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Blockchain the road ahead with context to Indian Economy

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Abstract
Blockchain can be termed as an economic innovation with which you either agree or disagree but just cannot ignore it. Moving towards a digital economy blockchain will turn out to be the key point in being able to achieve this dream. In the era of Artificial Intelligence and limited human intervention blockchain will be the need of the hour.

Keywords: blockchain, Indian economy, digital economy

Introduction
Remember the times when long ledger books were maintained and produced for inspection to maintain transparency in transactions now think of an online version of this story and that's were blockchain appears. Blockchain as the name suggest is a chain of data structure following certain protocols, a term which has taken the world of Finance and Technology by storm. Blockchain is aimed to revolutionize the speed and efficiency of transactions. Although Bitcoin seems to be the most discussed topic of blockchain, this white paper aims to explore how or whether Indian Economy benefit from application of block chain technology.

Global Statistics on Blockchain
As per Deloitte Assocham report we currently have more than 90 central banks discussing implications of block chain. 80% of these banks have predicted to initiate block chain transactions making it a new phase of financial service. Quite a few numbers of banks have already tested proto types of blockchain technology in 2017 with the aim to understand its best use.
Blockchain technology could give rise to what IT research firm Gartner calls "the programmable economy", whereby making the transaction networks programmable with limited human intervention. The firm also went ahead in predicting that block chain will add $176 billion in business value by 2025, and $3.1 trillion by 2030.

Indian Economy
With estimated population of 1.34 billion, India stands to be seventh largest economy in the world an approximate 18% of the world population. By 2050 India's economy is projected to be second largest economy by World Economic Forum. India will soon overtake china as world most populous country with world's largest youth population.
In 2016, the government implemented demonetization policy with the purpose of controlling black money transaction and curb on the tax evaders. People were divided in favor and against this step, slacking of GDP in the first quarter of 2017 founded its roots in cash crunch. The policy did not went well with the average Indians, there was still a sunshine in this scenario. As reported by world economic forum there was increase in digital transaction post demonetization. This led to increase in transparency and tracking of transaction within the economy became easier for authorities. This growth in digital economy can be considered as rays of hope for Block chain technology.

Some of the key advantages of implementation of blockchain to Indian Economy are
- Reducing transaction cost and streamlining the complex trade finance procedures
- Increased transaction speed making it real time transaction even for cross border, removal of middle man and abiding to accurate mapping at each stage
- Overall benefit for the entire ecosystem
- Reducing frauds and increasing transparency, tab on illegal transmissions

Intersection of Indian Economy and blockchain
We as a country still strive more on informal transactions, huge part of our population living in small villages would still approach a landlord for loan rather than banks. In order to be digital economy the first hindrance is getting bank accounts for one and all; subject which is currently being on a priority list for the government.
In this year's budget our Finance Minister Mr. Arun Jaitely made one comment on cryptocurrencies which read as:
"The Government does not consider crypto-currencies legal tender or coin and will take all measures to eliminate use of these crypto-assets in financing illegitimate activities or as part of the payment system."
There are two aspects of crypto currency one is the trade part, where the individual profits by trading the currency on exchange and second is the technology part which aims to make the transaction, smooth, transparent and on real time basis. The architects of black chain technology have always said that the real value lies in the technology part.
Currently, the impact of block chain is being globally felt as its presence and capabilities is said to change the way a person

perceives the internet to be. It is becoming a part of financial institutions around the world, but what would be its impact in India and how would such technology benefit the Indian economy, remains to be of uttermost curiosity.

The Reserve Bank of India (RBI) has successfully tested the block chain technology for the application of trade. A pilot study was conducted by the RBI on domestic banks and other financial institutions. However, block chain is being adopted in stock exchanges and trade platforms in India.

Andhra Pradesh is working hard in implementing block chain technology along with a Swedish start up Chroma Way. Although the purpose of the service is to have a digital land register system which can support people to collateralize property, get timely loans, and invest against asset. Tracking of owners through block chain can help in preventing frauds, errors and at the same time ease the administrative hassle faced currently. The state has joined hands with WISekey for securing citizens data as well.

When we indulge in online transactions our unencrypted personal information gets stored all over the internet creating a motive for hackers to breach that service and misuse the personal details. With use of block chain only encrypted relevant information will be released when necessary.

During a recent event on technology summit, Maharashtra's chief minister has also called upon the industry leaders and researchers to device ways in which block can help in e-governance operations.

