Blockchain bringing Paradigm Shift in Indian Governmental Society Functioning

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We probably use algorithms in our routine life; the power of the algorithm comes from the fact that technology can follow the steps quickly and accurately. Blockchain is a new-age technological algorithm which has the power to disrupt many industries; very similar to how the Internet was in the early 1990s. And we see countries and states around the world experimenting with that technology. Blockchain has achieved a strapping hold to be converted into a history altering technology that will prelude to a decentralized potential with real-world use cases. Blockchain is putting its whereabouts in emerging countries like India by track building the ecosystems, shaping the civilization, cater issues pertains to humanity, etc. with the help of government functionaries to shape the civilization. In 2019 it had been envisaged that blockchain technology will be adopted by more mainstream sectors. But the query remains unanswerable: "Are we at the height of a history shifting know-how that will coerce enormous social blow, or is blockchain the most up-to-date tech buzzword more smash than objects?"

Introduction

A block in a blockchain is an anthology of data. Blockchain is a Distributed Ledger Technology (DLT), which simply means that a ledger is spread across the network among all peers in the network, and each peer holds a replica of the complete ledger. Blockchain technology offers a safe and sound, speedy, and cheaper medium of carrying out online transaction and online transfer of information without the need of third party authentication. The intention behind this title *"BLOCKCHAIN BRINGING PARADIGM SHIFT IN INDIAN GOVERNMENTAL SOCIETY FUNCTIONING"* is to throw a light on how blockchain not restrict to cryptocurrencies but bringing a change in society as a whole by its application. In a coming years you will see how blockchain will be applicable from underneath to pinnacle in each of the sectors.⁻

The Roots of Blockchain's Potential

The Internet as we be familiar with it is enormous for coalition and communiqué, but extremely incompatible with regards to commerce and privacy. The new blockchain innovation encourages peer-to-peer transactions without the need of any middlemen or intermediary such as a bank or governing body. Keeping the client's information anonymous, the blockchain validates and keeps a permanent public record of all transactions. It gives an opportunity for technology start-ups for creating and utilizing the technology for multiple assorted applications. The blockchain innovation was brought in 2008 when Satoshi Nakamoto made the primary digital currency or cryptocurrency called Bitcoin. The Bitcoin blockchain technology utilizes a decentralized public ledger combined with PoW(Proof-of-Work) based stochastic consensus protocol, with financial incentives to record a totally ordered sequence of blocks, the blockchain.

Misconception

It is the fundamental technology that makes crypto currencies possible. A blockchain is a digital, secure, public record book of transactions (a ledger). "Block" describes the way this ledger organizes transactions into blocks of data, which are then organized in a "chain" that links to other blocks of data. There is a lot of hype, fallacy and misconceptions related to blockchain. Though the concept of decentralized ledgers has been around for a while, blockchain became popular with Bitcoin, the first-ever blockchain application. Provided the anonymity and lack of regulations in the space, Cryptocurrency was widely

adopted by the parallel economy and faced resistance from many nations. This created a reputation problem for the term blockchain itself, as people perceived it as synonymous to Cryptocurrency. However, the widespread awareness about the technology and its footprint in a variety of sectors other than finance, blockchain has been rebranding itself. As per a study by Stanford University, 55 percent of blockchain initiatives for social well-being have been showing an impact. Projects related to democracy and governance has been the most significant in its impact.

Adoption by Government Entities: International Examples

Internationally, blockchain technology has demonstrated to be a change-producer. Some of the below mentioned thought will give a glimpse towards its application in a worldwide perspectives.

- The South Korean government is now considering to use this evolving technology in the electronic voting system.

- Australia's National Transport Insurance (NTI) is planning a blockchain trial to help ensure the safety of food.

- The government of Dubai, through the Global Blockchain Council, intends to roll out blockchain initiatives in key departments such as education, transport, energy, and healthcare.

