

The Organizational Adoption of Block Chain is Challenging: Facts from Indian Financial Services Sector



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The study examines the technological, organizational and environmental aspects of adopting block chain technology (BCT) in the Financial Services sector in India by employing the technology-organization-environment (TOE) framework. This is different from previous research that used models such as technology acceptance model (TAM), Unified theory of acceptance and use of technology (UTAUT). This scholarly work advances the body of knowledge now available in block chain technology adoption studies theoretically apart from the research framework that contributes to the theoretical advancement.

Keywords: Technology-Organization- Environment (TOE), Block Chain Technology (BCT/BT), Block Chain (BC), Distributed Ledger Technology (DLT), Information Technology (IT), Financial Technology (Fin tech).

1. Introduction and Review of Literature

The emerging technologies are a tool for business, social, and economic transformation (Cohen and Amoros, 2014). The concept of block Chain has been pioneered by (Nakamoto,2008).The DLT is a decentralized transaction and data management solution(Pilkington,2015).At its core, a block chain is distributed among its user base for verified record keeping and updated in real time, much like an information systems database (Swan,2015). The fundamental elements of blockchain technology are consensus procedures, immutability, decentralization, and transparency (Eyal, 2017).The blockchain technology cleared the path for the creation of bitcoins, or peer-to-peer digital currency (Jessop, 2015). In addition to facilitating online money transfer and holding for bitcoin users, distributed ledgers also provide distributed computation and the clearing and settlement of digital asset transactions without the need for middlemen (Morgan, 2016). As a result, blockchain technology is beginning to be recognized as a new kind of trust for many different services offered worldwide, especially financial services (Trautman, 2016). This might make the current financial system and associated systems outdated. Indeed, the safe value transfer capabilities of blockchain technology may make it possible for the information technology revolution to extend to the primary fields of banking, economics, and law, which have undergone updates but not a full transformation (Swan, 2015). Some of the obstacles include resolving privacy and data protection issues, the requirement for technological infrastructure, the need for standardization, regulatory and legal issues, and worries regarding scalability (Dubey et al., 2020).The main barriers to adoption are the need for new governance frameworks and acceptability issues. Furthermore, it is acknowledged that the main environmental obstacle to adoption is the absence of legislative and regulatory support (Batubara et al., 2018).The internal and exterior operations of an organization are significantly altered by the implementation of BCT (Gunasekera and Valenzuela, 2020).Thus, academics' interest in the organizational adoption of BCT has increased significantly (Clohessy and Acton,2019).The block chain technology has the potential to disrupt applications used in the financial industry since it provides permanent and unchangeable recording of transactions on a distributed network. Applications for block chain technology are varied and include digital currency, trade finance, KYC, international money transfers etc. Any transformational technology faces a number of difficulties in its early phases as it advances from the research and development stage to the first few applications and then large-scale implementation. The fact that these technologies were first designed to address a certain set of issues contributes to the issue. While block chain technology is very promising, there are a number of issues that could prevent it from being used quickly. Among the challenges are interoperability, privacy, security, scalability, energy consumption, and legal framework. The study's conceptual model testing can produce tailored adoption plans for block chain technology in India. The two primary practical consequences of block chain technology are increasing government and industry awareness of it and developing feasible use cases for it. Applying block chain technology to issues like credit risk assessment, insurance claim processing, and co-operative security can increase productivity, transparency, and trust. By overcoming implementation challenges, BCT have the potential to revolutionize the financial sector and boost stakeholder trust and operational efficiency.

2. Research Gap

Based on current examination of the literature, it seems that there are research gaps in the contemporary instruments related to

blockchain technology (Lindman et al., 2017), apart from few significant scholarly investigations and publications in this developing sector. (Yli-Huumo et al., 2016). So the practical and theoretical views of blockchain technology need additional research studies (Du et al., 2019). As most of the research on BCT adoption has been undertaken outside India and there is limited research in our country. The results of research done in other nations cannot be transferred to the Indian context because the nations differ from one another in terms of their contextual and demographic features, such as GDP, union density, trade regulations, and gender.

3. Research Problem

Since blockchain technology offers benefits like efficiency, increased security, transparency, and cost savings, it has the potential to significantly transform the Indian financial sector. However, despite the advantages, organizational adoption of BCT is extremely slow and fraught with difficulties. Therefore, the present study examines how organizational, technological, and environmental factors impact organizational adoption of block chain in India's financial sector.

4. Research Questions

4.1 Technological Context

RQ: 4.1.1 How does the Perceived benefit of BCT influences the intention of Financial services sector to adopt block chain?

RQ: 4.1.2 To what extent does the compatibility of BCT influences the intention of Financial services sector to adopt block chain?