Blockchain role in banking and financial sector

A study conducted by World Economic forum suggests that banks and financial regulators are bound to test multiple pro to types of block chain in 2017-18. Even the non-financial sectors like healthcare, telecom, life sciences, and telecom and hospitality sectors are also closely monitoring the progress in block chain with the sole purpose of moving to digital models and moving on from the traditional business models that are currently being used.

Technology and banking is an alliance which has profited one and all and goes back quite some time. Impacts on banking are particularly important, with advances such as real-time settlement capability, reducing counterparty risk and enhanced automation.

Block chain embraces the potential of bringing greater efficiency and transparency to the banking industry, for example, allowing cross-border transactions to be made in real-time and money to be exchanged at the speed with which information moves today.

"Banks should be taking a lead in this because if you look at the original purpose of setting up a bank, it was to connect communities together and facilitate trade and commerce. For the first time, you have a tool to do just that on a global scale which is secure and irrefutable," Gautam Jain, global head of digitization and client access at Standard Chartered Bank.

It has tremendous opportunity in changing the ways trades are carried cross border and role of banks and financial institute in them. It's a great collaborative tool when people can work together with greater transparency.

The only reason for its delay implementation is lack of clear knowledge and understanding amongst small financial institution about benefits and use of block chain.

Some of the recent steps towards embracing of Blockchain in India

- IT services industry body NASSCOM has signed a MoU with Block chain Research Institute (BRI) to develop and nurture the emerging block chain eco system in India.
- Niti Aayog is currently working on an ambitious project called IndiaChain to develop a nation-wide block chain network. They are planning to test it in educational sector by issuing digital certificates in pilot stage to students of IIT Bombay and Delhi in the year 2019.
- In October 2016, ICICI bank announced about its successful test run of a pilot transaction via its block chain network with Emirates.
- Axis Bank and Kotak Bank are initiating pilot test on cross border transactions using block chain.
- Corporates like Mahindra & Mahindra have claimed of testing block chain technology in supplier to manufacturer trade finance transaction.

Whether it is an interbank payment involving the two banks and central agency; or a trade finance transaction involving two parties along with their respective banks; digital transaction and document based process have major role to play in financial sector. Simultaneously demands for real time transaction, with high level of accuracy, data security have time and again made them to come up with innovative processes with more efficiency and reliability. Still there are instances from time to time which possess threat to the system. This is where block chain can help or may serve as a preventive step for tracing such frauds and tackle the above challenges.

Looking at insurance sector we know the pressure faced specially in vehicle and crop insurances agents who have to underwrite proposals in large numbers and convert them into policies. Thereby; affecting the quality of check and verification which is compromised to meet up the deadlines.

Role of block chain can significantly help and ensure correctness at every stage for essential payments and proofs. It can also prevent double insurance of same asset with multiple companies.

Machine learning can help ensure that the process of evaluation corrects itself on its own as it gathers information and conducts more and more verifications. Once evaluated, the identity or credit scores can be stored and shared across different agencies and institutions which can be retrieved ondemand using private blockchains by only verified members with the help of smart contracts. Also, scores can be updated and mirrored in real-time by all stakeholders.

The two main anchors for India are Ripple and Stellar ho are leveraging the blockchain in India's banking sector and trying to address the cross border payment issue with different approaches. Ripple is currently working with consortium of banks that use its technology to form a 'global payments steering group' to take advantage of the network effects. It includes some of the biggest banks around the world, including Bank of America, and Standard Chartered, Mitsubishi, Barclays, Santander. Axis Bank and Yes Bank are the only Indian banks that are a part of it. Stellar, on the other hand, is an open-source platform that can be adopted by any organisation. Recently, IBM decided to partner with Stellar to

develop a solution addressing the issue.

In this battle of cross-border payments, the incumbent SWIFT is still the Goliath. It is not easy to topple a recognized organization such as SWIFT, which has a significant advantage with its 11,000 partners. Recently, however, even SWIFT has decided to test the blockchain technology. As part of its global payments innovation (GPI) initiative to modernize the cross-border payments system, it has tested some proof-of-concepts to 11 supplement its current framework.

While these are the established blockchain networks, Indian banks have taken an unusual yet lauded route of forming its own consortium 'bankchain' on a separate blockchain platform. Announced in February 2017 by SBI, the network has grown to 24 members, including international banks, with the aim of exploring, building and implementing blockchain solutions in the banking sector. It currently has 10 active projects underway, such as shared KYC, syndication of loans, virtual currencies and 12 cross-border payments. While it is an exciting initiative with bright prospects, it will be interesting to see if they embrace or fight the international counterparts who benefit from a broader global network and have already started gaining traction in India.

