BLOCKCHAIN: A ROAD AHEAD FOR INDIA

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Abstract:

Block chain technology is the new age, disruptive digital technology that is bringing unimaginable shifts in business models across the world. This game changer technology has already started gaining its footholds in Indian business world. In the" industry 4.0" era, block chain as well as similar distributing ledger technologies have been an inescapable trend for both academy and industry . Since its origin, the block chain technology has shown a bright and promising future for Indian as well as the rest of world business. It has already printed its footmarks in industries like telecom, insurance, cyber security, supply chain management, business analytics and forecasting, crowd funding, energy management and in many other public sector organizations. Many established industries are in its way to establish the potential block chain use cases instead of their traditional business practices. Today block chain has emerged to become a potentially transformative force in multiple aspects of government and private sector operations. Block chain technology has the potential to revolutionize the interaction between Governments, Business organizations and common citizens. Block chain system creates a trusted and transparent platform for different entities and organizations to do their business with ease and excellence. The growing ledger system under block chain brings transparency and trust among the people and business organizations. In developing countries like India, the block chain system can be a panacea for long haunting problems like corruption, non-transparency and mis-governance. In this paper, we are mainly focusing on the opportunities and challenges for block chain system in India.

Key Words: Block chain, Indian Economy, Digital India

Introduction

Block chain is known as a new disruptive force of digital era which is dominantly changing business the business models and increasingly becoming a major game changer around the world. The government of India is very popular for its promotion and adaption of digital technology in different sectors of Indian economy. The Indian government successfully using digital technology for implementation of its public policies and schemes that focuses at economic reforms with uniformity to all sections of the society by making the service available at ease through digitalization. In India, the revolutionary changes are taking place in terms of corporate sector, banking, insurance and other financial and non-financial service sectors through enormous digital transformation. In this stage of transformation, the blockchain management technology is considered as the most significant innovation which can change the nature of world business practices. Block chain technology is gaining a huge popularity among the different classes of entrepreneurs. The charm of blockchain lies in its power of creating trust and transparency in the business by connecting all entities related to that business. It transfers power and control from large entities to the many, by enabling decentralization of power, safe and secured transactions in a transparent manner to the grass root level.

The smart city concept can be looked upon as a framework for implementing a vision of advanced and modern urbanization. Smart cities leverage technology and utilize existing and planned infrastructure investments to provide a higher quality of living to residents and a conducive

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investment climate for businesses, and to maximize resource utilization and transparency for governments. Smart cities can be considered an organic integration of systems, IT infrastructure, physical infrastructure, and social and business infrastructure. These systems work collectively so as to generate intelligent and actionable information for decision makers.

Block chain mostly known as the backbone technology behind bit coins, is currently emerging as a most attractive innovation which is attracting a lot of attentions from entrepreneurs, startups and media after Demonetization in India. Blockchain has the capacity to transform large number of industries and make operations more democratic, secure, transparent and efficient. Many industries and non-financial organizations like telecom, healthcare and life sciences, travel and hospitality, and many other public sector organizations are also curiously watching the development of block chain technology to use positively to replace their traditional practices.

Objectives:

➢ To understand and explore the concept of block chain and its benefits in the real world.

➢ To study and explore the opportunities andchallenges to adopt blockchain system in different sectors of Indian economy.

➢ To know the role of blockchain in building trust and transparency among different sectors of economy.

Methodology:

This study is purely a descriptive study, it is carried out with the help of available secondary data, published reports and research articles in journals and edited books.

Literature Review:

Glaser (2017) Block chain can be described as a decentralized, transactional database technology that facilitates validated, tamper-resistant transactions consistent across a large number of network participants called nodes.

Beck & Muller-Bloch, (2017); Walsh et al., (2016) Block chain is a class of technologies (sometimes called distributed ledger technologies) that give users confidence that archived 4 information (e.g., a certificate) has not been tampered with. In principle, this guarantees a "single truth" across different agents who may or may not trust each other. Not surprisingly, financial services has been one of the first industries to express an interest in block chain.

Kim, Barua, & Whinston, 2002 Blockchain and the smart contracts it enables could give rise to a new type of economic system, which we refer to here as the blockchain economy. While the digital economy, where "goods and services traded are in digital format"

Smart contracts can execute transactions autonomously, without interference from agents or the need for approval from third parties. They can be embedded into digital assets or into the digital representation of physical assets in the form of tokens that enforce autonomous contract fulfillment (Szabo, 1994)

What is a blockchain?

Blockchain is a digital, decentralized (distributed) ledger that keeps a record of all transactions that take place across a peer-to-peer network. It is an interlinked and continuously expanding list of records stored securely across a number of interconnected systems. This makes blockchain technology resilient since the network has no single point of vulnerability. Additionally, each 'block' is uniquely connected to the previous blocks via a digital signature which means that making a change to a record without disturbing the previous records in the chain is not possible, thus rendering the information tamper-proof. The key innovation in blockchain technology is that it allows its participant to transfer assets across the Internet without the need for a centralized third party.

