Banking on Tomorrow
No Humans Allowed

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Abstract: A DAO is a smart contract which runs autonomously on a peer-to-peer framework such as a blockchain. The DAO and Blockchain are the next rung in evolution of economic entities. The DAO removes human frailty as a factor of counterparty risk and fraud while recording information about the product on blockchain not only allows to keep accurate hard-to-temper track and make more accurate calculations. Both of these make the basic foundation of Automated Bank which can prove to be one disrupting concept for conventional banking processes just like how Double Entry System from the Medici family changed the face of accounting and financial management.

Today the Fractional Reserve Philosophy of Banking and Monetary Policy is being broken by Blockchain and Bitcoin where there is no Central Authority required to carry the fundamental regulatory role. Due to the overcoming of the trust concern in a two-party transaction in absence of a third-party regulator via blockchain, Artificial Intelligence will change the face of conventional banking. This is feasible because adhering Basel III as non-violable makes the technological concept scalable and the automated bank unified as one profitable venture.

Key Words – DAO, Automated Banking, Artificial Intelligence, Blockchain, Markowitz Optimization

Introduction
The basis or the moral imperative for reinventing the industry in the form of “Automated Bank” which doesn’t require any human intervention is the banking flaws that led to the 1998 and 2008 crisis. This wouldn’t have been possible without the development of Artificial Intelligence and its various applications including some like Signature Verification, Image Classifier etc. Today's bank has digital processes but are not digital and automated. On the other hand, various Fintech companies are revolutionizing one or more sub process at a time but none completely changing the landscape or the entire banking chain.

The concept of Automated Bank stands tall on two strong pillars – 1. Blockchain and 2. DAO. Both the path breaking ideas have made it possible to completely waive off the double spending program.

Blockchain
Anywhere there is need for a trusted third party to intermediate the transaction blockchain can be disruptive. Blockchain Technology is based out of Decentralized Ledger System with working on peer to peer network. The global ledger system is maintained by a group using special mathematical aspects to protect these ledgers. The block can store data, processed data (information) as well as transaction within. A block will have the information to continuation to a previous transaction we get blocks chained with each other. Today blockchain has found applications in plentiful ways in a wide spectrum of industries. Blockchain is used in the world of finance as a distributed ledger which stores financial transactions but not limited to cross border currency transactions and money remittance but storing smart contracts for real estate or any other financial asset sale purchase, storing smart insurance contracts etc. Blockchain in future will be used as a standard database. Recording information about the product on blockchain not only allows to keep accurate hard-to-temper track and make more accurate calculations.

Applications of Blockchain:
- Stock Exchange – Stock Transfer, Stock Certificates, Bank Information, Payment Documents, Real Time Data of Stock Prices, Real Time Data of Stock Price Estimations
- Bank Transactions – Loans and Savings, FD Certificates, Payments and Transfers
- Portfolio Management – Stock Prices, NBFC and Insurance Companies various avenues to invest
- Bank Customer Data – Preferences and Transactions – Shopping details, Social Media Updates
- Tickets Purchase and Sell – Concerts, Movies Tickets
- Real Estate Transactions – Property Transfer Papers, Certificates, Payment Receipts, Tax related documents
Decentralized Autonomous Organization (DAO)

A DAO is a smart contract which runs autonomously on a peer to peer framework such as a blockchain. This contract incorporates all the governance and decision frameworks of a typical firm. Consider this the MOA / AOA and the board decision and strategy directive of a firm gets hard coded into a blockchain to ensure 100% adherence to the said rule. The DAO is the next rung in evolution of economic entities. Simply put, the digital representation of a legal economic entity where the rules cannot be broken is a DAO. The DAO removes human frailty as a factor of counter party risk and fraud. Consider this Mr. A and Mr. B decide to open a company together which will invest in only blue chip stocks with a VAR of less than 5% and AAA rating. Today the create a legal entity, hire a manager, deposit money in a bank and give directives to the in form of a board resolution for investing framework. The two major risks here are the manager misallocating and / or misappropriating funds and conflict during the dividend distribution from the financial instruments. Imagine this legal firm transforms into a DAO on a peer to peer blockchain where the board resolution of asset allocation and dividend distribution is coded. This quasi legal entity will use an optimization algorithm to choose the best i.e. the highest yield instruments which fits the parameter and redistributes dividends in an automated fashion.

