A Study on Centralized and Decentralized banking technology

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Abstract— The purpose of this study is to compare the differences between Centralized banking and distributed banking, and to highlight the rapidly increasing use of Decentralized cryptocurrency. Cryptocurrency is not physically printed, and it is not controlled by any banks, unlike conventional currency that is based on gold or silver, cryptocurrencies is based on mathematics which can be freely calculated through available software. Since centralized platforms require all data to go through one place, it's very easy to track information. Decentralized allows far more privacy. Because information doesn't have to go through one point and can instead pass through a variety of access points, it's much more difficult to track information across the network for other users. Thus, the decentralized banking is more secure, robust, and efficient to control

Index Terms — Banking, Cryptocurrency, Blockchain, peer to peer system, Centralized Banking, Bitcoin.

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1 INTRODUCTION

FOR a long time, cutting-edge technologies have comprised the flagship achievements of the centralized banking systems across the globe both economically and socially. The technology behind credit cards and online payments have driven business performance, revenue and customer ease-of-access. Just as early industry disruptors such as PayPal revolutionized the digital commerce landscape of their time, the modern day self-labelled 'Crypto-banks' are challenging the offerings provided by the status quo. They are making fully integrated cryptocurrency-based banking services and payments accessible to every-day users, enthusiasts and entrepreneurs alike. We are still in a transitional period between the centralized fiat finance era and what will become of its co-evolution with decentralized e-commerce. There is potentially a great deal to be gained from being an early adopter of disruptive decentralized currency solutions.

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2 CENTRALIZED

Centralized banking also known as core banking. CORE stands for Centralized Online Real-Time Exchange. As per pure definition Core banking refers to a centralized system established by a bank which allows its customers to conduct their business irrespective of the bank's branch. Thus, it removes the impediments of geo-specific transactions. [1] Core banking is a banking service provided by a group of networked bank branches where customers may access their bank account and perform basic transactions from any of the member branch offices. Core banking is often associated with retail banking and many banks treat the retail customers as their core banking customers. Businesses are usually managed via the Corporate banking division of the institution. Core banking covers basic depositing and lending of money. Core banking functions will include transaction accounts, loans, mortgages and payments. Banks make these services available across multiple channels like automated teller machines, Internet banking, mobile banking and branches. Banking software and network technology allow a bank to centralise its record keeping and allow access from any location.

2.1 HISTORY:

Core banking became possible with the advent of computer and telecommunication technology that allowed information to be shared between bank branches quickly and efficiently. Before the 1970s it used to take at least a day for a transaction to reflect in the real account because each branch had their local servers, and the data from the server in each branch was sent in a batch to the servers in the data centre only at the end of the day (EOD). Over the following 30 years most banks moved to core

banking applications to support their operations creating a Centralized Online Real-time Exchange (or Environment) (CORE). This meant that all the bank's branches could access applications from centralized data centres. Deposits made were reflected immediately on the bank's servers, and the customer could withdraw the deposited money from any of the bank's branches.

2.2 SOFTWARE:

Advancements in Internet and information technology reduced manual work in banks and increasing efficiency. Computer software is developed to perform core operations of banking like recording of transactions, passbook maintenance, interest calculations on loans and deposits, customer records, balance of payments and withdrawal. This software is installed at different branches of bank and then interconnected by means of computer networks based on telephones, satellite and the Internet. Gartner defines a core banking system as a back-end system that processes daily banking transactions, and posts updates to accounts and other financial records. Core banking systems typically include deposit, loan and credit-processing capabilities, with interfaces to general ledger systems and reporting tools. Core banking applications are often one of the largest single expense for banks and legacy software are a major issue in terms of allocating resources. Spending on these systems is based on a combination of service-oriented architecture and supporting technologies. While larger financial institutions may implement their own custom core, community banks and credit unions tend to outsource their core systems to system providers. While there is no consensus or a public register on the actual Core Banking Providers, various Market Research companies like Gartner or Forrester Research release annual deal surveys mentioning platform deals. [2]

2.3 FEATURES OF CORE BANKING:

1. Customer-On Boarding.
2. Managing deposits and withdrawals.
3. Transactions management
4. Interest. Calculation and management.
5. Payments processing (cash, cheques /checks, mandates, NEFT, RTGS etc.).
6. Customer relationship management (CRM) activities.
7. Designing new banking products.
8. Loans disbursal and management.
9. Accounts management
10. Establishing criteria for minimum balances, interest rates, number of withdrawals allowed and so on.