Blockchain Advantage:

▪ It is an append-only distributed system shared across the business network, which makes the system resilient by eliminating a 'single point of failure'.

▪ A transaction is only committed when all parties agree to a network verified transaction.

▪ The entire history of an asset is available over a blockchain

▪ Records are indelible and cannot be tampered with once committed to the shared ledger, thereby making all information trustworthy.

▪ Once a transaction is completed over a blockchain, it can never be reverted.

▪ Code is built within a blockchain that computers/nodes execute based on a triggering event. Essentially, an 'if this then that' statement which can be auto-executed.

Blockchain : Impact on Major Sectors:

Healthcare

The digitization of health records has brought about significant change in the public health sector, but it has

been criticized for being complex on account of centralization and associated ethical issues. Blockchain technology can disrupt public health by creating a secure and flexible ecosystem for exchanging electronic health records (EHRs). This technology could also make the space more transparent by creating provenances for critical drugs, blood, organs, etc. In addition, by putting all medical licenses on a blockchain, fraudulent doctors can be prevented from practicing.

Education

Student records, faculty records, educational certificates, etc., are key assets in the education domain. Such records needs to be shared with multiple stakeholders and it is imperative to ensure that they are trustworthy. The provenance of these records also needs to be determined accurately. Student records, faculty records and educational certificates can be maintained with the application of blockchain technology. Blockchain can also simplify certificate attestation and verification. It could even transform the manner in which the policy for educational inclusion is framed by bringing in base uniformity in the tracking of national metrics.

Public safety and justice

Blockchain could make the delivery of public safety more efficient by resolving the problem of interagency coordination by providing a unified source of truth that each agency independently interfaces with based on predefined conditions. Establishing a chain of custody for crucial evidence is often an important prerequisite for the evidence to be admissible; blockchain technology could help establish the provenance of the chain of custody for such evidence.

Agriculture

Blockchain technology can be used to increase transparency, reduce complexity and cost in food-based value chains by enabling trustworthy provenance and traceability from farmer to consumer. Other possible applications include the use of blockchain technology to record and manage agricultural land records as well as agriculture insurance.

Civil registration

The civil registration process can be simplified through the application of blockchain technology to create distributed citizen registration platforms and even register vital events such as births and deaths on a blockchain. This can help make citizen records tamper-proof, resilient, secure and private, thus providing wide-ranging benefits for a variety of stakeholders.

Defense

Information regarding defense infrastructure and computer systems is critical to national security. For this reason, it is distributed across different locations to prevent unauthorized access and modification. Blockchain technology can be leveraged to provide consensus-based access for modifying data and distributing access over multiple system resources such as networks, data centres and hardware equipment.

Governance

Government departments have functional interdependence but operate in silos, which impacts the availability of services and deteriorates citizen experience. Blockchain technology can be used to break the silos, check government corruption (if any), increase efficiency and transparency. Linking file and data movement between departments through a blockchain would increase visibility into the process and ensure that the data/file moves forward in real time.

Challenges for Blockchain adoption in India:

Awareness about blockchain is very limited and shrouded by the disrepute of the unregulated crypto currency market. Businesses interested in blockchain could probably set aside an internal team focused to understand the technology, its impact, and areas of usage. Blockchain is considered as a complete technology that will replace existing technologies. This misunderstanding has also been a hindrance in its adoption. Complexity is in the integration of the current technology with the blockchain and data security during the early stage development. Blockchain-based financial services are being worked upon. Many Indian banks have started to implement the blockchain ecosystem within their banking system. But the lack of regulation and a specific regulatory body to bring in standardization and approval for mainstream implementation is another complication.

Way forward

For the adoption of blockchain technology in the government and public sector, and specifically in the, the technology will need to be validated, regulated and adopted. To harness the potential of blockchain technology and reach the stage of large-scale implementation, a structured approach is needed, spanning policy, governance, ecosystem development, talent incubation, academia focus, as well as budget allocation with aligned roles and responsibilities. For governments and smart cities, the following sixphased structured approach can be adopted.

Conclusion:

New technologies have always attracted enterprises and governments. This is largely due to their promise to improve the current way of working and service delivery, thereby leading to happier consumers and stakeholders and providing an edge over competitors, resulting in an improved brand image. However, the large-scale implementation of a 'new technology' takes time and involves an adoption curve. Blockchain technology is also undergoing a similar adoption curve. The technology is still being tested out and new use cases are being implemented on a small scale. While most experts agree about its potential for disruption, there are a few obstacles to the successful implementation of this technology.

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