



# **BLOCK CHAIN TECHNOLOGIES AND FINANCIAL DATA PROTECTION – AN APPLICATION APPROACH TO FINANCIAL AND OPERATIONAL DATA– AN INDIAN PERSPECTIVE**

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## **ABSTRACT**

The Role of Blockchain technology in today's economy is very crucial can cause serious disruptions to existing business models, and covers different sectors, with its applications as diverse like financial services, insurance, logistics, agriculture, hospitality, healthcare, education, real estate, smart contracts etc. The very concept of block chain is to enable transactions to be performed in a safe, secure manner and allows for non-repudiation , preserve data integrity, enhances trust levels that can help industries to use and access the technologies effectively and facilitate trade, commerce and industry to function in an integrated manner. The entry of new players, and growth of existing players in financial markets, and the increased role of fintech had, in turn, made it all the more imperative for us to focus on the effective use and adoption of Block chain, and its integration to AI, ML and digital technologies. Applications of block chain can also be found in public procurement, distribution, land records. and social welfare schemes of the govt, enables productivity improvements, sustainability, and growth become well integrated and the effectiveness of solutions provided to problems can be increased. The authors examine the role and importance of BC technologies across various sectors and offer possible applications and how the scenario may be unfolding in the future.

## **KEYWORDS:**

*Block Chain, Sustainable growth, Economic development, Innovation, New business models, Artificial intelligence, Machine learning, Sandbox*

## 1. INTRODUCTION

The Role of Blockchain technology in today's economy is very crucial can cause serious disruptions to existing business models. The applications of block chain across domains has increased substantially and covers different sectors, with its applications as diverse like financial services, insurance, logistics, agriculture, hospitality, healthcare, education, real estate, smart contracts etc. The very concept of block chain is to enable transactions to be performed in a safe, secure manner and allows for non-repudiation , preserve data integrity, enhances trust levels that can help industries to use and access the technologies effectively and facilitate trade, commerce and industry to function in an integrated manner. The growth of UPI , digital platforms, coupled with growth of fintech entities , the entry of new players, and growth of existing players in financial markets, and the increased role of fintech had, in turn, made it critical and important for us to focus on the effective use and adoption of Block chain, and its integration to AI, ML and digital technologies. Applications of block chain can also be found in public procurement, distribution, and social welfare schemes of the govt, which can be better effectively interfaced with the Govt machinery so that productivity improvements, sustainability, and growth become well integrated and the effectiveness of solutions provided to problems can be increased. The authors examine the role and importance of BC technologies across various sectors and offer possible applications and how the scenario may be unfolding in the future.

## 2. OBJECTIVES OF STUDY

1. To understand the role and importance of block chain technologies
2. To understand the risks involved in embracing block chain technologies and the regulatory approach adopted
3. To examine the block chain technologies in India and how it applies to different sectors of the economy helps sustainable development and growth.

## 3. REVIEW OF LITERATURE

Bitcoin is the foundation of the blockchain technology. It is a technique for managing data and decentralising transactions. Since Satoshi Nakamoto's initial presentation of blockchain in 2008, extensive study and careful thought have gone into its conception. The growing interest of academics and developers is the key feature of blockchain, which gives a high degree of security, anonymity, and data integrity without any involvement from third parties who are in charge of the transactions. The main purpose of this study, which was conducted using a well-defined methodology, was to compile all pertinent research fields and technologies on blockchain technology. Blockchain carries its own share of concerns as it becomes the way financial transactions are done in the future. But it feels ethical to take the risk because it has the potential to revolutionise the current technology(Nayak, A., & Dutta, K. (2017, June). Blockchain is frequently seen as a fundamentally transformative technology. Despite the fact that many academics have recognised the importance of blockchain, blockchain research is still in its infancy. As a result, this study looks at the most recent academic research on blockchain, especially in the business and economics sectors. It investigate the most often referenced publications, most productive nations, and most popular keywords using a systematic evaluation of the literature acquired from the Web of Science service. The next five study themes are also determined by clustering: "economic benefit," "blockchain technology," "initial coin offerings," "fintech revolution," and "sharing economy." This report also offers suggestions for future research topics and practical applications. Xu, M., Chen, X., & Kou, G. (2019).Currently , every online transaction using digital currency is a little more difficult due to the growing risks of hackers trying to steal posted bank information. As a result, several other types of cryptocurrencies are created, with Bitcoin being one among them. The technology that powers the use of bitcoin is referred to as blockchain. Blockchain is a digital, decentralised, and open public ledger of all bitcoin transactions. Blockchain aims to build and distribute a data structure on a computer network that contains all of the online transactions that are kept in a distributed

