Analysis of the Challenges and Drivers Associated with Block chain Technology in the Banking Industry

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Abstract

This research paper we have analysis of the challenges and driver associated with Blockchain has been gaining focus in research and development for diverse industries in recent years. Nevertheless, innovations that impact to the banking nurture a potential for disruptive impact globally for economic reasons; however, it has received less scholarly attention. Hence the effect of blockchain technologies on banking industry is systematically reviewed. The relevant literature is extracted from Scopus, Web of Science and bibliometric techniques are applied. While a bulk of earlier papers focuses only on bit coins, a broader framework is envisaged that synthesizes interdisciplinary thematic areas for advancement, hence novelty in current work. A few practical and theoretical implications for stakeholders in view of technology, law and management are discussed. explores the challenges and opportunities of Blockchain based Financial Technology applications in the Indian perspective. Blockchain has a recent hype worldwide and India responds to it making itself open to both the challenges and opportunities. India has niche societal characteristics, which makes its Blockchain confrontation unique than the other countries exposed to this technology. This chapter contributes to the understanding of these niche characteristics to identify the unique challenges and opportunities of implementing the Blockchain technology from the Indian perspective.

Keywords:Challenges, Driver, Associated, Block Chain, Industry, Banking.

Introduction

In this research paper we have presented the early 2008, a working proof-of-concept paper was published online being authored under a pseudonym. Slowly the work gained attention of researchers but concepts leading to the invention were published several decades earlier [49]. Put in a nutshell, the paper demonstrated working of bit coin, a type of currency that can be transacted digitally anytime around the world. Within a decade, there has been immense advancements of techniques into big data, machine learning, internet of money, etc. Blockchain, a broader concept that encompasses a model for bit coin transactions, is highly resilient against tampering of the data. By design, this model is "an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way". A banking entity, traditionally an intermediary between two transacting parties,i.e. buyer and seller of financial asset, has to re-position itself in this new realm. Additionally, risk factor and impact of banking on world economy is well documented. Business intelligence approaches for banking have positive results, but IT adoption requires customization for multicultural settings. The digital economy perspective demands sector analysis, providing inclusive solutions. Nevertheless, severe dearth of knowledge exists because lack of proper theoretical foundation. Having demonstrated the impact in finance, technology and government space, the blockchain framework has extended beyond bit coin. A crucial question arises on ways to overcome misconceptions and identify technology caveats for developing world. By such, thin boundaries of hype and reality on blockchain applications get delineated as argued by. Hence, the present study poses 3 empirical research questions:

RQ1. Which are the current technologies within the blockchain ecosystem for competitive advantage to banking institutions?

RQ2. How will blockchain based digital platforms transform existing value-creating interactions?

RQ3. What are the implications on legality, technical structure and organizations from an information systems perspective?

The remaining sections of this paper are organized into Section II- background and earlier related work; Section III- methodology and data for research; Section IV- emerging research avenues; Section V- discussion & proposed framework and Section VI- conclusion & suggestions.

Challenges for Blockchain in India

Challenges are countless as the Blockchain is going through a very early stage of adoption. It might be risky to commit to apply and to predict its applicability for mainstream technology. Many upgradations still need to be implemented to make it safe and secured. Despite the highly promising outlook of the Blockchain technology and its applications, many unanswered questions remain that could make Blockchain a vulnerable venture to pursue. Blockchain is at the same stage where the internet was during the 1990s.The internet faced doubts and hesitation during its days of initial launching similarto what the Blockchain technology experiences today. However, with time, this technology grew, and similarly, the technology is expected to rise in the future (Noyes, 2021a).

Lack of awareness

Sine Blockchain is a relatively new technology, the lack of awareness and knowledge remains a key barrier to Blockchain adoption across the world (Noyes, 2016b).For firms that want to adopt Blockchain, the ideal first step for them is to develop an internal team that will learn the technology at depth and breadth coviering its technical architechture and mechanisms, impacts, and applicationareas in the businesses' operations. In addition to in-house training,knowledge-sharing sessions, and employee Hackathons,key employees could also be sent for attending external events such as training, conferences, and industry working groups to develop a comrephensive understanding about the technology (Gogerty and Zitoli, 2011; Eyal and Sirer, 2014). Firms should consider the expenses related to Blockchain training and learning as an investment rather then just an operational expenditure.