2.4 CORE BANKING SOLUTIONS:

Core banking solutions (CBS) help automate front-end and back-end processes of banks to achieve centralized and smooth processing. These applications offer a single view of the customer and facilitate automation across delivery channels. The concept of CBS has helped banks become one-stop shops for all the financial needs of retail and corporate customers by offering multiple services under one roof. Thanks to CBS implementation, customers can now access their accounts from any branch of their bank, irrespective of which branch the account was opened at.

3 DECENTRALIZED

Decentralized system allows people to engage in trade directly with each other. Instead of relying on the centrally-controlled servers of the companies, a decentralized market operates by employing its users' own computers as the infrastructure. [3] Decentralization is the process of redistributing or dispersing functions, powers, people or things away from a central location or authority. [5] Decentralized systems are naturally occurring, usually self-regulating systems which function without an organized centre or authority. In terms of banking system, the decentralization is assumed under the non-existence or limited interference of financial institutions or governmental authorities, which suppose limited regulations' pressures on banks' activity and decisions. [6] This technology creates a multi-signature vault over a DPN and allows you to store any amount of IoPs on it as securely as any centralized crypto bank or centralized wallet. This is not an app that someone can open and access the funds; it is autonomous software that does its job automatically. That's why it can run on devices of multiple family members, yet no one can see or withdraw an individual's funds except the owner. It replaces cold storage with a massive multi-signature vault which can require up to dozens of devices to sign transactions if needed.

3.1 HISTORY:

The idea of decentralized services is not unique. In the early days of trading, people transacted directly without middlemen. Bakers bought wheat from farmers; cobblers bought leather from herders. As communities and distances between them grew, producers and manufacturers began to transact through middlemen and used centralized market places where producers and consumers were aggregated for efficiency. By doing so, producers could access more consumers, and consumers could access more producers. [3]

3.2 FEATURES:

Robustness
Performance
Digital Currency. Digital currency is a money balance recorded electronically on a stored-value card or another device. Another form of electronic money is network money, allowing the transfer of value on computer

networks, particularly the Internet.[9]
Faster Transaction
Improved Security
Improved data quality
Trust less, does not require trust of any one entity or corporation to work. Even the creator himself cannot manipulate it to his own advantage on his own.
Cheap to send transactions with no extra charges between countries, money can be sent with ease from one end of the world to another in seconds.
Bitcoin debit cards exist to serve as a link between bitcoin and the traditional system, allowing its use even with merchants who do not accept bitcoin directly.
Free from the manipulation which plagues the traditional baking system.
One easy to use currency that is global.
Acceptance gradually increasing.

3.3 TRANSACTION FEE

Unlike the traditional banking system, which can charge quite high transaction fees, bitcoin allows transactions globally with very little cost. The idea that once all the bitcoins are minted, people donating computing power are still given an incentive to do so, while keeping the supply capped and well distributed. The sender of a transaction does include a 'transaction fee' or 'miners fee' with their transactions, typically 0.0001 of a bitcoin or similar, during high network load times this can go up slightly. You can send transactions without a fee and hope miners still include it in their blocks, which they may do at times of low network demand. The small fees add up when thousands of transactions are taking place. This fee goes to the miner who generates the next block. The fees are the incentive to mine when all the bitcoins have been minted. The bitcoin consensus rules mean that no one person can manipulate transaction fees for their own motive. [12]

Comparison	The Centralized Bank	The Decentralized Bank
Definition	Power and authority for planning and decisions rest with top management organized around a hierarchical structure.	Power and authority (with accountability) should be close to the employee and customer.
Decision Making	Rests with senior management	Rests with local markets
Largest Risks	Inflexibility	Inconsistency
Biggest Advantage	Control	Resilience
Other Advantages	Consistent Customer Experience	Market specific pricing, marketing and product design
Cost Savings	Mixed	Mixed
Speed Of Decision	Mixed	Mixed

Table 1. Basic comparison

4 CIRCULATION

Fiat money is a currency without intrinsic value established as money, often by government regulation. It has an assigned value only because the government uses its power to enforce the value of a fiat currency or because the exchanging parties agree to its value. Fiat currency can be printed on-demand. every governing body around the world can create additional fiat currency "out of thin air." It goes without saying that, by increasing the total supply of fiat backed by the previous value, all money in circulation becomes less valuable. fiat currency being "backed" by assets to create the illusion of value, the US Dollar has not been tied to a tangible asset for quite some time. In fact, every US Dollar in circulation is backed only by "the full faith and credit of the United States", and has no inherent or intrinsic value whatsoever.