Till now all corporate entities have acted through people which has two flaws - A. People do not always law exactly and B. People do not agree on the interpretation of the law. Hence code based objective and unified decision framework accepted by the participants at the starting of the exercise is a more robust approach. The world of tomorrow is the world of economic entities written in code and not convoluted legal language.

This is no longer a figment of our imagination but a reality which has raised over 168 million USD via crowd sourcing with over 20,000 retail investors. As time passes, DAOs will form a more complex recursive structure where there would be a master DAO and departments of a company using smart contracts would be the child DAOs. This potentially has revolutionary implications not only in the world of code but also economic theory and organizational structures. DAOs will replace voluntary compliance with pre-agreed decision framework hard coded into smart contracts.

The DAO becomes possible only using large public and private blockchains. As peer to peer nature of blockchain makes it impossible for either counter parties to circum navigate or break the contract. Consider a relationship a tenant and a house owner - their rental agreement would be encoded in form of a smart contract in a global blockchain which in turn in the form IOT blockchain would control the physical premise. As long as the tenant is adhering to the laws and payments are made automatically via the blockchain the tenant receives a private encryption key which unlocks all the doors in the residence. The minute the smart contract ends, expires or is invalidated a new private key for the smart lock is generated which is not shared with the tenant. This will open an entire new economy if sharing utilities and hardware as price of sharing/transaction is 0 due to the peer to peer nature of the blockchain.

DAOs are made possible due to development of blockchains using their native cryptocurrency as a token of transaction. All transactions on a blockchain require a token to validate every transaction. Tokens are the ones which fuel any blockchain transaction. Even the data sources which will trigger certain actions such as selling of...
stock if DAO falls below a certain pre-define number are pre-determined and defined i.e. this smart contract will only except the bloomberg field as DAO as the external data source which has the capacity to trigger the action.

Two or multiple individuals who want to form a DAO will inject the DAO with tokens and the value/volume of the tokens will be proportional to shareholding in DAO. People and legal entities owning DAO tokens can sell it to other entities which leads us to inevitable conclusion - "In the future we will have a secondary active market for selling and buying analogous to our stock market".

DAOs in the market today are open source contract/projects. Due to the nascent nature of this innovation, it is quasi nature in nature in most jurisdictions except Switzerland. Consider the DAO to be the next generation of an automated escrow account. The DAO can contact and interact with external physical entities via creation of a legal entity under which the DAO is sub registered. The DAO can be assigned a house keeper or a curator whose job is to ensure that tyranny of majority does not derail any DAO. Consider a DAO which was formed by investors with a predetermined goal of investing in tech startups which adhere to certain KPIs. Due to the open nature of the DAO one or some entities end up acquiring 51% of the tokens and reprogram the DAO to wire all the money to their account. It is the job of the curator program to ensure that the DAO keeps true to its founding philosophy.

In the future legal drafts, would be secure code and we would have programs where you have to type the terms and conditions of a smart contract in plain English and a DAO interpreter middleware will automatically translate it to a smart code. When this happens, every system will have this interpreter program and blockchains/DAOs will get acceptability as we have abstracted the complexity and the code from general uses. Only then will this become a fact of life rather than a cool innovation which gets only innovators like me excited.

**Literature Review**

The concept of Blockchain was coined by Satoshi Nakamoto in his paper ‘Bitcoin: A peer to peer electronic cash system’ while DAO or Decentralized Autonomous Organization was first implemented by Crostoph Jentzsch in his research draft “Decentralized Autonomous Organization to Automate Governance”. Both these papers evolved the practical implementation of a first-generation DAO entity is provided using smart contracts written in Solidity on the blockchain. These same research works have bolster the formation of the proposed Automated Bank. The fragments of ideas were then clubbed together and the entire chain of banking services.

**Structure of the Automated Bank**

Our objective is to completely disrupt today’s banking models like online trading did for physical brokers. Previously only Atom Bank, a digital bank is the only bank which has received license in the last 100 years in UK to operate. Today the Fractional Reserve Philosophy of Banking and Monetary Policy is being broken by Blockchain and Bitcoin where there is no Central Authority required to carry the fundamental regulatory role. Due to the overcoming of the trust concern in a two-party transaction in absence of a third-party regulator via blockchain, Artificial Intelligence will change the face of conventional banking. This is feasible because adhering Basel III as non-violable makes the technological concept scalable and the automated bank unified as one profitable venture.

