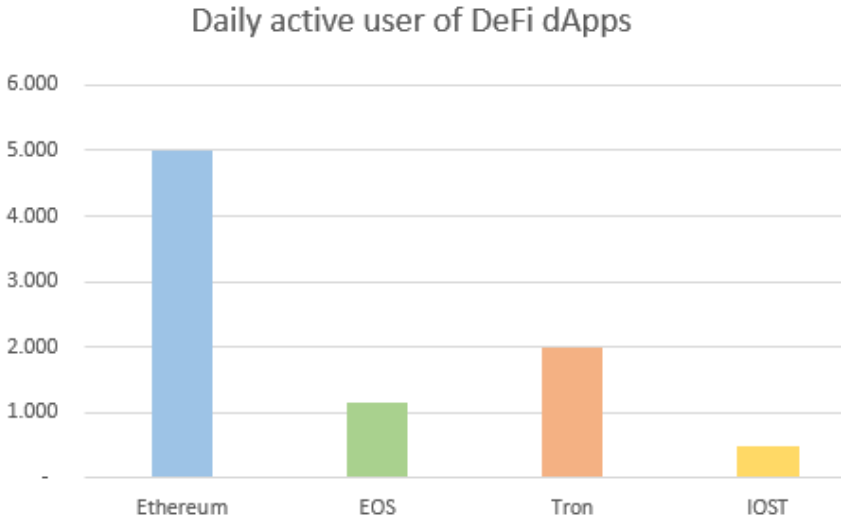
4.3 De-Fi vs Traditional Finance

Many facilitators are crucial to market financing and bring together diverse players. The archetypal middleman is financial institutions such as banks and market providers such as stock exchanges. These facilitators involve a number of banking system actors, notably funders (e.g. savers, creditors and investors) (e.g. borrowers, entrepreneurs etc.) This intermediary typically considers us to be a vital aspect of existing market-based financial markets in their conventional cash, payments, banking, securities and insurance sectors.

4.4 Buzz about De-Fi

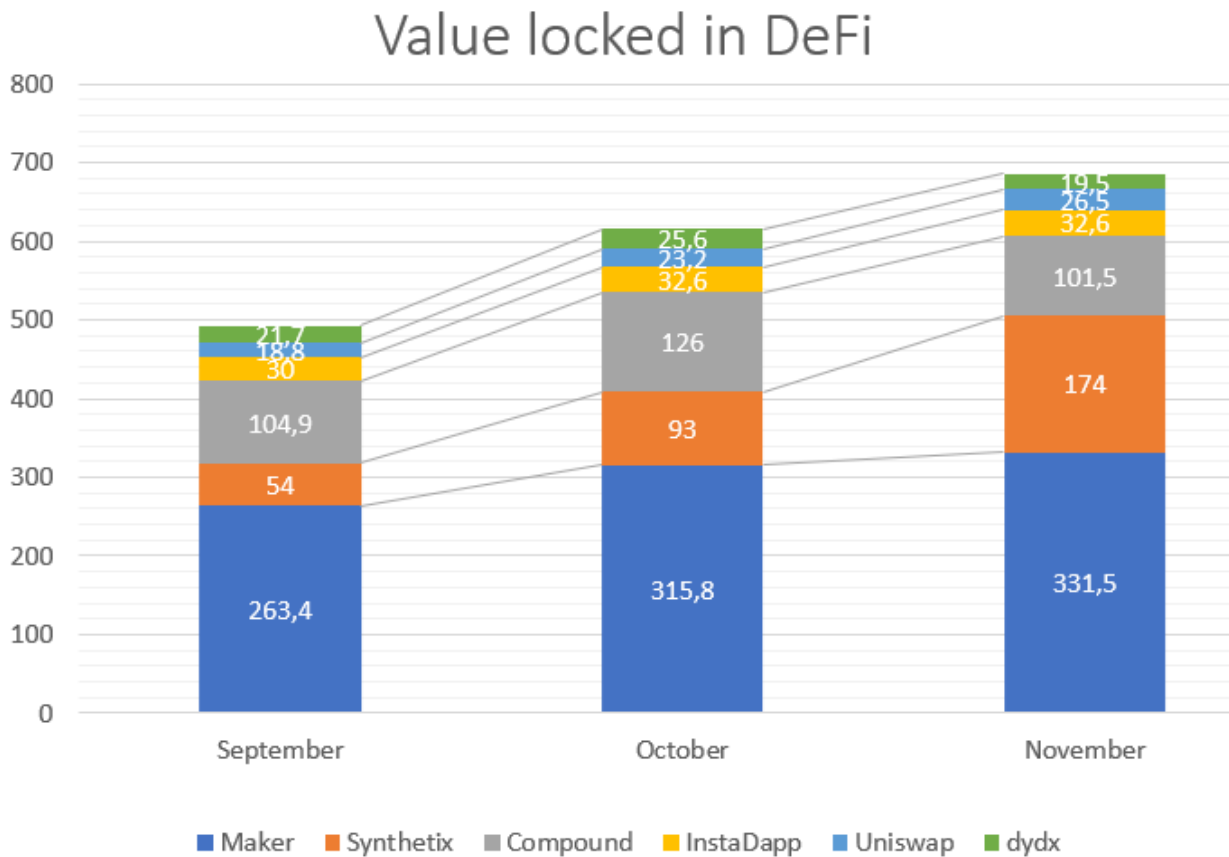
De-Fi is now a trendy problem among the block chain public. Unlike the decentralisation of Bitcoin, De-Fi intends to develop a diversified framework for the decentralisation of the traditional financial industry in general. The main purpose of this endeavour is to provide traditional financial services to everyone through the provision of an unlimited, blocked investment banking ecosystem based on architecture. De-Fi is an ambitious effort to decentralise fundamental traditional financial uses, such as trading, lending, investing, wealth management, payments and insurance on the block chain. De-fixed apps are built on decentralised apps (dApps) or methods.





4.5 Rise of De-Fi

While a open financing initiative generally has block-chain agnostic characteristics, it blossoms on more adjustable block-chains (i.e. programmable intelligent contracts). Now almost every De-Fi project is built on Ethereum, rendering it the default block chain for many dApps. Looking at the November average data, Ethereum pervades existing block-chains, with apps, user activity and operated/inaccessible amplitude (with boundaries). The large amount of EOS transactions is an event all year round, often regarded as a assistance of null transaction cost and therefore as an inflationary effect.



The fuel control De-Fi is running ETH and DAI is very significant to mention. It is also the most easy cryptocurrent to convert to another currency to pay for blockchain transaction fees. DAI is a layer 2 design for the Ethereum block chain and provides a stable coin with the advantages that it is totally decentralized, nanoparticles attached to the dollar and thus less volatile. The potential to circulate DAI between various De-Fi protocols and to use it as an account unit for these dApp is a major driving force behind the prosperity.

4.6 Core benefits of De-Fi

On top the block chain is constructed De-Fi. Often referred to as the fblock chain as a general protocol stack, De-Fi can thus be considered as a cluster of systems in the second layer. De-Fi is therefore inherent in de-centralization's core characteristic. It should be noted that the only way of doing this is by decentralising the block chain itself. To meet this necessary condition and to distribute the core advantages of launching finance with the core advantages of block-chain:

True decentralisation enables resistance to censorship, strategic guidelines regardless of class and exempts trustworthy third parties.

The use of the blockchain as a technological infrastructure allows for relatively quick and low-cost money transfers, immutable financial contracts and automation of contracts.

Generally, De-Fi apps enable the user to keep privately held keys. It is known in the block chains ecosystem as non-custodial. Without a credit card information, the user has full control of the money. Hence, price and market efficiency was obtained ecosystem openness.

De-Fi favour network impacts, as a great deal of innovation comes from combining different projects with apps of layer 2 or even layer 3. For example, one of the largest active contracts for De-Fi is USD 10 million, with no bank account or a third party, and the underlying cryptocurrency is always owned by the customer.

4.7 Will it be Skyrocketing?

However, behind the enticing theory, the implementation of De-Fi currently fails. De-Fi must overcome huge hurdles to a broad adoption of payment channels.

- A field of research in ai and creativity is the De-Fi ecosystem. Accessibility in UX is universal but nonetheless unintuitive. In addition, the conversion of fiat currencies into cryptocurrencies as a pre-command must be carried out on the basis of virtual currencies.
- · Overweight liquidity is settled by centralised alternatives. This is critical because liquidity is crucial for successful banking system appraisals. Actually, as economically efficient rivals, most proceedings cannot compete today. With double-digit stability, MakerDAO is presently not utilised to facilitate unauthorised loans but to use Ethereum decentrally. This follows a systemic approach of several long-standing holdings, changing ETH into DAI and investing it in ETH.
- The items are over-collateralized, with far too many products (something up to 150%) being surcollateralized because nowadays there is no credit rating or shared assets, which reduces skilled traders' leverage or opportunities for access to money that the subscriber does not own. Traditional credit rating based on identity or intelligent disinvestment systems allows high capital effectiveness in centralised systems. Liquidation and assurance funds algorithms. This is a path to investigation.
- Because of the innovative methods, implementation issues are difficult to identify, such as bugs of intelligent contracts or block-chain layer. By design, the blockchain is irreversible to false and fraudulent transactions.
- Additionally, due to lack/manipulation of feeds (so-called oracles) and the complicated administration strategies risk events are present.
- De-Fi represents the risk exposure of the dependency of De-Fi protocol. This can be observed with MakerDAO's too huge a failure state, perhaps the most important part in De-Fi as it is

dependent on oracles and stabilcoins. Nevertheless, MakerDAO is open source and is mainly decentralised, at least in certain areas neutralising the over-failing statement. However, the main lender system and its midas for commercial banks are now few feasible possibilities.

Some of the following problems on Ethereum the situation could possibly form concerns for De-Fi:

- Network gridlock: Ethereum has had a couple of obstructive problems with its block chain during times of high use. If the network becomes congested, it may remain an outstanding transaction, resulting in market inefficiency and delays in the provision of information.
- Operating expenses such as on-line gas charges: transactions with less gas charges may be left pending at lower priorities as transactions are competitive on gas charges.
- These issues are very rare for traditional finances because the block chains' state is revamped on average every 15 seconds. De-Fi interest rates and prices are computed per block and involve sustainable block mining for vigorous process.

While these challenges concern Ethereum particularly, analogous difficulties might arise across any block chain. In particular, Ethereum might possibly suffer severe network problems because of its popularity and use. Just because they are not large enough, or because designs are more centralised to allow high speeds and better results, there are no concerns for scalability in the majority of existing block chains as now. However, we believe that the open financial sector's newness explains the greatest number of problems. These products will stay investigational and so many of the significant problems now in use will improve and resolve.

4.8 Use Cases of De-Fi

De-Fi is a key term for de-centralized digital institutions without permission, thus it is possible to find a variety of customer oriented apps. Financing and exchange procedures are among the most interesting fields at present. The table lists a numerous De-Fi cases that share DeFi's perks.