Cryptocurrency is the decentralized currency, has a fixed supply of money. No more currency can ever be issued beyond that point, this insures the potential to increase in value of currency over time. since there are no institutions "printing" / "issuing" additional funds. The only way to bring additional currency in circulation is through a complex process called "mining." Unlike fiat currency, where one institution is responsible for controlling the money supply, Cryptocurrency is consumer driven. On top of that, decentralized system has multiple points of distribution, as the "mining" process takes place all over the world. Where mining is the process by which transactions are verified and added to the public ledger, known as the blockchain, and also the means through which new Cryptocurrencies are released. [9] Anyone with access to the internet and suitable hardware can participate in mining.

5 DOUBLE SPENDING PROBLEM

Double-spending is a problem unique to digital currencies because digital information can be reproduced relatively easily. It means a transaction using the same input as an already broadcast transaction. Basically, it is a risk that a digital currency can be spent twice. Physical currencies do not have this issue because they cannot be easily replicated, and the parties involved in a transaction can immediately verify the bona fides of the physical currency. With digital currency, there is a risk that the holder could make a copy of the digital token and send it to a merchant or another party while retaining the original. Double spending occurs when a user buys from two sellers using the same Cryptocurrency. The double spending issue can be illustrated in the investing world with an investor Dave who has $700 in his checking account. His checking account is linked to both his investment accounts with Broker A and Broker B. When Dave completes a buy order, the funds are automatically transferred from his checking account to his investment account where the order was placed. Dave buys one stock worth $700 including the trading fee from Broker A and makes the exact same buy order of one stock with Broker B. In a situation where there is a lag in the system and transactions can be processed at the same time, both brokers will receive information that Dave has the required funds in his account, earning Dave two shares instead of one. Fortunately, spending money more than once is a risk that traditional currencies avoid through institutions like clearing houses, banks and online payment systems like PayPal that update a user's account balances immediately a transaction occurs. In order to

solve this problem in the digital currency platform, the maker of Bitcoin created a process whereby each transaction copied onto a ledger is verified by multiple Bitcoin miners distributed across networks. Every Bitcoin transaction is recorded in a ledger known as a block chain, and then stored and copied digitally across multiple networks in the decentralized system. To prevent manipulative users from spending digital money twice, digital copies ensure that every bitcoin participant holds an encrypted digital copy of everyone's bitcoin holdings. Bitcoin miners verify new transactions and add them to the distributed ledgers. The first miner to confirm a legitimate transaction adds it to the queue of new transactions to be included in the ledger and publishes his/her results. Other miners verify the first miner's results before adding the transaction to the ledger queue of their digital copies. Transactions are finally and permanently recorded in the blockchain after 6 miners have confirmed that the user has the necessary funds to complete the transaction. Using the illustration above, the first miner may mark Dave's order with Broker A as legitimate, and cancel his transaction with Broker B given his insufficient funds. If the other miners follow suit, Dave's transaction with Broker A is finalized and recorded in the ledger. In a way, miners act as the clearing house for Bitcoin transactions. With digital copies of Bitcoin ledgers, it is highly improbable for a transaction history to be compromised. A user who tries to manipulate a transaction on the ledger for his own gain would do so in vain as he is only able to change his own digital copy. For a transaction input to be changed on the ledger, the user will have to access everyone's copy which may prove to be highly futile. [10]. The blockchain, which is an open and immutable ledger, ensures that the transactions are finalized by its inputs confirmed by miners. The confirmations make each unique bitcoin and its subsequent transactions legitimate. If one tried to duplicate a transaction the original blocks deterministic functions would change showing the network that it is counterfeit and would not to be accepted. Once a transaction is confirmed, it's nearly impossible to double-spend it. The more confirmations that a transaction has, the harder it is to double-spend the bitcoins. By solving the double-spend problem, digital currency has now become viable. The Bitcoin network changes fast and changes often. To stay ahead of the game it's necessary to follow the news and discuss the latest events with other members of the community. Bitcoin.com aims to be a reliable source of information for beginners and industry insiders alike. [11]