- Russia is practicing blockchain based system for its land registry management and also to improve the local voting system.

- The Dubai government is on its way to execute blockchain-based paperless digital systems in visa

applications, license renewals and bill payments.

- Blockchain-based system is being used to process, accumulate and store patient health records by Estonia's eHealth.

- Estonian government has been one of the early adopters of this technology to enhance security, efficiency and accessibility of the country's government services.

- Gates Foundation with a Mojaloop, an open-source payment platform developed a project which tries to interface financial institutions and payment providers to enciurage payments and information sharing through blockchain.

How Does it Work? (Application)

Use of blockchain in Bitcoin is just a single application of the blockchain, which has been tried and tested across industries. Blockchain-powered smart contracts, where every piece of information is recorded can enhance ease of doing business. It will enlarge the reliability, precision, effectiveness and efficiency of a contract at the same time as reducing the risk of frauds, to a large extent. The technology could play a critical role in health insurance claims management through reduction of risk of insurance claim frauds. In the today's world of artificial intelligence and Internet of things, Blockchain technology can be proved to be game changer as millions of devices would need to rapidly and effortlessly transact with each other in the real time.

How Indian Government is taking Blockchain Technology

India, as the biggest democracy, needs a revolutionary technology to reform major sectors including

agriculture, healthcare, financial services, real estate and others. The fresh developments in blockchain technology and the outlook of the leaders and bureaucrats on blockchain are in favour of India capitalising on the technology. In one of his speeches, Prime Minister Narendra Modi mentioned, "India's youth can lead a revolutionary movement using Artificial Intelligence and blockchain technologies with value addition" during a parliament budget session in 2018. Finance Minister Arun Jaitley acknowledged the value of blockchain and assured the government's commitment to exploring the utilization of blockchain to usher in the digital economy. During a parliament budget session in 2018, he acknowledged the value of blockchain and assured the government's commitment to explore the make use of blockchain for accompanying in the digital economy.

How India Acclimatize with the Block chain?

If we talk about India, let's start with the government of India which is already well aware of the benefits of Blockchain application through various use cases and proof of work. But the government of India is yet to formulate a Blockchain regulatory framework which will address multiple problems including the lack of talent in the Blockchain industry and figuring out who will bear the cost incurred in the maintenance of the entire network and the validation of transactions. Also, RBI has banned the popular application of Blockchain - Cryptocurrency which has its own negative impact on the Blockchain industry.

CASE STUDY OF NITI AAYOG WORKING ON BLOCKCHAIN

Blockchain can be a key driver for ease of doing business. "Blockchain brings ease of collaboration

for enterprises and ease of living for citizens by bringing in transparency" this is what quoted by Niti Aayog CEO Amitabh Kant during a session at International Blockchain Congress, Hyderabad, 2018.

NITI Aayog, Indian government's premier policy, co-hosted the biggest blockchain conference in Asia, International Blockchain Congress 2018 with the state governments of Telangana and Goa. Through events such as this NITI Aayog is also exploring opportunities to deploy blockchain technology in industries including drug and fertilisers. The Indian government needs to play a crucial leading role in allowing the application of blockchain technology in vital areas such as disbursement, land records, health records, e voting, supply chain and others. Countries worldwide had to improve and revolutionize the legal system to make them bring into play blockchain technology.

- NitiAayog, an Indian government think-tank, partnered with the technology giant Oracle and Apollo Hospitals. By integrating blockchain technology and a distributed ledger, the project aims to create immutable records of each pharma transaction that will be shared by the whole supply chain

- For squeezing the problems in the country in areas like land registry, health records and fertilizer subsidy distribution, the organisation is taking a shot at applying this blockchain technology. Also for fully traceability of medications and drugs from producers to customers for protecting the citizens from the hazards of the false and spurious medicines, blockchain will turn out to be useful.