APPLICATION	DESCRIPTION	USE CASE	EXAMPLES
LAYER 3 APPLICATIONS	Applications aggregating core DeFi infrastructure (Layer 2) and thus providing an abstraction of complexity.	Combining DeFi platforms allows customers easier interactions, monitoring and general better usability.	Ray InstaDapp Defi Watch
BORROWING/LENDING	Ability to lend cryptocurrencies and receive interests, ability to borrow cryptocurrencies and pay interests.	<i>Borrower:</i> Ability to short an asset, borrow utility, create leverage. <i>Lender:</i> Ability to provide capital and earn interest. <i>Both:</i> Arbitrage and letting capital work.	Compound Dharma dydx bZx
STABLECOINS	Stablecoins are cryptocurrencies within the blockchain ecosystem, pegged to a fiat currency. There are various, centralized and decentralized mechanisms to build the tether. The only significant decentralized stablecoin is DAI.	<i>Trader:</i> Cryptocurrency with minimal volatility as pegged to a fiat currency. <i>Ecosystem:</i> Unit of account for most dApps to compare the value of various cryptocurrencies.	MakerDAO EOSDT
DECENTRALIZED EXCHANGE	Decentralized alternative to trade cryptocurrencies on markets.	Cryptocurrencies can be exchanged. Most common are ***/ETH or ***/DAI markets.	IDEX Kyber Oasis
DERIVATIVES, EXOTIC ASSETS AND PREDICTION MARKETS	Decentralized alternative of advanced financial instruments like puts and call, index tracker and futures.	The purpose of decentralized derivatives is a manifold as the instruments itself. Often: risk management, leveraged trading, betting.	Synthetix Augur TokenSet
INSURANCE	Insurance against systemic and idiosyncratic risks: price risk, counterparty default risk, technological risk, network risk.	Insure against a variety of risks.	Etherisc

Interestingly, it is effectively examined from two angle: either centrally or de-centrally the catering industry for the cryptocurrency. For instance, the centralist (e.g. coinbase) and decentralised exchange of different variables can be carried out (e.g. IDEX). In addition, dollar-packed stablecoins are available in a centralised and decentralised arrangement (i.e. USDT block-chain map).

5. De-Fi Indepth Structure

De-Fi is based on DApps, which perform financial operations on digital ledgers called blockchains, a tech used first by Bitcoin, but which has become more widely used. Instead of transactions with and via centralised intermediaries, such as digital currencies, smart contract programmes mediate immediately with both respondents. DApps are normally accessed via a web service or assessment activated by the Web3, such as MetaMask, allowing learners to connect explicitly only with homepage block chain Ethereum.

For instance, with the liquidity protocol like Aave, stabilcoin holders may commit assets to a liquidity pool. Some others may take this pool, normally more than the amount owed, by contributing additional collateral. The protocol adjusts debt levels inevitably, depending on current asset demand. Aave also brought "flash loans," which are arbitrarily chosen loans taken out and paid back over one block, a time period of microseconds, into the market.

While legal apps may be made for such loans – such as arbitration, collateral swaps and self-liquidation – several De-Fi platform vulnerabilities have leveraged flash mortgages in short-term virtual currency rigging of pricing.

"De-centralization" denotes to the absence of a central exchange. Smart contract packages for the De-Fi practises themselves are run via open source software by a unrestricted developers and programmers.

Uniswap, a decentralised or dex exchanges which operates on the Ethereum block chains and lets millions of payment channels to be traded that come in on the Ethereum block chain, is one example of a de-fi protocol. Uniswap's algorithm encourages users to establish cash pools for the tokens, rather than depending on central marketers to fulfil their orders through trading charges to those supplying liquidity. A design team builds software for Uniswap delivery, but its users are solely responsible for the platform. Nobody is available to confirm people's identity with the platform because no centralised party operates Uniswap.

5.1 How De-Fi Works?

The Aave, Maker and Compound loans have been among the most renowned ventures. These feature allows cryptocurrency to be borrowed instantly—and typically in huge quantities to verify that the loan can be reimbursed in a single transaction. The loan of cryptocurrency might generate interest.

Then there's Uniswap, an exchanger that allows you to trade any Marketcap token you desire, or to earn cash if you contribute liquidity to the market of that token. De-Fi also concerns synthetic assets, such as tokenized equities of Synthetix and Maker's de-centralized cryptocurrency, the DAI, which the protocol determines algorithmically. And other services are not custodial to move Bitcoin to Ethereum, or offer decentralised pricing oracles which allow synthetic properties, along with other things, to fit in with their quasi similarities appropriately. What earns these protocols the De-Fi tag is that they are—at least in principle or ambition—De-centralized and non-custodial.

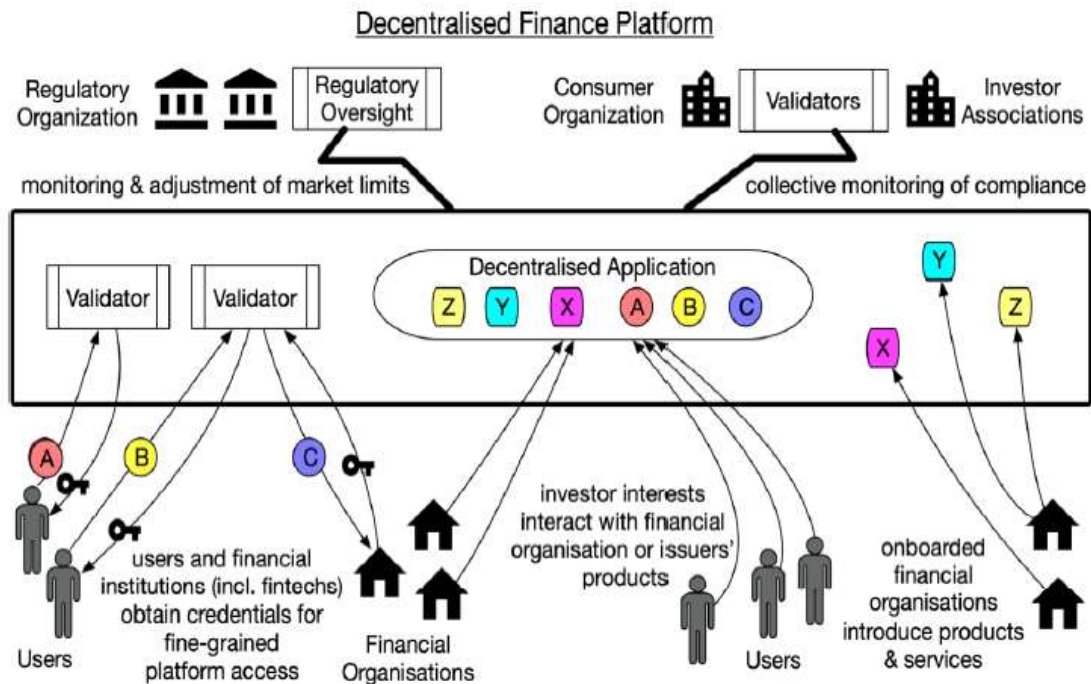
Non-custodial It signifies that on our behalf the teams will not handle your encryption. Unlike, example, saving money in a bank, or crediting a crypto credit firm (like Cred), you constantly maintain your bitcoin with De-Fi protocols.

De-centralized This implies that the developers of these protocols have given their authority to the communities over their intelligent contracts — their inventors vote as soon as possible out of influence in the ethos of hacker ethic and let the people to post on a network's destiny.

The place has not met its high goals. It is known. Close examinations of his intelligent contracts show that teams have huge capacity or that the deals can be manipulated, but in some of the largest De-Fi standards.

Although for some investors it's incredibly rewarding. Many of these algorithms provide ridiculous interest rates, which are even greater by the phenomena of income production, with these protocols providing lenders with more tokens.

Those so-called tokens of governance may be traded on online marketplaces, which also help vote on ideas to update the system, meaning that certain yearly returns reach 100%.



5.2 What are some of the leading De-Fi Protocols?

5.2.1 De-centralized lending protocols and yield farming

Aave, Compound and Maker are prominent De-Fi lending technologies and their smart contracts include billions of dollars in value. The principle is simple: tokens can be loaned or borrowed. Ethereum is the basis for all important protocols, which means that any ERC20 token may be bought or borrowed. They are all non-custodial, which means that the designers of the procedures have no influence on your assets.

The rate of interest varies. You may lend Maker's De-centralized virtual currency (DAI) at the current count for 7.75% of the compound, or borrow 10.78%. At Aave, the loans amount to 9.59 and 17.46%. But the percentage points are dramatically different every day, so take a bit of salt.

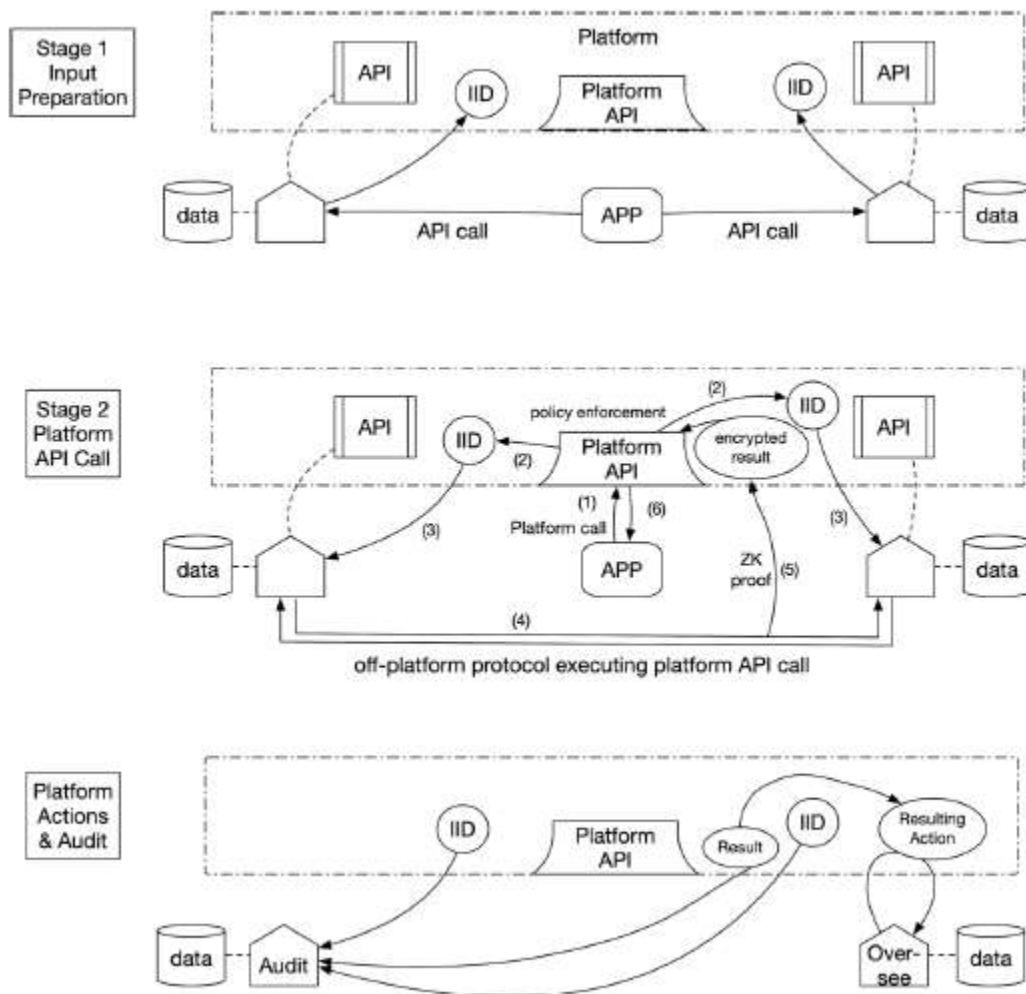
The so-called "yield farming" was spawned by these regulations. By mid-June the company was able to vote on how the network operated, utilising \$COMP, the symbol of administration.