6 BLOCK CHAIN

The block chain provides cryptocurrency public ledger, an ordered and timestamped record of transactions. This system is used to protect against double spending and modification of previous transaction records. Each full node in the Bitcoin network independently stores a block chain containing only blocks validated by that node. When several nodes all have the same blocks in their block chain, they are considered to be in consensus\ Copies of each transaction are hashed, and the hashes are then paired, hashed, paired again, and hashed again until a single hash remains, the Merkle root of a Merkle tree. The Merkle root is stored in the block header. Each block also stores the hash of the previous block's header, chaining the blocks together. This ensures a transaction cannot be modified without modifying the block that records it and all following blocks. Transactions are also chained together. Blockchain is a decentralized database system. Ledgers that store transaction data, are distributed across many nodes. A transaction is a transfer of value between Bitcoin wallets that gets included in the block chain. Bitcoin wallets keep a secret piece of data called a private key or seed, which is used to sign transactions, providing a mathematical proof that they have come from the owner of the wallet. A global network of computers uses blockchain technology to jointly manage the database that records Bitcoin transactions. That is, Bitcoin is managed by its network, and not any one central authority. Decentralization means the network operates on a user-to-user (or peer-to-peer) basis. There are three principal technologies that combine to create a blockchain. None of them are new. Rather, it is their orchestration ... Protocol. A block – containing a digital signature, timestamp and relevant information – is then broadcast to all nodes in the network.

7 PAYMENT VERIFICATION

Each transaction has at least one input and one output. Each input spends the currency paid to a previous output. Each output then waits as an Unspent Transaction Output (UTXO) until a later input spends it. When your wallet tells you that you have a 10 units balance, it really means that you have 10 units waiting in one or more UTXOs. broadcasting a transaction to the network doesn't ensure that the receiver gets paid. A malicious spender can create one transaction that pays the receiver and a second one that pays the same input back to himself. Only one of these transactions will be added to the block, and nobody can say for sure which one it will be. Two or more transactions spending the same input are commonly referred to as a double spend. Once the transaction is included in a block, double spends are impossible without modifying blockchain history to replace the transaction, which is quite difficult. Using this system, the Bitcoin protocol can give each of your transactions an updating confidence score based on the number of blocks which would need to be modified to replace a transaction. For each block, the transaction gains one confirmation. Since modifying blocks is quite difficult.

8 NETWORK

In centralized banking system all the data related to

transactions and customers is stored on a centralized data repository and is available to all networked branches to access. The centralized data repository helps online transaction processing, making it easier and faster. All the branches access this centralized data repository using banking software or application. Recent research revealed that many data centres are still based on 20-year-old technologies, to the point that they are being stretched to their limits because they were never designed for today's always-on, multi-platform, application-intensive environment. A reliance on outdated network designs and technologies is leading to problems that are increasingly coming to light in the public domain. Overly complex networks make the deployment of new applications and service updates challenging, slow and often high-risk, and the cost of maintaining the networks takes up a significant proportion of banks' IT budgets. Combined with infrastructure failures that can take a considerable amount of time to identify and resolve, these issues are increasingly hitting customer satisfaction, creating demand for compensation and attracting the undesirable attentions of regulators. Uptake of online and mobile banking has ensured finance never sleeps with consumers refusing to tolerate outages or limited access to services. [8] Many problems caused due to the centralized server can be eliminated by making the system decentralized. The blockchain is a decentralized, distributed and public digital ledger that is used to record transactions across many computers. The data not being centralized eliminates the chances of data losses caused in centralized system due to server failures. The cryptocurrency network protocol allows full nodes (peers) to collaboratively maintain a peer-to-peer network for block and transaction exchange. Full nodes download and verify every block and transaction prior to relaying them to other nodes. Archival nodes are full nodes which store the entire blockchain and can serve historical blocks to other nodes. Pruned nodes are full nodes which do not store the entire blockchain. The consensus rules are the block validation rules that full nodes follow to stay in consensus with other nodes. Consensus rules do not cover networking, so cryptocurrency programs may use alternative networks and protocols, such as the high-speed block relay network used by some miners and the dedicated transaction information servers used by some wallets.[14]

