

# Analysing the Impact of Blockchain Technology in India's Digital Economy

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## EDITORIAL BOARD EXCERPT

At the initial Time of submission paper had a 4% plagiarism which is an accepted level for publication. The editorial viewpoint is of an observation that article had a successive close watch by the blind reviewer's which at later stages had rectified and amended by an authors in various phases as and when requisite to do consequently. The reviewers had in a beginning stages mention with minor revision with a following stamen which at a small duration streamlined by authors (Jeevan John, Devashish Sharma, Nishant Kr. Singh). The comments related to this manuscript are tremendously perceptible related to exponential organization both subject wise and research wise by the reviewers during evaluation and further at blind review process too. The authors be commendable of appreciation for writing this paper on impact of blockchain technology in india's digital economy. The blockchain technology as highlighted by the authors in section 5. The objective of the paper is clear and discussion are well placed and open up avenues for future studies. All the comments had been shared as a mixtures of dates by the authors in due course of time and same had been incorporated by the author in computation. By and large all the editorial and reviewer's comments had been incorporated in a paper at the end and further the manuscript had been earmarked and decided under "View Point" category as its highlights and emphasize the work in relation to use blockchain technology particularly on India's digital economy.

## ABSTRACT

**Purpose:** In the backdrop of Digital India and the National E – Governance mission there has been an exceedingly high reliance on the digital infrastructure which acts as an enabler in the process of decentralizing and scaling the Indian digital economy. This paradigm shift entails a significant account of trust and security of data which is to be provided for the end user. It is in this regard, a study is made so as to understand and analyses the assimilation of Block chain technology into India's digital infrastructure which is to provide robustness and scalability in the technological contours of growing Indian economy.

**Design/Methodology/Approach:** The research incorporates the application of exploratory method withstanding the requirements of data, review and analysis.

**Findings:** The analysis comprehensively concurs that Blockchain technology acts as an enabler in bridging the gap between the principles and practices of India's digital economy. It further approves the hypothesis that a robust technological infrastructure acts as an impetus towards the greater goal of financial inclusion.

**Originality / Value:** The discourse of understanding the significance of digitally enabled financial services is of growing interest. However this paper endeavours to pioneer a link between the social aspects of financial inclusion to that of technological one.

**KEYWORDS** Blockchain | Digital India | Technology | Financial Inclusion | Cyber Economic Espionage

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## Introduction

A popular instance for the occurrence of an event is often described with the help of classical unities which are described as the unities of time, place and action. This philosophical narrative can be viewed as a cornerstone towards the understanding of blockchain (Bashir, 2018) in Indian digital economy. The socio-economic paradigm of our country especially after the wake of liberalization has been such that it has encountered various challenges and moreover numerous possibilities. One of the greatest possibilities which India has embarked in the due course has been its transient and high end infrastructural capabilities. Especially in the wake of a robust infrastructure which would help in the transition of our “medieval” economic infrastructure to attain parity with that of developed countries. It is at this point of the narrative a modern and state of the art infrastructure which essentially provides high end data security was advanced, known as the blockchain. The principled demand for the advancement of this infrastructure was due to the increasing instance of cyber fraud that occurred between the 1990’s and early 2000 (Swan, 2015). However in India with a rapidly increasing population, the process of enumeration and inclusion of people into the organized financial system has been a cumbersome task. And the accomplishment of such a hefty task cannot be visualized in vacuum, as it essentially involves a large amount of man, money and infrastructural capabilities. It is in this backdrop we need to realize as to how blockchain as an infrastructure could drive as a juggernaut wave towards a robust and sound digital economy providing parity and concurrency to all the beneficiaries involved in the system.

## Literature Review

The most fundamental and critical understanding of the blockchain as a “distributed ledger” (Bashir, 2018) has facilitated in understanding its technological viability. However this nascent technological tool has been a matter of much contemplation in the technological circles (Zibin,

Xie, Dai, Chen, & Wang, 2017) such as Institute of Electrical and Electronics Engineers especially during its 6th International Congress on Big Data. However the financial viability of using this tool as a model of secure digital transaction has been sought much later (Swan, 2015). Especially in the backdrop of ambitious developments such as digital India there exists an expected trillion dollar economy in hand (Company, 2018) which can seek benefit from this technological leap. Thus it becomes an imperative to analyze and understand as to how the dimensions of secure digital transaction can be enhanced and developed to provide a stable and scalable infrastructure (Blockchain Technology Explained: The Ultimate Beginner’s Guide about Blockchain Wallet, 2017) meeting the demands of a developing economy.