Those that lent compounded cryptocurrency would get COMP \$ for their efforts—such as points of loyalty. These administration tokens might be used to vote on network improvement proposals. This was only a token use.

Another one — one that gave De-Fi fame and notoriety in the same way — was a speculation gain from COMP. The statistics show why. \$COMP was worth \$64 on the debut day on June 17.

A single \$COMP valued \$346 by June 23. Other developers of the loan protocol have begun to recognize and start their own management tokens. As with a raft of other De-Fi protocols, Aave has one \$LEND.

The pricing of a single \$YFI, the De-Fi Yield Aggregation earn. finance token, peaks in mid-September 2020 at \$41,000, quadruples Bitcoin's prices at the time and is around its recent all-time peak. (The turnover at the current count is just 29,967 YFI, compared with 18 million-odd Bitcoin). And all this for a token presented as having "0 value" by the designers of yearn finance.



5.2.2 De-centralized exchanges and liquidity providers

A further common sort of De-Fi protocol is de-centralized exchanging. The biggest one is Uniswap by far. The volume of trading of Uniswap reached \$426 million over the course of August 2020, exceeding the coinbase's centralised trade, on which dealers traded cryptocurrencies worth US\$348 million. The Balancer, Bancor, and Kyber are others. linch includes on a single webpage all de-centralized marketplaces.

The "automatic marketers" all transactions are instances. These automated market makers feature liquidity pools, unlike, instance, a centralised exchange borrowing or de-centered exchange IDEX, where traders purchase and sell cryptographs among each other.

Liquidity simply implies that moving money across a market is straightforward. It indicates very easy to trade, if the market for token is extremely liquid. It's hard to find customers for their tokens if it's illiquid.

Liquidity pools are huge covers of token couples – like an ETH and BTC liquidity pool – where traders may take advantage of trade. There are also enough cash to sell securities without difficulties if anyone has deposited \$ 1 billion worth ETH and \$ 1 billion worth BTC in a volatility bag.

The De-Fi component of the system is that it is entirely not subject to custody, which may be joined with any ERC-20 token. This provides the market with greater options, as centralised trading would not offer some tokens and with legal troubles and many tokens are, well, frauds. The other half of De-Fi is the motivational framework.

5.2.3 De-centralized stablecoins and synthetic derivatives

That is how synthetic resources are centralised worlds: Tether, the leading dollar-powered stablecoin, is in distribution at around \$24 billion. Tether asserts that the US dollar's currency reserves fully support its tokens. However, the explanations to these assertions lay behind locked doors, and the business has already recognised that the US currency only supported these tokens with one time. The New York Attorney Gen is now investigating the firm.

The demanding difficulty is that individuals exchanging stable coins of the US dollar would believe that the firms who produce them are genuine to what they say and that they can always be redeemed for US dollars. However, corporations breach the confidence of their users. The aphorism of Lawrence Lessig, "Law Code," prompted the creation of the Stablecoin de-centralized, whose attachment to the asset it symbolises is decided by a complicated, independent mechanism. DAI, made by Maker, has been the most prominent.

Other notable synthesized asset marketplace is Synthetix. It allows consumers to trade additional derivatives, including USD, Australian dollars, Bitcoin and bullion. All inventories, ETFs and indexes are on the way.

Wrapped Bitcoin, or WBTC, is a definitive synthesized asset. It operates as follows: Connect your BTC to its contracts, and WBTC will provide a Bitcoin comparable. The advantage is that Bitcoin users may participate in De-Fi, which is nearly all of Ethereum.

WBTC has a market valuation of around \$5 trillion. It is a custodians product—BitGo, a cryptography company located in Silicon Valley with Goldman Sachs support, is custodian of this Bitcoin. On the coming are pseudo goods.

5.3 How De-Fi Lending works?

De-Fi financing services are intended to give crypto loans all with no intermediary, i.e. enable users to lend their crypto currencies on the system. A customer can accept a loan straight from the P2P lending de-centralized platform. The loan procedure also permits the lender to acquire interest. De-Fi has the greatest lending rate and is a contributing factor to safeguarding cryptocurrency in all de-centralized apps (DApps).

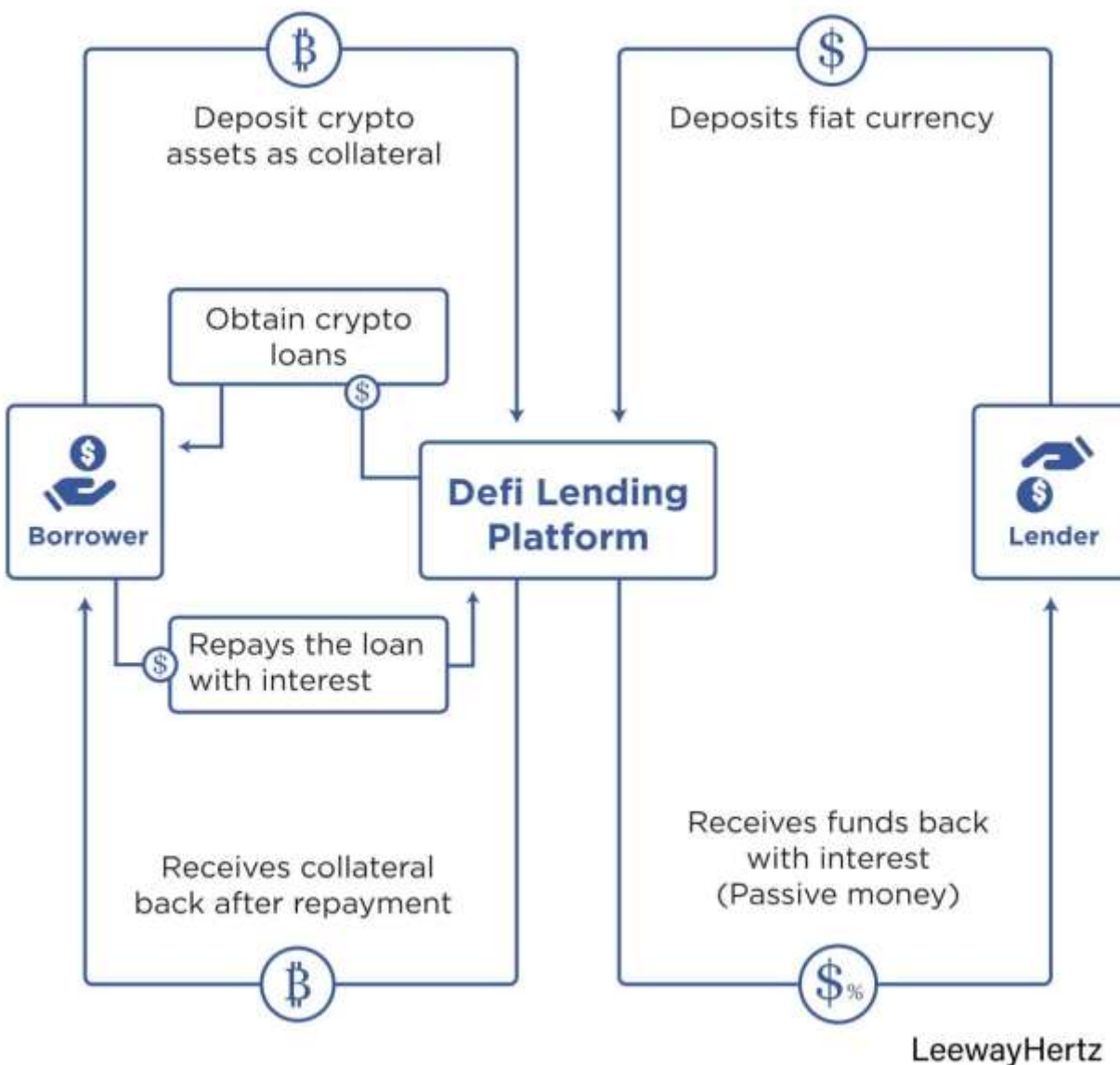
5.3.1 De-Fi Lending vs. Traditional Lending

The mechanism behind De-Fi credit is block-chain; De-Fi makes unusually good use of all its characteristics compared with regular loans. De-Fi financing offers total openness with simpler access to assets without using a third party for each money transfer activity. The customer must register on the de-fi platform, have a blockchain wallet and open Smart contracts. It gives the most simplest credit process. De-Fi provides a surveillance environment that ensures data integrity without any special treatment.

Homeowners and creditors profit from De-Fi financing. It provides margin trading alternatives, offers asset lending to long-term investors and increases lending rates. This also enables users to access debt based loans to borrowing at reduced rates than de-centralized bonds. In addition, users may exchange it for a digital currency on a centralised market and then loan it to decentralised marketplaces.

5.3.2 How De-Fi Lending works?

Crypto assets' underlying worth may rise or decline, but no interest is gained by resting inert in wages. It will only be no profit if a certain coin is held. It is under this circumstances that De-Fi loans take shape. De-Fi lending enables users to lend their cryptography to another person and get interest on the lending. Banks have traditionally used this service as fully as possible. Anybody may now become a financial institution in the De-Fi world. An asset loan can be borrowed from others and interests upon the loan can be generated. This method can be carried out by lending the regular banks' loan offices.



Customers can pool and allocate their assets to borrowers utilising intelligent agreements. It is advisable and worth finding it difficult to explore to establish your sort of interest, because there are many ways to distribute interest to participants. The same applies to creditors, because every pool has a distinctive attitude to borrowing.

A commodity related with this loan is necessary for the taking of a personal loan. The automobile itself, for example, is collateral for a vehicle loan. The bank will confiscate the car so when person views paying the loan. The same is true of the de-central system, only that the platform is anonymously and has no tangible property utilised as a collateral. In order to obtain an amount of credit, the debtor must contribute something worthwhile. Intelligent contracts are utilised for depositing at least the same quantity of the currency with the loan.

Borrow crypto exchange may be utilised with all the crypto token accessible in a broad variety. If a user has to borrowed one bitcoin, for example, he should pay a crypto - currency price in DAI.