The four philosophical legs of the Automated Bank shall be:

- Profit in DNA
- Change is the only constant
- Pro creation i.e. constantly increasing Blockchain Nodes as DNA
- A mutating AI based algorithm at the heart of this self-sustaining immortal machine

The following will be the structure of the Automated Bank:

A nested DAO structure for implementing shareholding i.e. board and departments. The master node DAO will have functionalities of board resolutions and share holding pattern. And command and control structure for various sub DAOs in form of departments. Only two DAOs interact with the external world:

1. Compliance DAO which submits daily report to regulators
2. Sales DAO which will interact with the only outsourced agency used for bad loan recovery and the relationship between the external entity and Sales DAO will be a predetermined index based payout structure where payout is proportional to higher default rates.

Every quarter the risk DAO will push away the bottom 5% of its high-risk loans to its external agency to recover its loan. The audit/compliance/legal department will be bound
by Basel III laws as outer limits. Sales DAO at its heart is the optimization algorithm whose objective/loss function is to make as much money as possible within this parameter. IT systems would be distributed in form of cloud based GPU cluster and peta byte storage spread across not only prime cloud server but also across thousands of IOT devices.

Each fund seeker allows their computer and IOT devices to hold a piece of the master DAO and since hashing works on sequential data every new user gets an updated master blockchain.

Algorithms
Algorithm 1: ANN with Backprop /ANN with Reinforced Learning /Convolutional /Deep Nets /Boltzmann Machines Algorithm:

- Autonomous trading algorithm linked to portfolio optimization algorithm so that portfolio is always dynamically hedged and within the stipulated CRR ratios by the native Central Bank
- Macrofactor - based on macroeconomic trend analysis using optimization algorithm, the recommendation engine will create multiple scenarios of new age situations

About Algorithm:
- ANN (Artificial Neural Nets), is one of the most emerging branch today as in neural net the data which is input can give output irrespective of any hidden layers, further there are two ways supervised and unsupervised learning. Now, ANN is the process of obtaining value is being done with addition of different weights and biases and back propagation leads to finding results with less weights and giving accurate results. Also, while back propagating there is addition of error terms within the outputs. It reduces gradient which is being added by any layer as Gradient adds up and multiplies the gradients prior layers. Back propagation helps in reducing the gradient which is being added in Forward propagation.
- There are different types of ANN including Reinforced Learning, Convolutional nets, Deep Nets & Boltzman Machines

Formula:
\[
J(\theta) = \frac{1}{m}\sum_{i=1}^{m} \left[ \frac{1}{2} \sum_{k=1}^{K} y^{(i)}_k \log(h_\theta(x^{(i)})) + (1 - y_k^{(i)}) \log(1 - h_\theta(x^{(i)})) \right] + \frac{1}{2m} \sum_{k=1}^{K} \sum_{i=1}^{n} \left( \theta_1^{(i)} \right)^2, a^1 = \sigma \left( \sum_k w_{k+j} v_{k} - b_j \right), v_{a}(s) = E_\pi \left[ R_{t+1} \sum_{k=0}^{\infty} \gamma^k R_{t+k+1} | S_t = s \right] \]

P(v) = \frac{1}{z} e^v \sum_i w_{ij} v_i h_{j(1)} \] is called “Restricted Boltzmann Equation”.

Algorithm 2: KNN & K-Means:

About Algorithm:
- kNN & k-means is easily obtained by finding the distance between any two given set of events (data, cluster, group etc.). This is done on the Euclidean
distance equation stated as follows:

\[ d(x_{(i,j)}) = \sqrt{\sum (x_{(i,k)} - x_{(k,j)})^2} \]

Or

\[ d = \sqrt{\sum_{i=1}^{k} (x_i - \bar{x})^2 + (y_i - \bar{y})^2} \]

With the help of k-means, on an average we can predict and find the best value for a given cluster and classify the data also we can introduce new data set for a given cluster by the averages and means we have obtained.

Algorithm 3: SVM (Support Vector Machines)

- **About algorithm:**
  - Support Vector machines, is about constructing hyper planes for classifying and doing regression on the data given which can either be under supervised way or unsupervised way. If, unsupervised is taken then it forms new hyper plane on the basis of given dimensional space.
  - This algorithm is basically, vector based classification so it takes care of the dot product of each given set of data. Hereby, giving each data equal chance and choosing values very minutely on dot product basis.