## Objective

Based on the understanding developed from the respective documented records, it has been noted that there exists a lacuna in terms of contextual analysis. This void is fundamentally created due to an unsynchronized evaluation in terms of explaining the blockchain technology and Indian digital experience. Therefore it seems to be an imperative at this juncture to critically evaluate the following:

1. A prelude towards understanding blockchain as a key technological instrument in financial technology.
2. Recognising the impact of blockchain in India’s advancing digital economy.

## Research Methodology

The present study endeavors the adoption of an exploratory approach as it is principally based on secondary sources of data collected from various reports of government and private organization. This endeavor has been sought to enhance and develop understanding so as to make a comprehensive evaluation of the objective under consideration.

## Evaluating Blockchain Technology

Contrary to the traditional misconception blockchain is often misunderstood with that of Bitcoin. However it is noteworthy to understand that Bitcoin is essentially a product that uses the blockchain technology. One of the most cited phrase for describing the blockchain technology has been “distributed ledger”(Zibin, Xie, Dai, Chen, & Wang, 2017). However the technological foundation of blockchain goes far beyond that. Originally the development of blockchain occurred in 1991 by a group of scientists who endeavored to timestamp documents. The timestamp for document was essentially done so that the documents cannot be tempered or manipulated in any way. However the gravity of this technology was only realized when Satoshi Nakamoto(Swan, 2015) in 2009 developed a Cryptographic currency known as Bitcoin. The technical notion of the working of a blockchain can be understood with the help of thought experiment. Consider a person holding two Rubik's Cube in each of his hand, such that the Rubik's Cubes are joined together by a thread. Here each Rubik's Cube describes a block and that thread describes the hash of the particular block. It would be noteworthy to understand that each block contains a certain data that is pertinent to a particular block and this data is not subjected to manipulation or tampering. And any tampering of data will have an effect on the subsequent block attached to the tampered block(Bashir, 2018). The analogy for the hash of a particular block can be understood with that of the fingerprint as it provides a unique identity for each block in a blockchain. Initially when a block is null a particular hash is calculated or assigned to a block. However as data is encrypted into a particular block the value of the hash changes. This triggering of hash helps in detecting the change or tampering of data within a block. As it has been mentioned earlier, each block is attached to a previous block with the help of the hash and any change within the data of a particular block not only triggers a change in the hash of a particular block but also create a

change in the hash of the subsequent blocks. This degree of robustness of a blockchain provides an ambient proof of work making it an efficient system for secure data storage. The security of a blockchain is derived from its innovative usage (Swan, 2015)of proof of work and hashing. Moreover the centralized mechanism of data distribution provides the ease of scalability and accessibility of data among all the users using the blockchain. Moreover it provides a peer-to-peer which allows any of the users to join a blockchain. Having a preliminary understanding of the blockchain technology it would be an imperative to understand and examine the backdrop of Indian digital economy which would enable a comprehensive evaluation of the existing digital infrastructure.

## India's Journey Towards a Digital Economy

Before the introduction of ambitious projects like digital India and National E – Governance mission the Government of India with financial assistance of United Nation in 1975 developed the National Informatics Center(Technology, 2017). The primary aim of which was the computerization of government offices. This initiative was followed by the development of major insurance repository of India such as Central Depository Services and National Securities Depository Limited in 1999 and 1996 respectively. However this development was abysmally low to cater the demand of a fast and growing economy. Owing to the development of digital infrastructure, the Government of India sought it to be an imperative to introduce further development in due course of time. One of the eminent developments in terms of revival of our digital economy was laid in the (India, 2008). Here the ambitious project of National E – Governance Mission was introduced which primarily focused on enabling digital services for a citizen centered participation in the governance. This model of (Company, 2018)National E – Governance Mission was primarily adopted from the implementation strategies developed by Singapore. As a forerunner



to these initiatives the Government of India under the aegis of Ministry of Electronics and Information Technology and Ministry of Finance introduced several other schemes such as Digital India. There exists a wide ranging impact on the social, political and economic front with respect to the execution and development of India’s robust digital infrastructure. However the requirement of an advanced infrastructure such as Blockchain is only understood with help of some vital statistics which has been dealt in the following section.