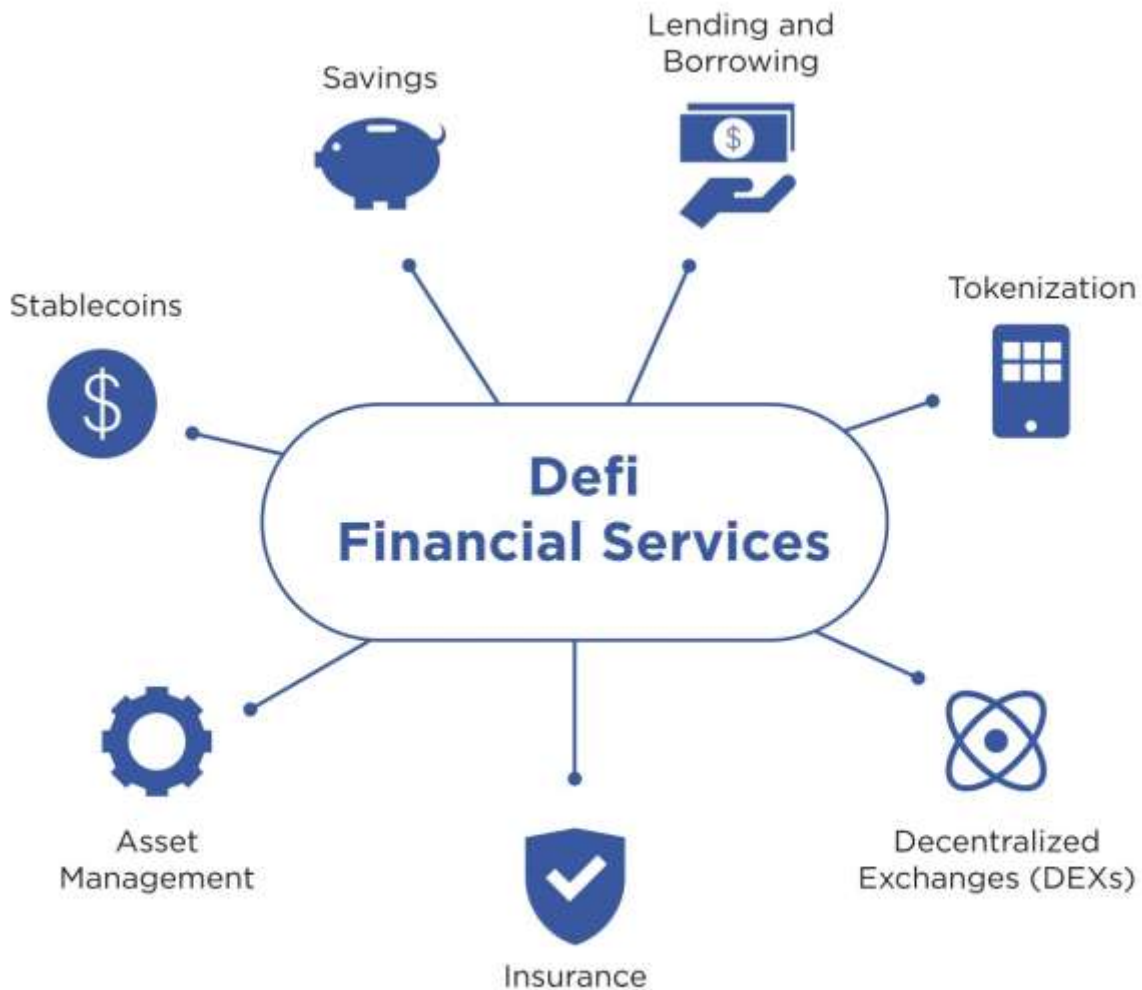
In addition, bitcoin values continue to dramatically fluctuate. A case may emerge if the collateral cost decreases below the loan price. Now the question arises, How can this problem be addressed? An example could help explain it. Let us assume that a user wants 100 DAI to be borrowed. Borrowers are required to guarantee their loans at least 150 percent of the credit value by MakerDAO. This indicates that the borrower has to pay \$150 in ETH for the loan. If the collateral value falls below 150 dollars ETH, the liquidation penalty will be imposed.

5.3.3 What are the benefits that De-Fi Lending provides to its users?

- **Enhanced loan instigation speed:** The most major benefit of electronic lending operations is fast development speed. Club-based services, fraud identification and fraud analysis, and machine learning projections support the de-Fi lending platforms for optimal lending conditions and risk factors. Gradually all of these technologies serve to speed up the process. The lender will give offers through e-contributes after a loan is accepted.
- **Greater reliability in lending decisions:** Credit policy rules ensure uniformity in lending choices. Disparities in the assessment and arrangement of applicant qualities by undertakings are removed.
- **Obedience with Federal, State and Local guidelines:** Decision rules reflect which rules are applied when, where and when and which rules are applicable. It is the proof that the loan meets with federal, state and county legislation.
- **Analytics for process enhancement and portfolio viability:** Statistics can assist lenders and debtors take advantage of the digital information age lending. Over a certain length (a week, month or year) the monitoring of loan requests can assist creditors in anticipating and allocating the appropriate resources to meet seasonal requests. Analytics also offers information on demographics, sources of loans, credit levels etc. The portfolio can be enhanced by evaluating how credit regulations and consumer features influence the effectiveness of the lending system.
- **Permissionless:** De-Fi financing permits open, unauthorised access to De-Fi apps constructed on a block-chain regardless of their locations, which means that anybody having a crypto wallet is able to access the service without a reasonably basic quantity of dollars.
- **Transparency:** Each payment is published on the network through the public block chain and validated by all network users. This level of openness in transactions enables a detailed analysis of data and assures authenticated availability for all network users.
- **Immutability:** The de-centered Blockchain design guarantees data coordination that is adulterate and enhances security and traceability.

- **Programmability:** Smart contracts are extensively programmable, automatically implemented and permit latest technological assets and financial products to be developed.
- **Interoperability:** The implementation of a linked software stack facilitates the integration and complementarity of the De-Fi apis.
- **Self-custody:** The use of Web3 wallets (like Metamask) ensures that De-Fi market contestants keep strong safekeeping of their assets and govern their data.

5.3.4 How do De-Fi lending platforms help the financial services sector?



LeewayHertz

Lending and Borrowing

The furthestmost extensively used De-Fi lending apps involve peer-to-peer lending and borrowing procedures. Aave, Compound and Maker are a scarce of the greatest widespread De-Fi platforms.

Savings

De-Fi aying have frequently provided customers with creative solutions to manage their funds. People can use the services of ownership accounts and optimise their revenue by connecting to other financial sites. Interest-bearing deposits can help users grow their profits dramatically compared with conventional savings accounts. Argent, Dharma and Pool Next to each other are now the most prevalent dApp saves.

Asset Management

De-Fi procedures and cryptowagons, such as Gnosis Safe, Metamask or Argent, let owners to share their crypto assets in their custody. It enables users can engage with de-centralized apps swiftly and quickly and use the procurement, sales, crypto transference and investing interest in offerings.

5.3.5 What are the popular De-Fi lending and borrowing platforms/ protocols?

Maker

Maker is a barrier layer cryptographic De-Fi platform which only makes it possible tokens to be borrowed. DAI is a solid coin with US dollars in value. The Maker may be used by anybody to form a vault, lock in assets like as ETH or BAT, and create DAI as a debt to that collateral. It enables customers through governance fees, which serve as network interests, to partake in operating income. Up to 66% of the collateral value can be borrowed from the user. If the vault decreases below the preset rate, a 13% penalty and disposal are imposed to remove the void from default. Forced to sell collateral is sold on an open market at a 3 percent discount.

Another token of Maker is MKR; in the instance of a black swan occurrence, MKR holders function as the final line of defence. When the value of the collateral falls, MKR is created and sold in an open market to increase further collateral and dilute MKR holders.

Maker's Portal is the preferred spot for using MakerDAO to open, manage and check vaulting, instal DAI on the DSR and update information on the complete Maker system.

Aave

It is an open source, as well as one of De-most Fi's popular loan protocols in 2020. The liquidity procedure is non-custodial for interest income on deposit and debt assets. This platform enables lenders to deposit cryptocurrency in a pool and to get a corresponding amount (comparable to cTokens of the Compound protocol). Aave changes interest rates algorithmically, based on buyers and sellers. It shows that the more aTokens the user has, the greater the interest.

Compound

It is an algorithms unsupervised protocol to open up a world of efficient accounting apps. It enables users to deposit cryptocurrency, earn interest and borrow from them other digital assets. Using intelligent contracts automates the platform's capital reliability and security. Users may connect to Compound and earn interest using Web 3.0 wallets like as Metamask. It is a technology without authorisation that allows everyone to engage openly with a crypto wallet and a network connection.

Compound just released its 'COMP' token of governance in 2020. It gives ticket purchasers the power to vote on items such as the choice to integrate new assets, improvements to protocols and technical updates.

Compound tokens, known as cTokens, are used to monitor compound positions (provided assets). These coins (Ethereum Request for Comments) are ERC-20 tokens, which show the ownership of a piece of an asset pool. When, for example, a user places ETH in a compound, it will convert to cETH; if a durable DAI currency is placed, the coin will be changed to cDAI. For example They will each collect interest depending on their interest rates in various situations of coin proof. It indicates that cETH is paid at a rate of cETH and cDAI is paid at a cDAI rate.

Compound finance provisions numerous lending and borrowing resources, comprising DAI, ETH, WBTC (Wrapped Bitcoins), REP, BAT, USDC, USDT and ZRX.

5.4 Area of Apps of Fin-tech

There are various areas or application which could employ and benefit from these technologies

5.4.1 Machine Learning, AI and Deep Learning

AI became old due of the convergence of three major variables through the implementation of "deep learning" computational models:

- (a) The effectiveness of arithemathical analysis for rectifying neural nets;
- (b) Enhancements in hardware, software which countenance very big (deep) neural nets to be computed proficiently;
- (c) Big data to construct these techniques are available. Profound learning models have shown that the use of typical or almost nonlinear econometric models does not reveal the subtle nonlinearity of the data. These systems are designed to achieve high efficiency pattern recognition.

Intelligent payment management can help AI process payment activities and learn from client behaviour (IPM). Potential savings are enormous: AI will improve consumer decision-making and expenditure monitoring every day. New corporate finance apps utilise contextual awareness to assess spending patterns and web footprints to generate customised consultation. Merging aggregate financial data with end user checks to provide tailor-made products is a traditional AI approach. Algorithms mine client information automatically and execute financial products cross-selling. Cognitive task mechanisation is currently fast taking place.

A number of technologies to create are under progress. Mizuho Financial Group has dispatched its Humanoid robot Pepper itself to Tokyo office to process client inquiry in the retail banking area. They teamed with IBM to permit Pepper to recognise and connect with human emotions in apps. Luvo AI, a customer service assistant, has being testing by Royal Bank of Scotland to engage with employees and clients. AXA (insurer) has an Xtra app that participates in customised talks about healthy lifestyles with consumers.

In peer to pair loans (p2p), AI is applied. Chatbots are becoming more and more important in transforming their contact with banking consumers. The activities of hedge funds are likewise permeated by AI. BlackRock uses deep neural network learning to replace human picker with computer algorithms. Sentient Technologies is a totally AI-operated hedge fund. It should have a secret method which involves 1000s of machines with teaching pupils. Numerai is a hedge fund which creates businesses using anonymous participants to aggregate trading algorithms; rewards are given in a crypto-currency known as Numeraire residing in the Ethera block-chain.

The activities of hedge funds are likewise permeated by AI. BlackRock uses the profound studying neural networks to replace human stock picker with the use of algorithms. Sentient Technologies is a fully operated hedge fund that uses AI. It should have a secret method that employs 1000s of machines and adaptive learning. Numerai is a hedegg fund and makes trade using anonymous individuals' combination of trade algorithms; awards have been granted in the Numeraire cryptocurrencies that resides on the Block Chain on Ethereum.