- Oracle's blockchain software permanently enlists a drug's record in the manufacturer's drug supply chain thereby leaving no scope for record altering and tampering. From here on, at every point of hand change, it records the drug's movement – from manufacturer to logistics, from stockist to hospital, or from pharmacy to customers. And in case of a fake and false drugs or medications, the software will detect abnormality and report the concerned nodal point. furthermore, Oracle IoT provides functionality to track vital information like chemical ingredients of the drug or maintenance of temperature control in case of life saving drugs or vaccines.

Social Areas where Blockchain can prove to be a Game Changer in India

The below mentioned table tries to explain the functioning and applications off the blockchain technology in various areas or sectors:

S.NO.	Sectors	FUNCTIONS AND APPLICATIONS
	Banking Solutions	• Decentralized ledger will keep an effective track of transactions between two parties in a verified way. • Blockchain technology has the potential to change the face of banks in various business areas such as payments, money transfer, loyalty, record keeping, asset management, loans and other back-end functions by enhancing the security, spend as well as operational efficiency of the banks. • It will eliminate all the intermediaries in the payment processing system. • It will also lead to reduction in transaction cost or processing cost. • Using blockchain technology, customers can receive verification in hours or minutes, which traditionally used to take 1-3 days. • It can also be used for improving various regulatory processes like KYC, AML and fraud.
	Citizen Journalism	• Blockchain may hold interesting potential in the news industry. Its decentralized ledger system can potentially help distribute content, pay journalists and do other things. • This model will create a greater level of control for publishers based on future revenue, and maintain a better relationship with writers who can get paid on time. • Blockchain journalism and all of these projects want to give more power to the people and publishers to put faith back in media.
	Music Industry	• Through blockchain technology, artists will be able to directly connect to their fans. Thereby removing all the intermediaries or mediators in the music business. • Through blockchain artists will become entrepreneurs as it will let them control their royalties.
	Healthcare	Blockchain can be used as a tool of facilitating data sharing simultaneously maintaining confidentiality too. This will remove the problem of scattered and false medical records with inconsistent data.
	Education	• Blockchain will save the files or documents prepared by students and institutions from theft or plagiarism or forgery of digital signatures. • It will lead to Accreditation of credentials.