As with any new technology, there are some difficulties to adopting the blockchain. Even with all its benefits, the technology brings with it the notorious reputation of cryptocurrencies (the common name for digital currencies). Since its inception, Bitcoin (the biggest cryptocurrency) has been associated with illegal activities such as drug trafficking and extortion, due to its ownership anonymity. Although, recently, exchanges have been forced to implement KYC (Know Your Customer) and AML (Anti-Money Laundering) norms, the anonymity aspect remains.

Road Ahead

The technology is believed to more efficient and more secure. One of the key benefits of using block chain technology is that the data is decentralized which reduces the risks from cyber exploits. Some of the popular cryptocurrencies that use block chain technology are bitcoin and ether.

The challenge with block chain technology is that it's expensive and requires high-end resources to process the data. It's mainly because in a block chain network each node performs the same tasks as every other node on its own copy of the data.

Top banks in India are increasingly recognizing the immense potential of blockchain. Some of them, such as ICICI Bank, YES Bank, Kotak Mahindra Bank, and Axis Bank, have used it for vendor financing and international trade finance. Others are in different levels of discussions to understand the technology and its potential uses.

Most of them are expected to adopt blockchain in some part of their businesses in the next three to five years. According to a PwC report, 56% of the players in the financial services sector seek to engage with blockchain in some form and eventually make it a part of their core business, compared with 77% globally.

The Reserve Bank of India's research arm Institute for Development and Research in Banking Technology (IDRBT) notes that "time is ripe" for the adoption of the technology in India, citing the sound basis underlying the technology, its many advantages, and the variety of its applications. In a recent announcement, RBI informed that they will be providing a model blockchain platform to encourage adoption within the industry.

Blockchain can help the financial sector move away from its heavy reliance on cash-based transactions. "From a technological perspective, we feel that blockchain technology has matured enough and there is sufficient awareness among the stakeholders which makes this an appropriate time for initiating suitable efforts towards digitizing the Indian Rupee through blockchain technology," says an IDRBT white paper on the applications of blockchain technology to the banking and financial sector in India.

Some blockchain critics, however, question whether the technology is ready for widespread adoption and whether it truly offers benefits that cannot be achieved using more conventional means. It is also unclear, some say, how the financial services industry would shift from the present regulatory regime to a quasi-autonomous setup that takes full advantage of blockchain. Other issues include the need for updates, while addressing scalability, regulatory and security concerns.

The IDRBT report concludes the benefits of the technology far outweigh potential concerns, which it examines carefully in its report. While promise of blockchain technology is great, it is still in its nascent stages. That said, it has emerged as a crucial technology, capable of changing the landscape of global finance, and the financial sector needs to get on board.

As a founding member of the open-source Linux Foundation Hyper ledger project, and a driver of global blockchain collaboration and innovation, IBM is working to reimagine business networks across various industries. Presently, IBM helps businesses help build, run, and manage production-ready block chains at scale and across industries including FMCG, financial services, logistics, shipping, and industrial.

Conclusion

We can compare the blockchain buzz to the internet buzz of 1900's. While we have all been a part of IT revolution and witnessed how our lives have changed in the past two decades we are now in the similar phase for Blockchain which possess to have a paradigm shift in the way we trust Internet transaction and value their presence. Although financial service industry might be the first sector to get impacted by this wider application of blockchain. The extent of the impact lies on the fact how well the economy and the financial sectors are able to capitalize on this technology and the supports that it's able to generate form the various stake holders involved.

Technology has now become the key enabler in today's businesses. With the disruptive and emerging technologies stepping in, the technology landscape is changing dynamically. Disruptive technologies like Blockchain have the potential to drive the business transformation in the coming years-

- Blockchain - It is a secured, distributed electronic ledger used for recording transaction data. This technology helps in creating a smarter collaboration among the businesses.
- Artificial Intelligence - AI has embedded algorithms capable of performing tasks such as speech recognition,

intelligent decision making, language translation, etc.

- Internet of Things - IoT creates a network of connected objects and helps in remote monitoring and control. It generates large volume of data that helps in getting better customer insights resulting in increased customer satisfaction.
- Analytics - Analytics is one of the key technologies which helps in drawing customer insights from the huge volume of collected data.
- Augmented Reality - AR helps in improving user experience by providing an augmented view of the real world.
- Virtual Reality - VR provides an interactive environment for the users by creating computer generated simulation of 3D images within a defined place.
- Robotics Process Automation - RPA helps in reducing labor costs, improves efficiency of work by reducing manual errors involved in the process.
- Intelligent Process Automation - IPA involves application of AI and related technologies including machine learning, cognitive automation to RPA.

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