Big data, which isn't really exposed in pure form as it scratches data using homo-morphic encryption, has been turned from open source numerals, an encoding form that allows data to be utilised for pattern study and prioritization without the possibility of extracting any original data.

5.4.2 Network Models: Fin-tech for Systematic Risk Modelling

Systemic risk is an economic system quality rather than the one of a single entity. It should have two crucial characteristics: (a) quantification – quantifiable in a continuous manner and (b) decomposability – aggregate. Systematically, the risk of all financial institutions in the system may be divided into risk contributions. FIs with a significant risk input may be considered "systemically important" to aggregated systemic risk.

The provisions of the Dodd–Frank Law of 2010 and Basel III identify a systemically dangerous FI as one which is (a) broad, (b) complex, and (c) interconnected, and (4) critical, i.e. difficult to substitute for the economy. The financial system may be disruptive in the failure of an institution. No particular measurement is available under the Dodd–Frank Act.

Lately, das (2016) suggested a systemic risk metric that contains both the system risk attributes, the systemic FI characteristics and the three universal systemic risk attributes. Graph theory is applied and a network of banks is established in order to appropriately quantify systemic risk. An example of this network creation is where text analytics have been utilised for the extraction and creation of a joint lending network of cash flows between banks of interbank credit transactions from Securities & Exchange Board (SEC) filings. Combining this linkage with credit factual info from major impact on the financial to a novel and appealing measure of systemic risk. It requires a thorough mixture of graphic theory and economics to produce a single metric to measure systemic risk by leveraging enormous amounts of data. This is especially compelling because of the need to do so in real time. For example, the download and text mining of all interbank loan SEC filings is highly intriguing, combining a combination of gigabytes with graph theory in order to depict the interest rates network.

5.4.3 Consumer & Personal Finance

Buyers and capital namespaces are households. On the consumer side, they borrow money for expenditure and capital investment. They also make money, save and assign their money to different funds.. Homeholds in the consumer investment cycle have recently experienced many challenges. First of all, asset returns have grown quite low and retirement goals have become increasingly difficult. Decent risk-free returns are no longer accessible to elderly investors that rely on stable income streams when their working years are completed, as risk-free interest rates fall to around zero. Additionally, the risk prices on speculative assets appear to have declined, but the predicted capital risk premium differs from each other. Second, lifespan danger has been aggravated by medical improvements.

Senior folks who survive their savings are also increasingly concerned. Third, when you attain yield, there is a large danger of volatility. The search for better returns in alternative asset classes entails considerable risks, not just from the second scene of return, but also from negative skewness and excessive curtosis. Fourthly, as risk-adjusted returns continue to drop, high-cost banks and financial institutions have maintained price schedules.

From 35% in the 1940s to roughly 50% of today, the portion of the population's highest decile income has increased. These reasons are calling for a solution from Fintech to enhance risks-adjusted returns so that shareholders may seek less, decrease expenses and inequalities in retirement. These concerns are addressed by a number of Fintech projects.

Robo consulting allows investors to employ automation to deposit their money in a varied asset pool at a far cheaper cost while also delivering retirement alternatives.

Companies like as Wealthfront ([https://www\[dot\]wealthfront\[dot\]com](https://www[dot]wealthfront[dot]com)) and Betterment ([https://www\[dot\]betterment\[dot\]com](https://www[dot]betterment[dot]com)) are leveraging technology to lower high price pension providers, while educating tiny ignorant investors. The main actors like Vanguard and Schwab followed them. On the loan side, we have stronger credit models that allow companies to provide segment clients who were otherwise excluded FICO marks from access to funding.

Not all of the substandard FICO marks arise from low grade borrower and Fintech lenders have the possibility to open up a new loan sector by cutting the subset that is of superior quality. On this area, interesting ways are explored: interactions in social network are utilised to identify best clients for example. In order to evaluate individual default risk Digital footprints may be employed. In peer-lending programmes, friendship networks may be utilised. Companies like PayActiv18 disconnect from the payday loan sector, which lowers borrowing prices by roughly 90%.

Big data helps to reduce biases, which can frequently be eradicated with limited data. Because biases inside the data may end up penetrating Fintech algorithms, large data must be treated cautiously (O'Neill, 2016) Consumer funding, on the whole, is ready for new, refreshing advances generated by innovation in fintech.

5.4.4 Nowcasting

Traditionally, the prognosis was interrupted by yearly or, at most, quarterly expectations. Current data can very rarely be used in macroeconomic projections as numbers for GDP, inflation, and unemployment are often merely lagging. In addition, these statistics are often updated and modified throughout time, just as they are utilised in predictions. This is a moving objective consisting of extremely low frequency figures.

The advent of new near-streaming time series sources, which correlate with macroeconomic information, has introduced the potential of real time forecasting at a high frequency. It's called nowcasting and became prominent as a new field in fintech. The Atlanta Federal Reserve Bank has introduced a GDPNow system (Higgins, 2014). This model forecasts GDP increase by

adding 13 GDP substructures using the U.S. Bureau of Economic Research chain-weighting methodology. The model follows previous ways to predicting and provides more prompt predictions.

In order to obtain a high frequency prognosis, now transmission often includes integrating data from several frequencies. In this way, it is similar to ensemble modelling, which combines various data to increase forecast accuracy. U.S. real-time data are utilised to generate a cumulative density of three frequently employed models based on quarterly GDP growth. When fresh article is released, newscasts are amended.

In terms of both logarithmic and calibration tests, combined density is always properly functioning in relation to model classes. The method to the density combination works better than usual ways. The generation of real-time indexes is another aspect of nowcasting. The trade process itself, of course, produces value indications in real time for traded indices. However, the use of other tradable variable and streaming data is now viable for non-coded indexes. Those examples show that the future of current transmission is a direct result of the increasing accessibility and utilisation of streaming data technology.

5.4.5 Cybersecurity

People have confidence in financial organisations to safeguard their wealth and information. They trust banks to function properly, but with every financial crisis, this perception of confidence erodes. Banks have been opening themselves to hijacking through more digital demonstration and radically changing the form of theft. Cybersecurity is no longer only a question of keeping a robust firewall. Digital and human-sized rogue agents are residing deep into banking systems, and the CISOs are not assuming that their firewalls are safe any more.

PwC (2014) reported that 45% of enterprises in the financial industry are criminally criminalised compared with 34% in other industries. Financial institutions can be classified as cyber dangers in three main types. Firstly, state-organized actors pose dangers. The press is full with facts and guesses concerning the involvement of government-sponsored hacking. Second, organised crime has found hacking to be a source of simple, much less risk, benefits. It is simple to see why criminals regard this far more as a (still global) business, since you can divest yourself of assets and informations without leaving your peace of mind.

Cybercrime led to the robbing of information like in the famous Target affair.

Five counterfeit money transactions using the SWIFT network in February 2016 were carried out by Bangladesh Bank cyber theft, totalling 101 million dollars of which only 38 million dollars were recovered. The Fed Bank's account had been hacked and thefts were linked to Sri Lanka and the Federal Reserve Bank of New York.

The Philippines demonstrates that cybercrime functions effortlessly on a worldwide scale in the financial system. The third player in financial cybercrime is the personnel of rogue banks. These sleeper agents enter servers as workers and wait for a timely opportunity to make their destructive purpose operative. Internal banking security solutions are developed for suspicious activities to be detected behind firewalls. An example of Fintech's Dark Sea is the rise of "tumblern," companies obscuring the sources of Bitcoin transaction or other cryptocurrencies.

By sending transactions via a tumbler you may mask origin.

Tumblers mix deals and assume responsibility for mediation..

These are algorithms, and certain coins, like cloakcoin (appropriately called!), may also be packaged automatically! As the blockchain is an immediate, distributed and public transaction record, it makes it feasible to trace a transaction instead of otherwise. It is the fact that it is decentralised and does not need a single transaction control agency which may modify regulations in an appealing manner. Unlike common assumption, the role of tumblers has become ubiquitous because it does not protect confidentiality.

5.4.6 Fraud detection and Prevention

The control of financial fraud online starts with record keeping and all online activities must be kept in so that they may be traced back. It is also vital to have strict certification. Multiple authentication financial systems, like many banks and asset management companies, are developed in popular two-stage verification. End-to-end encoding is essential in order to avoid an assault by people in the middle. In various respects, authentication is carried out utilising tokens, passwords, PIN codes, digital keys, biometrics, etc.. Many digital wallets now have numerous, frequently three digital passwords and at least two of them may be opened to guarantee a very high degree of safety.

However, authentication is a pointless procedure if a data breach has stolen information, since the authentication system does not maliciously identify the legitimately accessible data. Analysis of activity is required and further data may be supplied. For example, credit card details that are stolen allow direct access to the buying power to the criminal online, thus they must be identified by acknowledging that a buying effort does not fit regular user behaviours.

This is where ML has proven incredibly useful, in particular when using alternate data. Solutions in this area are provided by leveraging social media to detect abnormal behaviour, by observing various devices, surprising patterns of e-mail usage, strange credit card locations from standard users etc. This is also recognised by companies such as Bionym, EyeVerify, or BioCatch as the field of adaptive behavioural analytics. In all, a mix of authenticating, behavioural modelling, monitoring of devices, ML on huge data is used to monitor fraud.

5.4.7 Payment & Funding Systems

The manner we are moving money has transformed digital payments, but also our understanding of money has been modified. We are presently swapping money on various channels and bypassing the banking system starting with PayPal. Since then, the Apple Pay, Samsung Pay and Google Pay services are many.

Also, with digital payments like the Paytm platform I have developed new transaction mechanisms. Paytm was authorised to create the payments bank, known as "Paytm Payments Bank Limited" in 2015 by the Indian Central Bank. Paytm currently has in its transactional stream more than 250 million wallets.

The majority of p2p lending systems incorporate the anonymity of borrower and lender, facilitate loan pricing and enable lenders with liberty when they chose their consumers. Managerial services are commonplace, for example registration, credit control, and online mechanization. Targeted lending using large information and ML provides lenders with better advantages (Crespo, Naveira, and Kwon, 2018). The majority of p2p lending systems incorporate the anonymity of borrower and lender, facilitate loan pricing and enable lenders with liberty when they chose their consumers. Managerial services are commonplace, for example registration, credit control, and online automation. Targeted lending using large information and ML provides lenders with better advantages (Crespo, Naveira, and Kwon, 2018).

Fintech also offers crowdfunding to new enterprise finance. GoFundMe, Kick-Starter, Indiegogo, Kiva are the top websites for this. The annual consequence of crowdfunding is about 35 billion dollars in fund-raising. In general, platforms collect 5-10% of the money collected, therefore it's at least one billion to 2 billion dollars in profit. A processing fee may also be applied, thus the fees paid by financial institutions will also be borne in parallel. Payment systems are one of the fastest developing sectors of financial disintermediation, but their viability will eventually depend on being able to provide payment methods at considerably lower cost than conventional players. These costs are also adjusted using price AIs (Rizzi, Wang, & Zielinski, 2018).