### The Requirement of a Robust Digital Infrastructure

One might pose a pertinent question as to why a sophisticated and complex technology such as Blockchain is required in the Indian context. However to ascertain such dilemma we need a factual evaluation of data. For the sake of reducing parametric abnormality we have ascertained certain vital statistics which would help in the evaluation and understanding the need for Blockchain technology in India.

in 2017. The growth of financial inclusion has a complimentary nature with that of technological accessibility as it enhances the efficiency of usage of resources.

However this aspect of our digital economy circumvented a new horizon in the post demonetization years with the meticulous development of “Digital Wallets” thus enhancing the operability of cashless transactions. This can be understood from the following analysis.

Year	Country	Number of cashless transactions per person
2014	India	1.9
2017	India	8.0

Source: RBI, Euro monitor International

Table 2: Number of cashless transactions per person (excl. cheques)

Country	Indonesia	India	Germany	Japan	China	France
Percentage	61%	56%	38%	37%	37%	32%
Index Scores	36	29	55	61	42	53

Source: McKinsey Global Institute

Table 1: Growth of Digital Economy for the financial year 2016-2017

According to the report by the McKinsey Global Institute for the financial year 2016-2017, India has seen a rapid growth in terms of digital economy with a staggering 56% and an index score of 36. However this index is followed by another data on the dynamic inclusion (Company, 2018)of Pradhan Mantri Jan Dhan Yojana which was principally aimed at financial inclusion has witnessed a 2.4 times increase i.e. from 105 million in 2014 to 308 million

This table stipulates that there has been a 321% increase in the number of cashless transaction from the financial year of 2014 to 2017. The fundamental prerogative behind this analysis is based on the fact that with rise in the demand of digitally enabled financial services, there exists an equitable requirement to scale up the digital infrastructure. This need for scalability is not restricted to the financial services, but perhaps needs to be viewed as a holistic concept which encompasses all the services requiring a robust technological infrastructure.

## Countering Cyber Economic Espionage with Blockchain

Apart from making a utilitarian perspective the aspect of blockchain as tool to counter act cyber economic espionage is fundamental to understand as it involves financial security which in turn translates to national security. In the modern era the mechanism of warfare is not merely restricted to the inhospitable warfront but perhaps involves the requirement of providing a transient technological infrastructure which enables in providing reliability, scalability and accessibility.

According to a report by NITI Ayog in 2017 more than 50 percent of the organizations are reportedly affected by major cyber disruption. A detailed account entails that of the total attacks 57% attacks are caused due to phishing and a whopping 20% of the same by denial of service. Earlier the acts of cyber economic espionage were considered essentially as “first world problem”, however with the increasing reliance on computational infrastructure, the need for an efficient and robust technology is at an all-time high. Perhaps it is this lacuna which needs to be addressed with the help of efficient technology such as blockchain.

## Conclusion

On a concluding note it can be observed that even though the government is skeptical about the implementation of accepting Bitcoin as a legal

tender. The acceptance of blockchain technology in the future essentially looms around the practical and the legal challenges it faces especially in terms of statutory incorporation and technological upheaval which has an unsettling impact in the due course. However the observational understanding dictates that with more countries adopting and implementing blockchain infrastructure, it would be the imperative of “digital India” to accept and adopt innovation and technology into its contours of economy.

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### Blind Reviewers Comment

- The topic of the research is very relevant and focus towards societal and financial security issue.
- In the review it is found that the objectives of the research are clearly achieved through analysis.
- Also research design, data collection and sample size were well designed and meeting the ample reliability and validity in all aspect.



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## Annexure 1

ORIGINALITY REPORT			
<b>4%</b>	<b>3%</b>	<b>3%</b>	<b>2%</b>
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS
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<b>2</b>	<b>www.amazon.com</b> Internet Source		<b>1%</b>
<b>3</b>	<b>repository.stcloudstate.edu</b> Internet Source		<b>1%</b>
<b>4</b>	<b>Submitted to University of Bristol</b> Student Paper		<b>1%</b>

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