Methodology and Data

The journal/book articles in Scopus, Web of Science and ACM, IEEE and AIS (Association for Information Systems) conference proceedings published in 2008-2019 (11 years) were collected. Additionally the patents [18], doctoral thesis [56] and industry reports [43] were used as secondary information. Under each category, the articles were chosen for their match with the theme of blockchain and industry focused. In current work, VOSviewer, an open source software tool is used for data analysis and visualization. Specifically methods used to generate the charts are BCAD (Bibliographic Coupling Analysis of Documents) and CCAR (Co-Citation Analysis of References) [66]. Specific aim is to quantitatively assess the research output in peer reviewed journals. From Scopus, 70 documents were retrieved. The Scopus data in CSV file format got downloaded to apply the bibliographic analysis method using VOSviewer software.
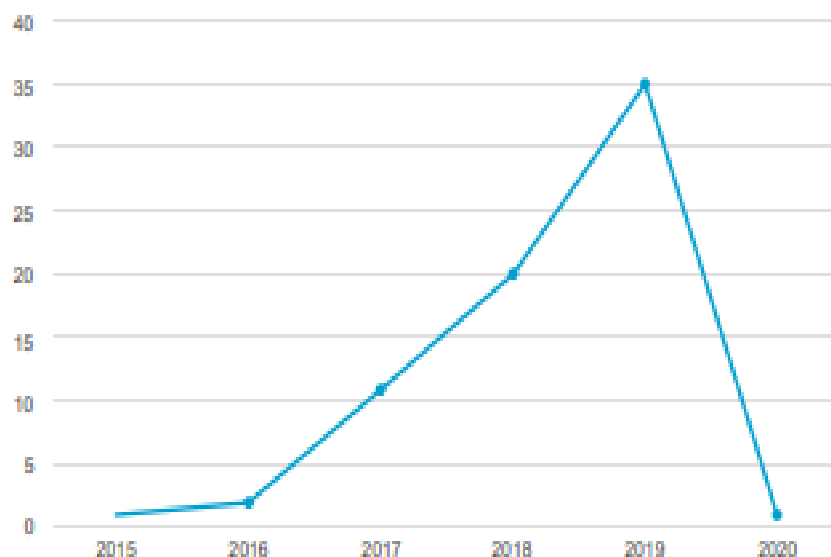

Fig:1.1 Research trend

This query in database selects research articles having title, abstract or keywords as "blockchain" and "bank". Articles with 1 citation and published during 2008-2019 were used. Fig. 1 shows renewed research interest in blockchain. Only less than 5 articles were published in 2015 but by 2019, no. increased to 35 (85 % increase).Other areas contributed low to research efforts. Interestingly blockchain applications also find use in biochemistry (2.5%), agriculture and medicine (1.7% each) and others. The major studies are summarized in Table I in Appendix. The top Scopus paper had prominence percentile score of 99.945, Field weighted citation impact 9.51 (Elsevier based metrics data). Web of Science Analysis: Before executing WoS database query, under the databases dropdown select options, "Web of Science core collection" is chosen. After this process, 28 results are obtained, from which 22 are articles, 4 review papers, 2 book chapters and editorial material and 1 proceedings paper. From these, articles with 1 citation are chosen. After this, 17 items were visualized into 4 clusters (Fig. 1.1). Some of the research works that already appeared in Scopus were omitted to avoid duplication.

Research Area

From review, the major themes are banking, information systems, innovation, law, finance, sustainability, entrepreneurship & digital infrastructure (standards, scalability, security, &privacy). This section further examines the current directions like:

Social media leveraged prediction:interesting research directions are: What are prediction methods to forecast future market conditions utilizing unstructured data sources? Research groups globally have increased attention to capture user generated content (UGC), social media for advanced explanatory/predictive models.