9 SECURITY

Cryptocurrency transactions are secured by military grade cryptography. Nobody can charge you money or make a payment on your behalf. So long as you take the required steps to protect your wallet, cryptocurrency can give you control over your money and a strong level of protection against many types of fraud. Most security is handled by the protocol, eliminating the need for PCI compliance. Fraud prevention can be simplified down to monitoring a single variable: the confirmation score. Beyond that, keeping your digital money secure is mainly a matter of securing your wallet and using HTTPS or other secure protocols to send payment requests to customers. Cryptocurrency on mobiles allows you to pay with a simple two step scan-and-pay. No need to sign up, swipe your card, type a PIN, or sign anything. All you need to receive Bitcoin payments is to display the QR code in your Cryptocurrency wallet app and let your friend scan your mobile, or touch the two phones together (using NFC radio technology). Any business that accepts credit cards or PayPal knows the problem of payments that are later reversed. Chargeback frauds result in limited market reach and increased prices, which in turn penalizes customers. Cryptocurrency payments are irreversible and secure, meaning that the cost of fraud is no longer pushed onto the shoulders of the merchants.[14]

9.1 PRIVACY

When using digital currency, there is no credit card number that some malicious actor can collect in order to impersonate you. In fact, it is even possible to send a payment without revealing your identity, almost like with physical money. You should however take note that some effort can be required to protect your privacy.[14]

9.2 BENEFITS

1. Advantages of core banking to the bank:
2. Improved operations which address customer demands and industry consolidation
3. Errors due to multiple entries eradicated
4. Easy ability to introduce new financial products and manage changes in existing products
5. Seamless merging of back office data and self-service operations.
6. Advantages of core banking to the customer:
7. The entire range of banking products including savings, deposit accounts etc are available from any location
8. Accessibility through multiple channels, including mobile banking and web
9. Accurate, timely and actionable information about customer relations
10. Single view between bank and customers
11. Redefining the concept of 'anywhere, anytime' banking.
12. Advantages of Decentralized banking
13. Disintermediation takes off both the risk and expense of counterparties and enables more empowerment for users to control their information. Disintermediation here provides a way to be free from third party intervention while performing banking transaction.
14. Faster processing for swift banking experience and lower costs, with lesser complexity in business processes and operations, can be empowered with Blockchains while also creating

avenues for new business models.

15. Since transactions are continuously kept as 'blocks' of records, they are secure, scalable and durable

16. Possibility of failure or intrusion is almost negligible with these ledgers and hence process integrity as well as transparency goes to a new realm here.

17. The quality and speed of data becomes so high, consistent, precise and so real-time that new revenue streams can also be tapped while offering customers seamless and actually-nimble experiences.

18. The special quality of being non-alterable, as immutable ledgers in real time, can help to track documentation and authenticate ownership of assets digitally

19. The quality and speed of data becomes so high, consistent, precise and so real-time that new revenue streams can also be tapped while offering customers seamless and actually-nimble experiences

10 RISK

Distributed ledger technologies (DLT) have the potential to be the backbone of many core platforms in the near future. The blockchain protocol is a special case of DLT, where the consensus protocol creates a daisy chain immutable ledger of all transactions that is shared across all participants. This framework allows for near real-time value transfer (e.g., assets, records, identity) between participants without the need for a central intermediary. While the blockchain technology promises to drive efficiency or reduce costs, it has certain inherent risks. These blockchain risks can be broadly classified under three categories:

1. Standard risks: Blockchain technologies expose institutions to risks that are similar to those associated with current business processes but introduce nuances for which entities need to account.

2. Information security risk: While blockchain technology provides transaction security, it does not provide account/wallet security. Value stored in any account is still susceptible for account takeover. Additionally, there are cyber security risks to the blockchain network if a malicious actor takes over 51 percent of the network nodes for a duration of time, especially in a closed permissioned framework

3. Strategic risk: Firms need to evaluate whether they want to be at the leading edge of adoption or wait to adopt until the technology matures. Each of these options have varying levels of risks to business strategy. Given the peer-to-peer nature of this technology, it's important for entities to determine the right network to participate in, as their business strategy could be impacted by the different entities

participating on the chain

4. Reputational risk: Unlike fintech applications, blockchain technology is part of core infrastructure and will have to work seamlessly with legacy infrastructure. Failure to do so could result in poor client experience and regulatory issues.