CYBER NOMICS

	Agriculture	• Blockchain will reduce the problem of low income by providing transparency in supply chain which facilitates farmers to get the real price for their production. • It will lead to empowerment of small farmers by elimination of middlemen and establishing the direct link between farmers and consumers or retailers. Also small farmers can organize themselves to reach the market together. • There will be availability of data for farmers related to the climate, seed quality data, demand and sale price , etc at single platform.
	Power Sector	Blockchain will have a 5D impact in the power sector: • Digitization, • Deregulation, • Decentralization, • Distribution, and • Democratization. Through blockchain people will be able to trade power within a peer-to-peer market.
	Supply Chain	• Implementation of blockchain technology in any supply chain can yield substantial benefits by eliminating the middlemen and enable trade directly between producers and consumers.
	Judiciary	• Blockchain will enable protection of digital expressions of evidences, thereby all the parties will have access to all the appropriate information • Blockchain will also lead to a complete digital experience to the courtroom infrastructure in which different parties will be able to add record and distribute their inputs digitally. • Most significantly, it will lead to cryptographically sealing of evidence.
	E-Governance Initiatives	Blockchain technology is being used by a number of State governments like Telangana, Karnataka, Andhara Pradesh, Gujarat and Maharashtra for their E-governance initiatives. Andhra Pradesh government is using the technology in land records and transport.
	Linking Blockchain With Aadhar	Blockchain will be helpful for creating a secure personal identity for all Indians.
	Critical Citizen Information	Blockchain is capable of maintaining all the critical citizen information including census data, electoral rolls, and land records, criminal recods and others.
	E-Voting On Elections	• People will not be able to vote twice because there will be an absolute and indisputable record of their identity and vote. Also there will be no deletion of votes as well. • Results entered and stored on the blockchain are not just immutable and transparent, however—they're also immediately available. That means conducting our elections on the blockchain is not only safer but also more efficient
	Ai Data Privacy	Integrating Artificial Intelligence with Blockchain will lead to Secure accumulation of Data. Also With AI accompanying Blockchain at the time of an e-contract, the data owners have the complete transparency of the proceedings and with AI monitoring the process, it can instantaneously notify and flag if there is a breach or fraud in the data inserted and processed.
	Peer-To-Peer Lending	Disruption technology Blockchain has some fantastic features such as public and private layers, smart contacts, etc which can optimize Peer-To-Peer lending process by: • Reducing time as it is much faster than conventional methods of taking a loan. • The peer to peer loans offer better rates than traditional loans. • Reducing or even eliminating the intermediate financial intermediaries • Providing better flexibility to borrowers as some of the P2P lending platforms offer loans with negotiable interest rates and time span.
	Insurance	• As the data is absolute, decentralized and unassailable, false billings and tempered documents are more averse to be neglected. Insurers could minimize their loss-adjusted expenses and tone down identity theft and cyber liability losses as well. • Blockchain can be useful in verification and validation of authenticity of documents. It is because of the fact that it serves as a cross-industry, distributed registry with all the external and internal consumer data. This will solve the most serious issue of huge time taken in detection and validation of fraud.
	Philanthropy, Aid And Donors	• Crypto-philanthropy refers to the utilization of blockchain technology to facilitate charitable contributions. It facilitates organizations to raise donations or funds and efficiently by offering an unusual solution, with decentralized and direct transactions • The numbers of charitable organizations that are embracing cryptocurrency as a donation method are growing at presnt. • Total transparency, Global and decentralized, Digital agreements, reduced expenses, and reduced taxes are a few noteworthy advantages for charitable organizations and donors as well.
	Waste Management System	Blockchain technology can be used in waste management system. For example: China is using the RFID technology.
	Trading Platforms	There will be crucial and significant changes on our trading platforms with the usage of blockchain technology as the risk of operational errors and fraud will be minimized. NASDAQ and Australian Securities Exchanges are a few examples.
	Security Market	Blockchain can play an important role in the security market by removing the intermediaries in asset rights transfer and reducing the asset exchange fees as well as the instability in the security market.

Concerns / Challenges

- Blockchain technology is expensive to initially put it in place.

- The massive usage of energy is required for the functioning of blockchain.

- As blockchains are usually open ledgers which everyone can see, safeguarding and protection of the privacy of individuals and companies is a matter of worry.

- Knowledge of the benefits of distributed ledger technology is still limited.

Future Predictsions

- It is expected that the blockchain technology will lead to high cost savings, and banks alone are expected to minimize the infrastructure costs by $15-20 billion by year 2022.

- It is indicated by the World Economic Forum that this emerging technology will be used by 25% of banks by year 2020.

- It offers a high-security as well as low-cost way of sending payments which slice down on the need for verification from third parties. Also it thrashes processing times for traditional bank transfers.

- It is believed by 90% members of the European Payments Council that blockchain technology will turn out to fundamentally change the industry by 2025.

Conclusion

- This is encouraging enterprises to come up with more blockchain products. The past year has been a year of proofs-of-concept and pilots demonstrating use cases of the blockchain. However, corporations across the world now understand its potential to address key business problems. Well-made blockchain initiatives will not only eliminate intermediaries and cut down costs, but also offer greater traceability and transparency to business processes. Apart from this, there are various industries where blockchain hopes to bring about transparency. Even under the healthcare umbrella, there are several blockchain companies working on bringing transparency and security to patient records, DNA database creation and genomics. Finally it is a It's powerful because it allows multiple parties to collaborate and come to consensus without any need of third party
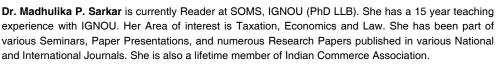
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