5.4.8 Automation of HFT

While Fintech is the latest nomenclature, HFT is a long-standing activity that marks some of the first achievements in financial technology. TradeWorx35 and the Automated Trading Desk (ATD) were pioneers in this industry, which was purchased by the Citibank for 680 million dollars in 2007. Algorithms currently make up 50 percent, down from almost two thirds of the stock tradings at the beginning of the 2000s, of all completed deals in the equities markets. Of course there are varying estimates, and Aldridge and Krawciw (2017) estimate a market share of about 40%. Competitive pressure and regulatory scrutiny are the profit from automated trading.

There is a wide range of academic HFT literature, which is sometimes covered by a number of discussions. The following are some of the highlights. Firstly, two thirds of the 30 top studies referenced in 2013 on high frequency traders suggest a favourable market effect. Secondly, automated companies have decreased trading costs and enhanced market depth and stability, as opposed to popular view. Thirdly, new research is conceivable as different kinds of high information streaming are now available. Tick-by-tick data sets are now far more often used and companies engage considerably more extensively with academics than in the past. Fourthly, evidence currently exists that HFTs stabilise the markets (Hendershott & Riordan 2013), HFTs improve the quality of the market and minimise bid expansion (Hasbrouck & Saar 2013). (Menkveld, 2013). Fifthly, trading in dark pools has been common for many years, but has altered several times with the evolution of risk and technology.

The markets are also being modified to create market (ideally) markets that treat smaller companies more fairly than in the past in order to better comprehend these trading patterns on the new trading platforms. The establishment of an IEX, which is immortalised in Michael Lewis' novel *Flash Boys*, is a good illustration (2014).

In view of this, the major changes expected in HFT include: (a) increasing regulation, (b) reducing profits by competitiveness and (c) reducing the importance of pure performance speed; (d) playing a larger role in the use of countless pieces of knowledge; (e) entering in-house knowledge and AI;

5.4.9 Blockchain and Crypto currencies

The Bitcoin crypto (BTC) price increased beyond \$4,000 on August 13, 2017. This was a 20% rise over the previous week following agreement on a strategy to speed up the execution of transaction. The new SegWit2x,36 solution is a hotchpotch in the BTC ecosystem.

Trading under prior protocols has been sluggish, though, and this innovation will change the game. However, trading BTC remains vulnerable to danger. BTC's daily unpredictability is about 5%, far superior to gold (1.2%), leading currency (0.5%–1%), or technology stocks (1%–2%). On 29 November 2017 a few months later, the BTC's price passed the 10,000 dollars threshold, an amazing growth in prices of any currencies.

By mid-December 2017, it increased to about \$20,000, but by February 2018 it sank to around \$7,000. Since then, following an even lower decline in 2018 and a recovery to \$10,000 at the conclusion of the three quarter in 2019, it has remained at this level. There is, of course, no clear idea of where its ultimate trading scope resides.

Cryptocurrencies and Blockchains are different things. A blockchain has four features and is a distributed ledger. The validation has been decentralised. The record cannot be updated, it is unmodifiable. It's safe — it's evidence of pads. It is certain that the ledger will only include genuine transactions and eliminate duplication of expense. It's also a p2p network leaflet.

A crypto is an asset over a period and a value store, exactly like fiat currencies, except it is legal, and may also be seen as an asset class. This currency records transactions on the blockchain. The inventor of BTC is unknown, however Nakamoto is responsible for the original paper on which he is based (2009). BTCs can be traced, but are usually disguising anonymity. Whether the BTC is an asset or a currency was discussed in Yermack (2015).

Transactions in blockchain cryptocurrency are encrypted and recorded in a decentralised network of nodes upon consent, through encryption technologies. Approval of the transaction takes place by adding to a variable-length transaction a number (the nonce) for the processing of a transaction block and resolving a hashing issue to build a fixed-length hash with a number of leading zeroes. (256 bits) (required to be 17 at the current time). This random guesstimation demands electricity and a certain amount of BTCs, that is BTC 12,5 as written, to be paid. This mining technique creates "work evidence" validating the block of transactions. A block is solved every 10 minutes using modern technology.

The quantities of BTC transactions are now fairly modest, with around 1-2.0 tps or approximately 300,000 transactions perday, compared to 125 tps for PayPal and 4,000 tps for Visa. But the technique is already well recognised and goes much beyond proof of concept.

A bigger topic for the future is that the blockchain provides a networked platform that allows decentralised and autonomous contracting. This is most famous on a configurable ledger on the platform Ethereum.

Everybody is able to construct an intelligent contract with the Ethereum chain using ETM and the ETH crypto-currency, used for platforms transactions and fees, will be utilised as proof of work. The ETH crypto-currency is utilised.

For example, a business exchange may be established on Ethereum and contracts may be resolved on the platform automatically after the software is developed. It permits anonymous trade, while allowing a regulator to have an overview of the concentration of risk in the market, allowing systemic risk management. The usage of the Ethereum platform in real property contracts is another example. There are several advantages such as title verification, settlement, equity shares in property and the liquid trade of property.

Ethereum also has enabled the creation of decentralised self-government organisations, in which group arrangements on the Ethereum blockchain are expressly concluded as intelligent contracts. In particular a \$150 million venture fund was established, known as the DAO(name itself), which was invested in crowd-sourced success by 1,000 people.

However, it was hacked in 2016 and many million ETHs were taken but afterwards restored, by deleting the stolen ETH on the chain. The blockchain was reset, which was in clear violation of the immutability principle. This led to the Ethereum blockchain being forked hard. The attack was therefore a result of poor DAO security, not the Ethereum blockchain security. Ethereum was hit for \$31 million in the Affinity wallet (in July 2017). Another 150 million dollars was susceptible but hackers of white hat stepped in to preserve these accounts in an odd circumstance where they could cure it themselves. 38 Regulators that struggle to keep pace have not addressed these problems. The SEC has declared that DAO-issued tokens should be classified as securities and now governed by federal legislation. One pessimistic point of view is that cryptocurrency end up in a new digital environment after regulation, following the old money norms.

The initial coin offerings are another financing application that grew swiftly (ICOs). This is similar to a pre-product sale, where currencies are created for future worth on a blockchain. These will also draw SEC oversight and in July 2017 alone there were 46 ICOs. The ICO's have lately been labelled securities by the SEC. ICO volumes double every year. 537 ICOs were registered by 30 June 2018 (\$13.7 billion). A total of 552 (\$7.0 trillion) ICOs existed in 2017. The average ICO size has increased from 12.8 million dollars in 2017 to over 25.5 million dollars in 2018. Companies like Numerai⁴⁰ have produced its own Numeraire crypto-currency, which clients may utilise for investment, cancellation, retirement and payment to able to trade algorithm designers in which they are entitled to invest. The hosting of this coinage on the Ether blockchain has made this feasible.

It is likely that there will be vast changes in financial contracting, trading, risk management, and corporate finance, all implemented on blockchain infrastructure. For a comprehensive outlook on the disruptive (and beneficial) potential of blockchains, see Harvey (2014) and Yermack (2017).

5.4.10 Text Analytics

An imperative area of fin-tech lies in apps that use “alternative” data.

Textual data significantly broaden the world of only numerical accessible data. The beginning step in any text analysis is the quantifying of textual data—a mapping from words and publications, such as vectors, matrices and tensors, to arithmetical abstractions. The aim is to clarify qualitative conclusions and predictions following appropriate arithemtical change. Text analytics are currently in use in finance in a number of domains. See Das for a recent inquiry (2014).

Text sources come into three categories: (a) blogs, forums and wikis; (b) news; and (c) corporate material. The early effort focused on the extraction via posting on forums like Yahoo!, Raging Bull, Motley Fool and Silicon Investor. Early works included. The Wall Street Journal, Dow Jones and the Reuters news agencies also extract feelings from news sections. At least every day, these sources were available. In recent times, text streams have been readily available and Twitter has been a joy for sentiment researchers. Bollen, Mao and Zeng (2011) say that 87 percent precision tweets are used to forecast the direction of the Dow Jones Index. Since that time, a number of articles, each with a varied result, have been used with tweets.

Company text data for asset management have been extensively used. Data from the huge universe, including forms 10-K and 10-Q, of company regulatory filings are collected. It is discovered to be advantageous to determine an emotion in the annual reports, namely particular word lists, known as lexicons. A number of risk-related terms is a good predictor of bad performance in future quarters, for instance, in annual reports. Calomiris & Mamaysky (2019) & Froot, Lou, Ozik, Sadka & Shen (2017) papers demonstrate a substantial market direction predictability of textual information from large-scales media sources combined with market information.

Finally, study demonstrates that it is unnecessary to count characters. Just glance at the file size of the SEC server's yearly report is an excellent sorting feature. Bigger file sizes suggest poor output.

News analytics are also utilised frequently to improve management of assets. In this sector the qualitative and quantitative characteristics of unstructured news stories are measured. The news analytic trading methods are discussed extensively in Leinweber (2009) and Leinweber and Sisk (2011). The quantity of negative terms forecasting bad profits as well as fundamental news items suggest that they are more helpful than other articles in Tetlock, Saar-Tsechansky and Macskassay, (2008). See Mitra and Mitra for a full analysis of news analytics (2011).

Predicting company or financial failures might save huge sums of money. Recent research shows Das, Kim, and Kothari (2019), how early warning signals may be obtained by examining e-mails from top management of a company.

They use Enron as a test case for a "zero revelation" technology, which allows a software programme to scan e-mails for qualitative features like emotion, quantitative features like size and frequency, geographic factors such as networks or focusing on aggregate issues. Since this is a non-invasive strategy, which corporeal management or the regulator may apply to early prediction of financial malaise and so bring value into a company's risk management process, since the software reads and delivers a comprehensive analysis with no information on content of e-mails.

These are the primary characteristics of such a method.

- (a) Corporate quality metrics are frequently postponed for finance.
- (a) Internal debate may serve as a mechanism of early warning for potential company discomfort.
- (c) e-mails can foresee situations of this kind.
- (d) Software may examine huge amounts of textual material which cannot be processed by humans.
- (e) Senior management corporations may also utilise these analyses to better anticipate and manage their companies' imminent crises.
- (f) The methodology needs, more importantly, zero disclosure of e-mails.

For textual alternative data, there are countless uses. Deep learning has recently become an essential application of text in finance for natural language processings. Text is classed as an early warning signal on business activities and predicts the effect of an announcement on the stock price. Since these additional data elements offer value to their trading algorithms, many hedge funds include text features as a cover..

5.5 Future of DeFi

Of 2020, DeFi surged as the value in decentralised platforms increased to the trillions. The most important themes throughout the recent year were yield farming, flash loans and automation market makers (AMMs).

However, what is DeFi's future? And would DeFi's accessibility, decentralisation and community development make it a better environment for the next generation of developments?

Three major areas of innovation in the DeFi space over the coming months and years:

➤ Digital identity

Anyone who uses computers, whether they realise it or not, already has a digital identity. The amount of our information major technology corporations collect and sell over the last few of years has become evident.

Legislation like the General Protection Regulation of the EU and the Consumer Protection Act of California aims to give customers some rein, but those indicators are tide swimmers. They impose onerous requirements on companies collecting and storing client data in centralised databases and are highly punishable for non-compliance. The system clearly needs to be reformed.

Technology from Blockchain offers a new digital age view of personal identity. Decentralized systems of identity (DID) provide data owners with control: individual users. They eliminate responsibility for centralised data collectors and create a consent-based system that would provide big-tech companies with a much needed goodwill. Users would own and decide on which platforms they share the data they create. These data can include health records, administration identification or the history of connected shopping.