ledger. It makes use of a peer-to-peer computer network to validate the transactions. Without the need for a centralised authority, users may instantaneously make and validate transactions. Blockchain is a transaction database that utilises the Bitcoin protocol and houses data on every transaction ever carried out in the past. This paper, covers what blockchain is, a SWOT analysis of blockchain, several types of blockchain, how blockchain functions, as well as its benefits and drawback. (Niranjanamurthy, M., Nithya, B. N., & Jagannatha, S. J. C. C. (2019). Both the scientific community and the industry have shown an increased interest in the Blockchain technology in recent years. The development, operation, consumption, and marketing of smart city solutions in the near future will undergo a significant paradigm change as a result of this technology. Blockchains have a huge potential influence on businesses and communities, but there are still a lot of unresolved issues that need to be properly addressed. This article focuses on corporate Blockchains and offers a thorough study of its fundamental elements, supporting technology, and potential uses. Finally, a variety of research prospects and problems are presented. (Hamida, E. B., Brousmiche, K. L., Levard, H., & Thea, E. (2017, July).

The significance, applicability, and connection between financial services, fintech, and information technology services have already been demonstrated via a number of research on block chain technology and its use in business models. With India being a global leader in IT services ( and to a lesser extent in products) -the scope for block chain getting integrated to fintech, and into product markets can perhaps give a reverse osmosis type of symbiotic arrangement for IT product development based on block chain technologies . An adoption of these initiatives for more effective use of block chain technologies can help conserve resources and develop sustainable business models in the economy.

#### 4. METHODOLOGY

The author here proposes to examine past studies in this regard and the way society and the economy are going to be shaped by the increasing role played by block chain technologies in sustainable development and growth of the economy. The industries that are most likely to be impacted are also briefly described, as well as the potential influence of the block chain on future emergent business models.. The study is exploratory and uses secondary data from various reports, RBI publications, publications on the status of Fintech by Inc 42 (Qtr-2) insights, etc.

#### 5. DISCUSSION:

The authors believe in the current economic and technological developments globally, believe it is essential for us to accept that Block chain technologies are likely to accelerate and becomes linked to sustainable economic growth. If applied properly this can help to emerging economies and countries to reduce transaction costs , improve operational efficiencies in various sectors help economic development, albeit in a sustainable manner. It has the potential to change the way business models in various sectors are currently functioning. Business managers and leaders need to know the key aspects and factors of innovations in block chain technologies coupled with AI and ML that will catapult growth going forward in the future. The importance of Block chain technologies in developing Fintech, products and services cannot be ignored ,and will seize the attention of different regulators across the globe, so that they understand its merits and risks they bring to new and evolving business. The flexibility, support to innovation in block chain technologies, their interfaces and platforms being applied to different regulated industries – e.g banking, insurance ,financial services, utility and energy sector , public distribution system, will help with a transformational change in the economy, albeit with caution and relevance on the ground...

♠ Proper application of Block chain based business models and approaches to services and products in the financial sector can help build a sustainable business model, that will help enhance output, facilitate more options of products, improve trading efficiencies and enable better allocation of resources across sectors, reduce costs and make business much more competitive. It will also help in identifying ways and means by which innovation can happen.