- **Formula:**
  - In support vector machines, by taking a point vector and dividing it into two ways part we obtain one to two vectors similarly, one to many vectors are obtained in a data.
  - \[ C = \frac{1}{n} \sum_{i=1}^{n} \max(0, 1 - y_i (w \cdot x_i + b)) + \lambda ||w||^2 \]
  - \[ c_i = \max(0, 1 - y_i (w \cdot x_i + b)) \]
  - minimize to \[ \frac{1}{n} \sum_{i=1}^{n} c_i + \lambda ||w||^2 \]
  - subject to \[ y_i (w \cdot x_i + b) \geq 1 - c_i, \text{ where for all values of } i, \]
  - \[ c_i \geq 0 \]

- By the above equations all Support vector machines works and further few changes are done in \( c_i \) to obtain different formulae like by adding dual sigma Dual problem is solved, by adding \( \varphi(w) \) Kernel is done, by adding \( \Delta(w) \) Kuhn Tucker conditions are done respectively.

Algorithm 4: APRIORI

- **About algorithm:**
  - APRIORI algorithm, by the name APRIORI it can be easily understood that on the basis of any priority an association is predicted between set of data.
  - So, in general, APRIORI is useful to find maximum prioritize data item or say frequently affecting and associated between or within any group or set of data and determining significance of association between them.

- **Formula:**
  - To obtain an APRIORI we shall define an item set say X, and another set say Y. while the set of all item set is defined as I, so let’s say there will be rule of implication as \( X \Rightarrow Y \) and \( X \cup Y = 1 \) and \( X \cap Y = \emptyset \)
  - Also, whenever, any transaction has been taken place, we define it as, \( T = \frac{\text{supp}(X)}{N} \)
  - The confidence at which this APRIORI is calculated is as below:
    \[ \text{conf}(X \Rightarrow Y) = \frac{\text{supp}(X \cup Y)}{\text{supp}(X)} \]
    Or we can say conditional probability also, \( P(E_1|E_2) \) and value of lift i.e., whether this will be lifted or not as: \( \text{lift}(X \Rightarrow Y) = \frac{\text{supp}(X \cup Y)}{\text{supp}(X) \cdot \text{supp}(Y)} \)
    and the conviction value of an item will be determined on this formula:
    \[ \text{conv}(X \Rightarrow Y) = \frac{1 - \text{supp}(X)}{1 - \text{conf}(X \Rightarrow Y)} \]

Algorithm 5: Optimization

- **About algorithm:**
  - Optimization is a simple method of finding optimal value by minimizing or maximizing the given value function of the data.
  - The best value of any given function can be found by determining best feasible solution or value of given set.
The local maxima or local minima and global maxima or global minima helps to find feasible and optimal solution.

- Formula:
  - Here, we take a graph or slope equation say $y = f(x)$,
  - For maximum value finding it is:
    \[ f(x_0 + h) - f(x_0) < 0 \text{ or } f(x_0) > f(x_0 + h) \]
  - And for minimum value finding it is:
    \[ f(x_0 + h) - f(x_0) > 0 \text{ or } f(x_0) < f(x_0 + h) \]
  - Here, $h$, is taken as any arbitrary small value.
  - Below given is the diagram showing optimization:

Algorithm 6: Hidden Markov Models

- About Algorithm:
  - In Markov Models, the state of transition probabilities takes place between input and output while, in Hidden Markov Models such transition probabilities takes place over Hidden Layers in spite of knowing all parameters (variables) of model.
  - In Hidden Markov Models, the state of transition probability is not visible but in output layer this hidden value is visible, thus it said Hidden Markov Models as this state of transition is unknown(hidden).

- Formula:
  - Let us suppose:
    \[ (Z_0, Z_1, ..., Z_n) \in \{1, 2, 3 ..., m\} \text{ and } \begin{align*} X_1, X_2, ..., X_n & \in \mathbb{X} \\
    X & \text{ for discrete } \mathbb{R}, \mathbb{R}^d \end{align*} \]
  - Now, let the initial state of input layer is as follows:
    \[ P(X_1, X_2, ..., X_n, Z_1, Z_2, ..., Z_n) = P(Z_1|X_1) \prod_{i=2}^{n} P(Z_i|Z_{i-1}) \]
    \[ P(X_1|Z_{k-1}) \]
    \[ \sum_{i=1}^{m} \prod_{k=2}^{n} P(Z_k|Z_{k-1}) \]
    \[ \sum_{i=1}^{m} \prod_{k=2}^{n} P(Z_k|Z_{k-1}) \]
    \[ \sum_{i=1}^{m} \prod_{k=2}^{n} P(Z_k|Z_{k-1}) \]
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    \[ \sum_{i=1}^{m} \prod_{k=2}^{n} P(Z_k|Z_{k-1}) \]
    \[ \sum_{i=1}^{m} \prod_{k=2}^{n} P(Z_k|Z_{k-1}) \]
    \[ \sum_{i=1}^{m} \prod_{k=2}^{n} P(Z_k|Z_{k-1}) \]
  - Then the transition matrix will be as follows:
    \[ T(i,j) = P(Z_{k+1} = j | Z_k = i) \]
    \[ (i,j \in \{1, 2, ..., m\}) \]
  - Thus, further with Baum Welsh estimation we get:

Automated Bank Features

Technology Breakthroughs which made this possible - 2012 ANN, 2016 DAO, 2008 Blockchain, 2017 Automated Bargaining

The concept of Automated Banks could not be even contemplated without certain break throughs including the double count problem and the vanishing gradient problem solved by blockchain and modern neural nets respectively. Add to this the formation of the first DAO in 2015 provided the right framework for creating a completely autonomous automated digital bank. The oldest innovation in the bunch is 8 years old - Satoshi Nakamura’s paper in 2008?? Hence the time for creation of such innovative vehicles is a part of today’s zeitgeist.

How three major department will bargain with each other?

The fundamental philosophy can be broken down into three verticals which are always in conflict with each other. We have seen that to a large extent this internal strife between the sales department and the risk department if managed properly can lead to enormous benefits and hence without an automated bargaining algorithm where the base lines and boundaries are set via a DAO framework this would not be possible.

The three verticals are

- Vertical which borrows money from repo market, central bank, customer deposits
- Treasury department whose job is to optimize the income generated from the financial instrument such as short term bonds and borrowing while staying within the risk parameters set by Basel and their respective central bank
- Vertical which lends out money integrated into this bank in the form of a proprietary loan automation system

Basel III Regulations
Basel III and the overarching framework established by Basel has been enormously in the process of the creation of this framework as Basel set the risk boundary conditions and quantified all mandatory ratios which got integrated in form of a DAO contract.

Markowitz Portfolio Optimization

While creating the portfolio optimization DAO, inspiration has been derived from the Markowitz formula which is considered to be the foundation of modern portfolio theory created by Henry Markowitz (Give Formula here)

Borrowing from CBLO and Repo

Every central bank and BASEL mandates maintenance of a basic CRR and SLR levels but ideal money earns nothing. Hence the treasury department of each bank borrows money from repo market and central market window based on estimated outflow and EOD M2M for maintaining the requisite CRR and SLR. In our DAO this is carried out using an bounded expectation maximizing algorithm – where the CRR and SLR ratios are my bounded variables.

Electronic Security

Electronic Security is unique not only because of our robust encryption protocol (AES - 256) but also due to the fact that the DAOs are hosted on a public private blockchain and it’s impossible to tamper with transaction history due to the successive hashing feature of the blockchains.

Securitization of Asset for LAP and how is it converted to a Smart Contract

One of the primary issues in any digital bank is double count of assets pledged with the banks for loan collateral purposes. The question was solved by applying the same principles by blockchain to stop the double spending problems. Hence an open source repository of assets pledged will be maintained by this automated bank for public consumption both in form of data dump and in form of a blockchain where financial institutions across the globe can access this to solve the double count issue.

Recovery - Selling high PD loans via CDO and selling the CDO in open exchanges

The two aspects of the bank which cannot be automated i.e. solved without human intervention are maintaining an ATM network and recovery of loans. To solve these two specific problems an outsourcing model is employed in form of shared services for ATM and selling of the bottom 5% loans with respect to default probability calculation to external agencies for manual recovery. This way the quarterly clean-up of high PD loans keeps the loan portfolio healthy and a genetic algorithm is employed to calculate the weakest link in loan applications.

Breaking down the loan asset like REIT so that fractional part of the asset can be sold

In a global market, which has seen increase in the number of default over the past decade decoupling of the assets pledged to the bank is becoming a necessity. Using a methodology analogous to REIT we securitize each asset not as a single token in a DAO but as a group of tokens where disposing one token in the group is analogous to selling of one flat in the building. If a buyer in the whole building cannot be found.

The role of liquidator, broker, Valuer, lawyer

The roles of liquidator, brokers, valuers and lawyers are taken over by smart contracts built over a block-chain. Now a Lawyer will not be needed due to the binding of the agreement in a Smart Contract.