5. Regulatory risk: Currently, across the globe there's uncertainty around the regulatory requirements related to blockchain applications. Additionally, there may be regulatory risks associated with each use case, the type of participants in the network, and whether the framework allows domestic or cross-border transactions

6. Supplier risks: Firms may be exposed to significant third-party risks since most of the technology might be sourced from external vendors.

Value transfer risks: Blockchain enables peer-to-peer transfer of value without the need for a central intermediary. The value transferred could be assets, identity, or information. This new business model exposes the interacting parties to new risks that were previously managed by central intermediaries.

Consensus protocol risk: The transfer of value in a blockchain framework occurs by the use of a cryptographic protocol that arrives at a consensus among participant nodes to update the blockchain ledger. There are several such cryptographic protocols that are used to achieve consensus among participant nodes for updating the blockchain ledger. Each such protocol will have to be evaluated in the context of the framework, the use case, and network participant requirements.

Key management risk: While the consensus protocol immutably seals a blockchain ledger and no corruption of past transactions is possible, it's still susceptible to private keys theft and the takeover of assets associated with public addresses.

Data confidentiality risk: The consensus protocol requires that all participants in the framework can view transactions appended to the ledger. While the transactions in a permissioned network could be stored in a hashed format so as to not reveal the contents, certain metadata will always be available to network participants. Monitoring the metadata can reveal information on the blockchain framework to any participant node

11 FUTURE IMPLICATION

For banks where keeping records of transactions made a major part of function and reconciling transactions across individual and private ledgers took so much time, paper and error – a Blockchain is almost a boon. All this has started taking roots and form. In its report in 2015, World Economic Forum (WEF), picked Blockchain technology as one of its six mega-trends mentioning how 58 per cent of the respondents anticipate as much as 10 per cent of global gross domestic product (GDP) to be stored on a Blockchain by 2025.We are already close to 2022, whereby Gartner estimates that ratified unbundled smart contracts will be

in use by more than 25 per cent of global organizations. These would be mostly closely defined and with narrow impact, but smart contracts are slated to jump in popularity over time, and impact on global commerce. That is just the starting of what Blockchains are capable of. There's so much that will change beyond recognition, even if not soon enough, irreversibly enough. Another watershed tipping point is on its way. Where conventional financial transactions are facilitated by centralized financial institutions, a blockchain is a decentralized system in which encrypted transactions are entered into a ledger that is shared by multiple parties.

12 CONCLUSION

Overall, both systems are here to stay for the foreseeable future, although decentralized system has the potential to change commerce, and the financial system as we know it. Both systems have their advantages and disadvantages.

The traditional banking systems networks have been worked on for decades, allowing reasonable reliability for digital transactions although clear times can be long. The traditional banking system is already established, and payments from all major debit/credit cards and cash are accepted almost everywhere although must be exchanged in different countries. Use of cash does not also require an internet connection or any other technology. Manipulation in the banking system has caused incidents such as the financial crash of 2008, bitcoin actually being created due to the manipulation of the banking system and the need for something in the control of the people. Both look like they are here to stay for the foreseeable future, although the rise of bitcoin is causing banks to rethink certain areas like transaction fees and how they link between countries, among other things. The chances are the adoption of bitcoin or other decentralized currencies will increase due to its ease of use and being tamper proof. The developers and community are working on capacity issues which would when the solutions are implemented and coconscious agreed, solve this hurdle. In poor countries with limited access to the internet or areas without electricity such as many places in rural India for example, there are still hurdles to cross there. Both will co-exist for the foreseeable future for the time being, although the world of finances and commerce has the potential for a revolution in how it operates due to the invention of bitcoin and other cryptocurrencies derived from it and the blockchain has other uses, such as smart contracts. Blockchain is an advance in technology, and potentially one that puts more power in the hands of the people. [12]

The explosion of cryptocurrency in the media may make it seem like a dizzying phenomenon that only the most full-time enthusiasts can handle. In reality, the emergence of all-in-one service providers such as these 'crypto-banks' appear to put the power of advanced AI systems and real-time world currency metrics in the hands of any savvy individual. Due to this decentralized nature, crypto-banks provide powerful solutions to a broad range of business and personal users. These include the security benefits of Blockchain without being bound by external regulations that limit their centralized high street rivals. Within the Blockchain, nobody can rollback a transaction, identify a user or block a wallet. Everything is decentralized, anonymous and permanent. [13]

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