♠ Regulators are likely to be hesitant to accept BC technologies, despite the sandbox arrangement of RBI , to allow and try innovations in products across the sector. The emerging and evolving BC technologies may reduce the innovation ability due to risk averseness on part of the regulator, or may move to other nearby geographies which are more conducive for such actions.

- ♠ Regulations are likely to increase in the adoption of BC technologies due its various benefits, which can, if not managed properly, create new concerns for regulators, in terms of its impact on economy.
- ♠ Effect growth and economic development will become more sustainable, due to the seamless execution of transactions, using BC and overall growth in volumes in trading.
- ♠ Academic institutions, technologists, start-ups, and promoters should join hands with the developer community to evolve new BC technologies, to involve students in the process of technology development, with a proper eco-system in place without which it may not be possible for talent to scale up and realize the full benefit of BC innovation and growth while at the same time have enough capacity to develop, manage, nurture the eco-system in a mutually beneficial manner to both the industry and economy.
- ♠ Agriculture , Energy sector utilities can use BC technologies to enable better irrigation , water resource management, avoid losses in power transmission, and lower cost of resources distribution and wastages.
- ♠ Risk levels for entities will multiply due to a combination of BC technologies, with others like AI, ML, digital technologies etc, and finding the balance between control and innovation is going to be difficult. An industry oriented approach may be called for from both the regulators and the business leaders, to balance the various issues arising in the process, while keeping the customer interest at the primary level, and the markets and eco-system at the secondary level.
- ♠ The regulator would do well to put up proper and structured reporting on models being adopted by BC technology based corporates and a pre-approval mechanism to be put in place -before product introduction in markets, as this would reduce the impact of any adverse risks emerging in terms of new business models.

## 6. LIMITATIONS OF STUDY

The study is exploratory and does not consider the limitations imposed on the adoption of BC technologies , and its implications in sectors like fintech, retail, Govt departments etc by the regulator or Govt. No empirical validation has been discussed, except for a few in a literature review.

## 7. CONCLUSION

The authors believe that fintech models are evolving and are in the early stage currently in India, However, it is possible that if left unregulated they can affect the sector and financial services adversely, while if nurtured properly, with the integration of BC models, can help build a catalyst for financial inclusion and easier transmission of funds to beneficiaries in social welfare schemes. BC models integration to Fintech entities will have to be carefully managed or the risk of consolidation coming in at an early stage will likely happen due to a possible explosion of operational risk and credit risk factors – as these are the two prime factors that dominate the financial sector risk management area. It can also lead to the possible booking of losses due to valuation issues based on the perception of the entities' future in the minds of investors – which can trigger a collapse of markets and loss of investor confidence, cyber security risk and the cycle can come earlier than later. Regulators need to be watchful on this aspect and avoid any deterioration in the fintech sector's health. They need to take a practical and balanced approach to the introduction of new products by Fintech units in conjunction with BC models, so that innovation is not stifled while at the same time, the growth in new business models is adequately calibrated, without loss of control and monitoring from a regulatory perspective. Sustained development and economic growth can be possible by properly integrating innovation, regulation, pre-approval of new business models, and simulated testing of new products in a separate sandbox arrangement set-up framework. Typically it has been found that markets embrace BC technologies to accelerate the pace of the transaction and the value added that can be laid on the table to customers, but the regulators seem to have second thoughts due to their none-too-good experience in the past and are careful enough not to give a free ride to the technologies emerging.

Also, the framework may impede the growth of Fintech unless a jointly co-ordinated BC technologies , and the approach taken in consultation with developers, industry, regulators and innovators is taken into account. BC

technologies can thus play a crucial role in resolution of complex issues like trust deficiency, integration with IT products, cyber security and hacking, by providing better automation based controls in financial and insurance services as well as banks and Public utilities, particularly in water resource management, power generation and distribution, energy management, logistics, etc which are crucial to economic development and growth.

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