Decentralized identity platforms such as Can DID would permit seamless integration with legacy systems, simplifying the on-boarding process and broadening the potential user base.

An applicant can succumb a cryptographic credential from their university showing a degree and evidence of their work permission from a government portal in that country. All of this without access to private information by third parties. DID enables the monetization of its own data in addition to reducing the risk of counterfeiting and fraud. Individuals may allow their anonymized health data to be analysed or released to advertisers in return for compensation in wider population studies. Once authorised, data people communicate with this knowledge without trust and without custody.

The pandemic Covid-19 has shaped new cases for safer digital identity remedies. IBM is re researching on a online health pass centred on its blockchain technology that allows organisations, employees and visitors to monitor their health. Individuals could share a credential which would show that they have been vaccinated or tested negative recently without sharing the data they use to produce this evidence.

The way data is saved and processed represents a major shift. If data is 21st century oil, it is time decentralised technology breaks the monopolies and gives the creators control.

➤ **The tokenization of real world assets**

Tokenizing takes an asset which is not indigenous and represents in a form that can be read in that chain. Tokenization The assets can be entirely out of blockchain, for example immovable, in the case of wBTC, or other wrapped cryptoasset tokens that are available in other blockchains. Token ownership is a right to the underlying asset. Stablecoins are a simple example of the tokenized assets: one USDC is one dollar in the bank account of Circle.

But there are endless possibilities; almost everything can be tokenised. While stable coins are fungible signs, the biggest possible increase is in the field of non-fongible signs (NFTs). An NFT is unique, a scarce asset.

Token art attracted enormous interest, with millions of dollars in projects like CryptoKitty and HashMasks. Investment in NFT's recently expended 605 ETH on the CryptoPunk 2890 – one of just nine alien cripto punks – is a decentralised autonomous organisation, Flamingo DAO.

Although this investment is plainly a totally speculative offer, it is a demonstration of confidence in the ability of the NFT area. While it's still early in the day, blockchain provides several benefits over traditional records in monitoring investment capital.

At any time of the day, the property can be transferred with a button click.

As the pool of buyers and sellers grow, liquidity increases to include everyone with internet access, and form of risk from days, weeks and months to seconds is decreased. Tokenisation provides an exposure for investors to assets that could otherwise have significant access barriers.

Everyone in the world can buy U.S. real estate with RealT and even earn lease income from their property, which is paid in USDC monthly.

The ability to remain in the crypto and DeFi ecosystem is another benefit of tokenized assets. Vertalo – a platform for digital asset management – just announced 22 different securities would be tokenized by Tezos blockchain. The support from Synthetix for trade stock directories such as the Nikkei FTSE 100 and commodities including gold, silver and oil means that investors do not have to take out their capital from cryptographs and from a brokerage account to gain exposure to such assets.

RealT indications will be approved in the near future as collateral on AAVE so token owners can borrow from their real estate portfolios.

On the distant but nearer horizon, the mortgages and transfer of title are completely blockchain based. An Australian engineer has just taken things into his own hands after four years of refusal of bank loans and paid off his loan with a DeFi credit.

You can probably buy and sell real estate as easily as you can swap Bitcoin and Ethereum one day soon enough.

Governance

We mentioned earlier in relation to FlamingoDAO, the NFT Investment Fund, decentralised autonomous organisations (DAOs). No central or hierarchical structure has been established for DAO. Instead, the voting on proposals that need to reach a preordained level of consensus are controlled by members. A token of governance that grants votes ensures membership.

The rules through which a DAO operates are encrypted, immutable and transparent to everyone.

The financial history of an organisation can be seen in the blockchain so that everyone can see where treasury holdings are spent.

In the beginning of 2016 the DAO was the first independent organisation to attract \$120 million in ether, making it the largest ever crowdfunding campaign. 14% of all ether were invested in the DAO at one point. The DAO has proved to the world that there is a real appetite for new models for leadership, although its history is turbulent and its organisation's closure at late 2016.

It is important to have fair token distributions as voting power is allocated according to the proportion of tokens a user holds. The democratic nature of a DAO would risk if a single user/consortium controls a majority of the supply.

➤ Security Governance

Each of these exciting new areas has its own chances and its own risks and considerations.

Security must be part of a conversation when talking of shifting from centralised to decentralised methods of identity management, tokenisation and governance.

Because of a number of fundamental features, decentralised systems certainly attain a high level of security. They do not rely on a single failure point and the system is designed to be strongly encrypted. For instance, when the Equifax hackers had only to break into an insufficiently-protected centralised server, hackers should bypass the cryptography which safeguards each individual user's wallet to access identities on a decentralised system.

However, the code on which platforms have been built must be secure to fully realise the advantages of decentralisation. In the last year alone, we saw dozens of hacks and achievements, which all back up the DeFi space. A free and fairer decentralised future will be just nothing more than a nice idea without comprehensive security.

CertiK offers a complete range of safety products to make this future a reality. The end-to-end safety of CertiK offers developers and users the peace of mind needed to continue innovating, ranging from pre-deployment auditing and penetration testing to reliable chain monitoring and a decentralised compensation protocol for loss of assets..

6. Fintech Implementation in Indian Context

There can be many application of Blockchain technology in India, some of the use case can be as follows:

6.1 Land Records: Creating a new system to manage land record transfer and ownership

6.1.1 Context of the issue

As an asset, land has intrinsic value dependent on its location and corresponding demand and limited supply. It is, in fact, one of the critical factors of production. Access to land has wide ranging economic, social, cultural, livelihood and industrial implications.

However, India's system for land ownership and transfer is largely owned by the British government. Land ownership is mainly based on a registered sales certificate. This paper is a record of property transfer and therefore subject to challenges not a policy property title.

During the pilot, the administration has sometime been required to retrieve any ownership claims on a plot of property for several years, including Manual records. This is not efficient and leads to departments' time delays, while silos are sometimes used and data across departments are not effectively updated. Not only that, there is always a realistic opportunity for records to be lost due to fire or natural disasters. There is also policy in certain departments to remove old documents occasionally. Disputes and disputes concerning land records and ownership therefore jeopardise a wide variety of awaiting matters before different judicial and administrative fora.

There is also policy in certain departments to remove old documents occasionally. Disputes and disputes concerning land records and ownership therefore jeopardise a wide variety of awaiting matters before different judicial and administrative fora.

6.1.2 Current issues in land transactions

a) **Establishing ownership over land:** Land can be owned by inheritance, donations, acquisitions and surrender. In India, the ownership of properties is mainly documented by a registered sales certificate in the event that a land is purchased. Other property ownership documents include property tax receipts, survey papers, etc. However, the buyer must check the

authentication and the seller's ownership structure during the transaction. Since the sales act is a simple document about the transfer of property and is not a guaranteed title for property in the state, it can always be challenging.

b) **Poor maintenance of land records:** The registration and transfer of property records by government bodies including Registrars, the Patwaris and Revenue Offices, in particular land registrations. Official State land surveys were extremely irregular; for example, during Nizam's 1932-36 last land survey was conducted in Telangana (sometimes Andhra Pradesh). Before transfer of property, the customer often has to seem to verify the nature of the title to the property that is held by the seller by a pile of documents which are mainly manual but sometimes dilapidated or unreadable. Such a process is ineffective and causes issues as the departments in question operate in silos and their data is not productively updated. Not simply that, there is always a realistic chance of records being lost as a result of fire or natural disasters, or even because corrupt officials act deliberately to the advantage of or detriment of one party.

c) **High amount of litigation:** Discrepancies and differences in land records and ownership comprise a wide variety of issues pending before various fora. The two-thirds of all pending court cases in the region account for land-related disputes, for example those relating to the authenticity of land rights and records. These disputes take about 20 years to settle.

d) **Asynchronicity of information:** Registers held by various agencies (e.g. estate and sub-registration office) are updated at various times during land transfer – resulting in an unclarification of the status of possession and complicated citizen duties.

An Approach to Solution

After the 'as is' procedure survey was completed in the Chandigarh Union Territory, NITI Aayog and its technology partner established process flow in order to identify parts of the procedure that are capable of using certain blockchain features. While some features of the blockchain system can have been achieved through pure "digitization" of processes, features such as its decentralised nature and ability to execute "intelligent contracts" have been found critical for making the process much simpler.

A 'prototype' has been developed in a blockchain to display the abilities of a revised system. This system allowed for the relevant stakeholders to be incorporated in a single user-free portal and the capacity to view the current state of their transactions via events immutably stored on the blockchain, with the advisability of their read/write accessibility and civilians to manage their border crossing (which would include uploading the necessary documentation, payments).

This blockchain situation has improved immutable land ownership records that are permanently digitalized and stored on the system and that are capable of tracking any change in ownership of these titles. Any new deal (e.g. further sale or title change) is recorded inescapably on the distributed ledger, while other stakeholders are available (utilities, insurance, etc.).

Highly recommended and adopted in many countries, the Torrens system of land registry is based on three fundamental principles:

- **Mirror principle:** Each farm database truly represents the particulars of all chosen procurement properties (beams).
- **Curtain principle:** The captured asset facts are adequate; do not entail a trail of ownership of paperwork
- **Indemnity principle:** In the event that the province makes an error, it shall provide payment

The first two principles are guaranteed by a blockchain-based land registry system. The intrinsic

A mirror and curtain principle are automatically implemented by designing a distributed land property record and its transactions. Once the recording system has obtained critical confidence in data and transaction integrity, the third principle of indemnity is implemented by the state.

The remaining possible advantages of "scaling up" the prototype was regarded as:

- Make sure property ownership is what can pave the way for a "conclusive titling" system
- Reduction in land transfer litigation, as the title records are recorded clearly and immutably
- Stimulate transactions in purchasing land and business investment – create a seamless land transaction market that releases economic value and liquidity
- Comprehensive system transparency through real-time audit functionality, digitally signed and time signed records

Blockchain technology provides the best way of implementing the land record systems, given the characteristic demands of maintaining clear ownership records, transaction history and allowing transactions among several parties.

A blockchain-based land titling and transaction system tracks land purchases and sales, mortgages and leases, as well as notary services on the state-of-the-art land registry and financial institutions' verification platform. This platform captures transactions, verifies data and works with financial institution to update current registers, permit smart transactions and distribute private keys to customers - so that property transactions between all parties can be automated and reliable.

Partners (Nodes) Identified to have access to private blockchain information, pilot-identified to potentially be: Title Owner of Property, Buyer of Property, Government Registrar, Government Income Office, Land Survey Office, Real Estate Regular Regulatory Authority (RERA), Real Estate companies or Insurance Providers, Financial Regulatory Authority, (for surveillance purposes).

6.2 Pharmaceutical drugs supply chain: ‘self-regulation’ of the sector through blockchain enabled trust

6.2.1 Context

The issue of counterfeit drugs is a global concern, with every country currently tackling its menace. It is a growing global dilemma which has a profound impact on LICs and lower middle income countries. It is also a serious problem.

The estimated 1 out of 10 pharmaceutical products in low to intermediate income countries is either below standard or falsified according to the recent WHO estimates. According to the 2014-2016 National Drug Survey of the National Institute of Biologics of the Ministry of Health & Family Welfare, false medicines are a major issue in India, where around three percent of medicines are not standardised or counterfeited.