Business model transformations: Future research questions of interest can be: What are the innovative business models that combine platform-based technologies and incentivized interactions? With empirical evidence of positive correlation between bit coin transaction volume and human development, if technology solutions affect Human Development Index (HDI) in developing economies, this leads to sustainable outcomes.

Digital platforms as infrastructure: An editorial note points interesting avenues of research study that simplify intellectual property rights (IPR) to create ownership, protect rights using technologies like blockchains. Fostering the debate to balance the goals of privacy against the desire for economic growth is needed. Will social media be viewed as "critical infrastructure" given their ability to influence critical societal functions even as elections? If so, what are appropriate regulatory regimes? Which is the suitable role for government intervention into how platforms operate? Is self-regulation in digital platforms feasible? Ex. Libra from Facebook proposed as blockchain based open source digital currency.

Integration and data security challenges

It is important to confirm that the technology's actual integration and data security (e.g., customer data encryption) do not result in a threat or risk. During the implementation phase of PoCs, most of the early adopters came up with only a minimum number of viable productsto pilot the application of the Blockchain technology. This approach allowed a smoother and carefully monitored integration of the new technology with the existing one. As an effort to ensure data security, they also developed effective strategies for data purging or masking (i.e.,a way of erasingthe data blockscreatd so that no one can access them any more) (Pilkington, 2016). It is necessary to ensure the reliability of the technology.

Opportunities in Indian Perspective

This section unveils the opportunities and benefits offered by the Blockchain technology in the niche Indian context.Blockchain technology has emerged as an accessible technology because of its decentralization feature (Foroglou and Tsilidou, 2015), which is most likely to find applications in different aspects of the mainstream society (Kosba et al., 2020). Blockchain can be a great platform that enables a range of extra facilities such as tracing the origin of a financial transaction(Sharma, 2018). If appropriately implemented, Blockchain features increase the security and reliability of the technology. Blockchain has the potential to streamline land records (Dixon et al., 2012), asset registries, auto records, voting records (Dennis and Owen, 2015), national identity, financial transaction records and traceability (Peters et al., 2015). All these can eliminate corruption on a large scale and bring the large informal sector into the formal economy (Singh, 2021). Blockchain, alongside other innovative technologies including artificial intelligence, machine learning, data analytics and robotic process automation could improve the effiency of India's current trade finance system by manifold (Assocham, 2018; Omohundro, 2014). Besides, according to Delloite (2018), Blockchain's use for digital identity management and 'know your customer' (KYC) seems highly promising.

Job creation is an inevitable blessing that India might enjoy from the technology. There is an acute shortage of Blockchain developers, and it has been observed that budding engineers are now opting-out from the conventional streams. According to the latest Blockchain news, it is alleged that there will be several high paying jobs in the next decade. Giant technological companies like IBM and Tech Mahindra are conducting seminars and workshops to spread awareness on Blockchain technology (Bakshi, 2021).

Conclusion& Discussion

The Indian economy is likely to be benefitted immensely from the adoption of Blockchain technology. If this new technology is proved to become successful and can be practically implemented in India, it has the potential to bring in a revolutionary change in society. Blockchain can contribute with an opportunity to create a new set of jobs to enable the nation to be independent ofthe unemployment problem. Indian banks and non-bank financial institutions need to prepare well for this new technology to have a more enriched understanding of its potential implications for finance (e.g.,products such as trade and supplier finance) when implemented and integrated into the overall system.