Sendtex Type Trading Automation in Python using Quantopian

The algorithm which has Markowitz and expectation maximization framework as its foundation has been plugged in to the financial networks and exchanges and used Bloomberg terminal data as a price benchmarking mechanism. The portfolio algorithm instructs the automated trading algorithm to execute both sell and buy orders.

Automated Loan

The Loan automation process is a 14-step process across the life cycle of the loan:
Step 1: Our system scraps the internet and all relevant data bases for user information right from social media, credit card data bases, internet, deep web, financial data bases. This gets stored in our distributed databases across the world. This is based on highly combinatorics mathematics based Data mining. We even store and scrape meta data.

Step 2: Our proprietary algorithm then sorts through the unstructured data and then identifies and demarcates them into socio economic buckets based on which we can send then relevant proposals. For example, one of the socio-economic types is students in the final year of their educational course - to these profiles we send options and proposals for student loans.

Step 3: Automated accepted proposals shall be reverted with successful response to the right users via SMS, voice calls, email campaigns and social media campaigns.

Step 4: The user comes to the One Form page on the Loan Approval site

Step 5: Fills up the form and selects the amount and duration

Step 6: Fills up basic details for KYC including selfie if the user has no passport size image. The image goes through the following:

- Porn Filter
- Face Identifier
- Facial Recognition
- Gets cross compared with pictures gather both from internet and the deep web to run biometric comparisons
- Meta data tags are extracted to add another layer of fraud analytics

Step 7: Our Algorithm checks all the data with various external data bases:

- CIBIL
- National Identity Data Base
- Other Credit Reports

Step 8: Credit worthiness check by our credit risk & score algorithm which even incorporates a social media graph analysis. Here apache nutch and duck duck go is used along with meta data search for finding the right data. For retail and corporate we scan the below mentioned data sources to create a credit profile from Social Media accounts and News sources.

For only corporate we also gather the following data:

- FOREX data (167 Currencies)
- Weather Data (Past data for doing regression model creation and future data for creating predictive models)
- Financial Data of all public limited firms
- Financial Data for Analysis of each firm

Step 9: Bank data bases are used to train AI programs and Neural networks

Step 10: The trained ANN analyses the loan application

Step 11: Loan is disbursed to a digital wallet and then goes to a newly created account in the bank but the account is not activated.

Step 12: Banks carry our physical KYC: we help using a scheduler

Step 13: Account gets activated

Step 14: ERP patch or free SAAS based ERP or a cookie is used to monitor the loan applicant during the whole tenure till maturity

Other features of the proposed entity

- Machine Learning Algorithms Big Data Sets on which ML and ANN will be applied (Past Transactional Data, Web Scraping, User Social Data, Financial Markets via Bloomberg including intraday bank to bank daily lending repo rates and CBLO (India) and SEC window (USA) continuous ping
- BASEL processes to be encoded as boundary conditions using a complete language for creating a DAO.
- Mobile App to gather all data for marketing analytics
- Free Fitbit to all its customers to monitor health parameters for insurance verification
- Emotional Quantification Technology including lie detection integrated during the loan automation process
- Jurisdictional Analysis and International Reach
- Due to Cost the POC should be carried out in an offshore bank license with international status
- Automated Contact Escrow Services via DAO to be a main feature and we will launch it via SAAS model so that customers in the world can create the Smart Contracts
with a unique user interface (with legal terms and conditions as dropdown) so that no technical skill is needed to create a DAO / Blockchain based Smart Contract

- Tying up with ISDA for taking pre-dominant market share in OTC derivate market and automation of ISDAs – Providing this ISDA service to all derivative players in the world
- Robot Advisory for Wealth Management
- Emotional Quantification Technology including lie detection integrated during the loan automation process

Conclusion
DAO revolutionize economic entities from dusty contracts in lawyer offices to open source code on a public blockchain. While Digital Banks are inevitable but as evolution has taught us faster, cheaper and better wins over; a completely Automated Bank can be the beginning of a new era in banking. The flaw is 20 years ahead of regulation and banking is regulated so trickling down impact of these technologies in highly regulated market will be slow as the BFSI lobby would not let past legislation which would drastically eliminate human resource requirement in a bank. However, the contrarian view is going to be taken by the investor fraternity who will champion this innovation as a methodology for earning higher yields and elimination of human flaws and frailty from investment decision process. The best example of the same is the rising volume of algorithmic trading.

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