With this growing risk of fake medicines, which enters the supply chain and reaches the hands of customers in particular, it was recognised that the origin of medicines and their way throughout the supply chain needed to be made more clear and traceable.

6.2.2 Current process and challenges

In most cases, the initial phases of the initiative have been researched and interviewed to show that drugs from the factory are trustworthy and that the potential for fake drugs is created when the products are transferred between the various phases and the complex supply chain layers (i.e. wholesalers, distributors, or sub-distributors). Medicines can be stolen, adulterated and replaced at each transfer point from the factory to the patient. The result of such a misuse results in financial losses and a significant risk to the safety of patients for drug producers, above all.

The National IT Center developed and implemented a new system called DAVA, based on GS1 standards, for drug tracking and traceability, named the Drug Authentication and Verification Application (DAVA). The system is based on the application of Global Trade Item Numbers and the serial numbers for the identification of different hierarchies for product packaging provided by manufacturers. The objective was to increase India's image as a world leader in the production of safe pharmaceutical products by giving the drugs produced and exported from India a real-time visibility.

The whole DAVA system will be rolling out into phases with 2000 producers, with big and medium-sized manufacturers and small-scale manufacturers participating first.

At primary level, barcodes are optional, but at secondary and tertiary level, barcode marking and barcode markings is mandatory.

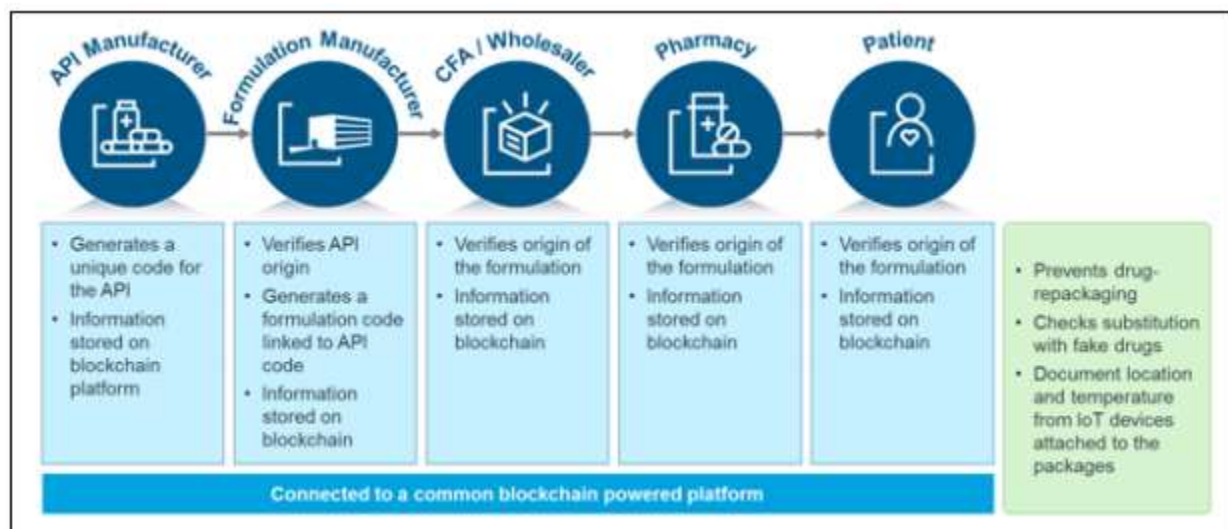
While DAVA provides manufacturer-level information on products which other stakeholders can verify, however, it has been established that the full functionality of blockchain cannot be included. For instance, it does not ensure that all stakeholders who are extremely important in a multi-stakeholder, multi-location and multi-product scenario are aware of each transaction. In addition, the product cannot be tracked and tracked in the entire supply chain and temperature compliance is ensured. These can now be achieved with emerging technologies like blockchain and the Internet of Things (IoT).

6.2.3 Leveraging blockchain technology for a unified data system

NITI Aayog, together with a host of healthcare and technology partners, organised this initiative.

In this sense, the pilot was different from the other pilots who carried out the process because it was not entirely "capable" of a single institution. The partners included drug companies, carriers, logistics providers and pharmaceutical retailers.

In order to transmit information on receipt and transmission of goods, the pilot required the integration of a series of independent IT systems and worked together to ensure manual information input was restricted.



Each transaction was automated and registered using internal systems, and timed using the ledger to ensure the safety and safety of the product as the pharmaceutical products moved through the supply chain. Because of decentralisation, encryption and immutable recordkeeping, stakeholders can show a large number of associated data without affecting the security of the data. In addition, even inputs from production, such as active pharmaceuticals and excipients, have been tracked and linked to the final pharmaceuticals.

The blockchain also documented critical information such as IoT location and temperature attached to the packages, which makes the journey visible to all stakeholders, thereby limiting the possibility of record manipulation.

6.2.4 Benefits of blockchain technology observed

Blockchain technology has found that in highly controlled pharmaceutical industries, it can improve transparency, efficiency and reliability in transactions. Blockchain enables manufacturers and other supply chains participants, from the manufacturing point of view, (raw materials/ API suppliers' codes) up to the point of sale (pharmacies providing patients with prescription/OTC medicines). But above all, at the point of purchase, consumers will be able to verify the source of the drugs.

Major benefits are highlighted below:

- ✓ End-to-end pharmaceutical traceability: To provide a better visibility at each stage/stakeholder of the drug or medicine movement in the value chain. This enhanced traceability facilitates drug flow optimization and an efficient stock management system that will significantly improve stock planning.
- ✓ Transparency to increase accountability: drug shipments can be traced throughout the supply chain at every ownership point. The actors or stakeholders participating in the shipment chain can also be tracked. If there is a problem during the provision of drugs or drugs, blockchain can identify the last stakeholder to get the product through.

Smart contracts also enable accurate locations of medications to be identified at each transaction stage and allow 'batch reminders' to be effectively dispatched to guarantee safety in the health of the patients.

By introducing digital currency into the distribution network, pharmaceutical businesses will eliminate intermediary reliance, increase transparency in inventory movement, manage quality and enhance the reputation of the sector as a whole. The government may play a leading part in allowing an underlying blockchain system to have a shared public infrastructure. Various government programmes in the medical sector also will benefit tremendously.

6.3 Super-Cert: Anti-fraud identity intellect blockchain solution for educational

6.3.1 Context

"Certificates" means the verification of credentials between domains and geographies of individuals.

A paper certification is not manipulable and fraud-sensitive. First Advantage reports that there are more than 7,500 organisations that provide counterfeit jobs and educational certificates, according to a background screening firm. Two problems are usually at stake: fake university degrees and real university fake degrees.

Several of these complaints were submitted by the University Grants Commission (UGC) and universities and organisations are frequently listed, yet scrupulous agencies continue to mushroom.

This problem has a tangible cost – companies spending a substantial amount of money to check their credentials; an awkward and time-consuming process for students in India as well as abroad.

6.3.2 Current Challenges

The following challenges are therefore presented by existing education certificate verification solutions:

- Centralized i.e. fully dependent on the issuing authority of certificates
- Manuals: emails, phone phone calls or web forms are usually used for verification.
- Time consumption – weeks or months may take
- Simple to break and manipulate

A decentralised trust system, verifiable and safe, automatic, in real time and fraud proof, is therefore needed.

6.3.3 Leveraging blockchain for educational certificates

NITI Aayob has tried to tackle the challenges in educational certification with a blockchain-based solution, in partnership with the Indian School of Business (ISB) and Bitgram. The SuperCert approach has a permitted blockchain architecture that involves decentralisation, intelligent identity encryption and the linkage between certificates.

The process involved:

- i. Student identity creation – superidentity. A unique identity blockchain representation and a set of public and private keys are provided.

ii. University certification, together with the student's superidentity.

SuperCert i.e. building of a student certificate block – hashed version of a blockchain certificate

iv. Check the certificate using the student's public key and the college's public key. The solutions have functions for online as well as offline checking.

The blockchain immutability feature ensures that certificate manipulation is impossible – both its contents as well as the identity of the holder of the certificate.



SuperCert's main features include:

i. Privacy of data: the data remains with the entities which own it.

ii. Effective, automated, worldwide verification.

iii. Resistant to falsification and fraud

iv. Permanence: certificates shall remain outside organisations – eliminates dependence for future verifications on issuing authority.

V. National and worldwide scalable.

6.4 Chit-Funds: A block-chain constructed model to augment trust and unlock value creation

6.4.1 Context

Under a chit fund scheme, a group of people come together at regular intervals for a predetermined time. The collected amount of money is loaned internally to the auction winner by means of a tentative mechanism every month until the end of the programme tenure. In this way, people who need funds are provided with bidding interest rates by those who want to save. Generally speaking, a subscriber's interest rate is higher than that offered by bank systems in time deposits and offers borrower flexibility from the mechanism of the chit fund at a competitive interest rate determined by the dynamics of the chit group.

6.4.2 Existing Process

Chit funds are funded in a variety of mechanisms across the country. Traditional chit funds have been operated in hyper-local markets, where the group consists of a contractor in his trust circle, with the trust mutual and the risk of social obstacles always. These lending costs ('commission') are managed by the foremen.

These traditional corporate funds are now run by private limited companies. They have been corporated. Chit funds have been classified by the Supreme Court in India as a special type of contract, under which the central and state governments are entitled to enact legislation. The Chit Funds Act of 1982 on regulating the sector was adopted by the Indian government in 1982.

6.4.3 Leveraging Blockchain technology

Chit funds have many strengths and weaknesses as a financial mechanism (in operations and administration). Blockchain can be used to address many of the challenges that would reduce the frictions of info, interface and (fees, cash movements, reporting, auditing and potential fraud from the parties including foreman and subscribers).

For regulators, the following are few advantages that the government regulator can gain through the management of chit funds on our power platform:

- Protect millions of subscribers' interest in the state
- Smooth auditing and reporting
- e-KYC / Subscriber Identity
- Reduce friction through the use of secure access systems
- Interface for controller and proofreader easy to use
- Complaints will be easier to redress
- Learn more about the per capita system debt in close real time
- Integrations of payment gateway for the challan payments
- Collective knowledge on management and surveillance

- An administrative blockchain-powered chit fund manager will protect the interest of both subscribers and the government by making processes easier to do business through events such as:
- PSO application online, beginning group, etc.
- Online reporting of the monthly minutes.
- Activation of loan evaluation, type of activities of default management.
- Conduct check and report compliance through intelligent agreements
- Enable access by business based on business requirements to other auxiliary services.
- The company will become a new level through renewed confidence in the system.
- Innovations in business models are easy to implement and monitor

Chit fund subscribers can easily register on blockchain with any Chit Fund company by validating the company's credentials. As the whole system is safe, permission-based, blockchain, he can expect some things in this network:

- Full procedure openness and access to chit money.
- End to end apparatuses for tracking based on his consent.
- Choose to share your info only with applicable entities
- Better package due to improved efficiency of operations.
- Network auxiliary services to participate actively in chit funds.

Once the abonnés are included in the system, they can participate in a chit in which they want to be included. The subscriber will benefit enormously as the System matures.

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