Broadly, the issues associated in blockchain technologies specific to banking were identified. Major drawbacks of blockchain or crypto currencies are technology cost incurred, low transaction throughput, illegal use like terrorism, drug trade, cyber-crimes, etc. [20]. Therefore, need arises for industry consensus to solve challenges with collective benefit

Regulatory landscape: The legality of blockchain and bit coin is subject of intense public confusion and government scrutiny, hence still a grey area. Adding to complexity, there exists ambiguity at multiple countries. For example, in India, where services including banking contribute more than 50% GDP (2022), it was announced in 2018 that bit coin was not a legal tender for transactions, but blockchain technology is promoted in payment systems.
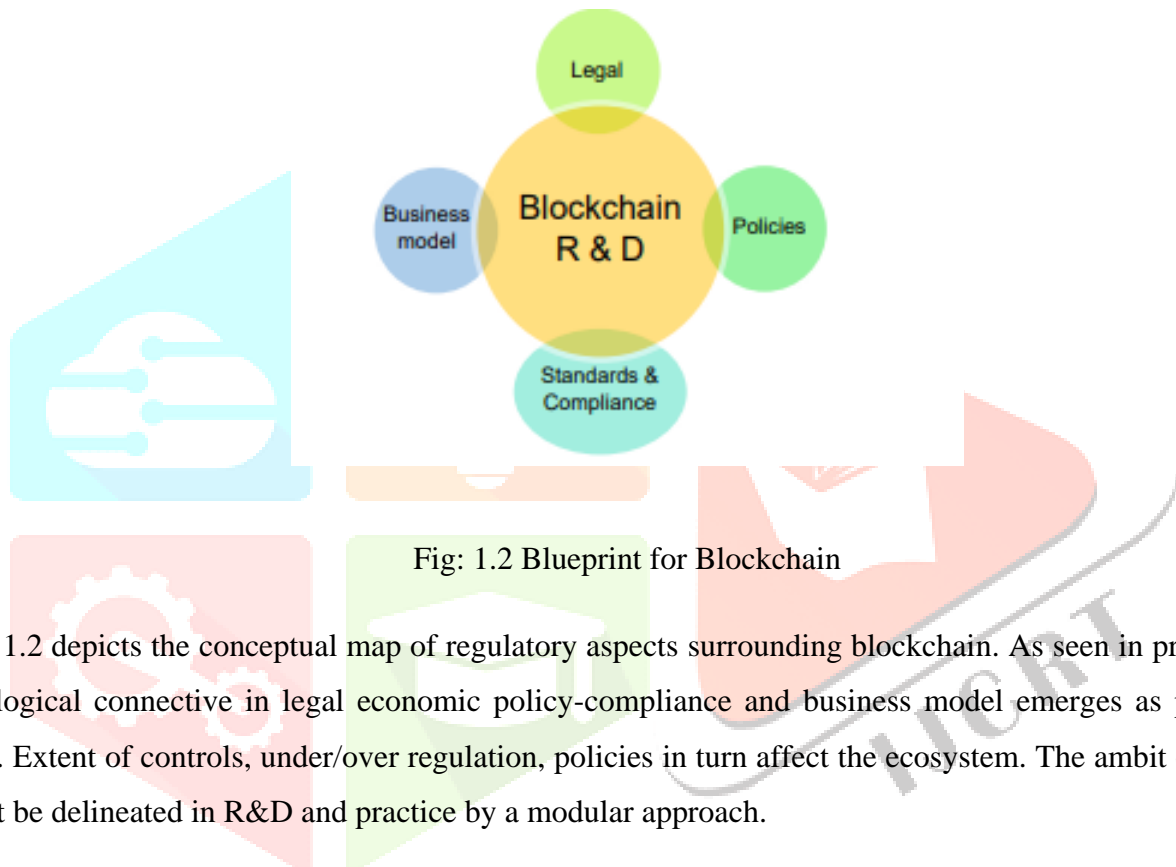

Fig: 1.2 Blueprint for Blockchain

Fig. 1.2 depicts the conceptual map of regulatory aspects surrounding blockchain. As seen in previous ex: the logical connective in legal economic policy-compliance and business model emerges as paramount [45]. Extent of controls, under/over regulation, policies in turn affect the ecosystem. The ambit of policies must be delineated in R&D and practice by a modular approach.

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