RQ: 4.1.3 How does the perceived complexity influences the intention of Financial services sector to adopt block chain?

RQ: 4.1.4 What is the role of perceived Trust in influencing the Financial services sectors intention to adopt block chain?

4.2 Organisation Context

RQ: 4.2.1 How does the size of an organisation affects the Financial services sectors intention to adopt BCT.

RQ: 4.2.2 How top management support is crucial for Financial services sectors to adopt block chain?

RQ: 4.2.3 In what way the IT resources and Financial Resources are crucial for Financial services sector to adopt block chain?

4.3 Environment Context

RQ: 4.3.1 In what way the competitive pressure affects the intention of financial services sectors to adopt block chain?

RQ: 4.3.2 How Government Policies influences the Financial services sectors to adopt block chain?

5. Research Objectives

5.1 To study the technological, organizational, and environmental (TOE) factors on BCT adoption in financial services sector.

5.2 To examine which TOE factors are more closely linked to the use of BCT in financial services sector.

5.3 To have a conceptual model for block chain adoption in the financial services sector.

6. Scope of the Study

The financial services sector has been adopting block chain technology in a proactive manner and the study concentrated on players from this area such as NBFCS, Micro finance, credit rating institutions, Fintech companies and investment firms. The chosen participants had first-hand knowledge of creating block chain solutions. The senior managers, mid-level officials and executives are the target population. The sample frame for the pilot study is 100 and will take place in four major Indian cities such as Mumbai, Bangalore, Hyderabad, and Chennai. The investigation has been concentrated on these places because of their importance in the economic and technological domain. The Mumbai is considered to be the commercial capital of India, head quarter of Reserve Bank of India (RBI), the Bombay Stock Exchange (BSE), and several corporate organizations including banking, insurance and mutual fund companies for many years. The Bangalore is considered to be the Silicon Valley of India is a leading technology and financial services hub. The Hyderabad is a prominent place for software and tech companies just like that of Chennai. Whether it is Bangalore, Chennai or Hyderabad, it has established itself as a hub for Fintech and Startups ecosystem apart from the existence of MNCs.

7. Theoretical Framework and Determinants of Blockchain Adoption in Financial Services Sector

An innovation, in the words of Rogers (1995), is "an idea, behavior, or thing that is seen as fresh by a single person or another adoptive unit. The Innovation might take the form of new technology, but it can also refer to something more abstract, like an idea. "A decision to make full use of an innovative IT as the best course of action available" is one way to define an organization's decision to accept an IT innovation (Rogers, 1995). Numerous theories have been applied to pinpoint particular elements that either highly or minimally affect how quickly IT innovations are adopted by businesses. The TOE framework (Tornatzky and Fleischer, 1990), the technology acceptance model (Venkatesh and Davis, 2000), the perceived e-readiness model (Molla and Licker, 2005), assimilation theory (Armstrong and Sambamurthy, 1999), and theory of reasoned action (Karahanna et al., 1999) are a few examples. The 1990 saw the development of the TOE framework (Tornatzky and Fleischer 1990). The identification of the technological, organizational, and environmental perspectives that impact the adoption of IT innovations in businesses is the primary goal of the TOE framework. The technological approach takes into account technological aspects that can impact both newly proposed IT systems and currently operational IT systems (Rogers, 1995).

The internal components of a company are referred to as the organizational view (Weiner, 2009; Wang et al., 2010). The environmental perspective includes elements that affect an organization's daily business operations (Lippert and Govindarajulu, 2006). The various studies have identified these factors within the three contexts and adopted by the researcher and extended to the BCT adoption in financial services in accordance with the experiential evidence, literature review, and theoretical viewpoints (Kauffman and Walden 2001).

8. Formulation of Hypothesis

The elements and pertinent hypotheses created for this study are explained in the following parts, which are grouped under the technological, organizational, and environmental contexts of the TOE framework.

8.1 Perceived Benefit (PB)

According to De Castro et al., 2020 indicated that firms adopt BCT at a positive rate due to perceived benefits. Consequently, the following hypothesis is proposed:

(H1) The Technological factor Perceived benefit positively influences financial service sectors intention to adopt BCT.

8.2 Perceived Compatibility (PC)

Perceived compatibility refers to an organization's perception of how technology would be aligned with its business objectives (DiMaggio and Powell 1983). When organisations believe BCT is compatible with their IT infrastructure, they are more likely to adopt it (De Castro et al., 2020). Therefore, businesses are more inclined to adopt block chain technology if they believe they are more compatible. So the following hypothesis can be framed for the study:

(H2) The Technological factor Perceived compatibility positively influences financial service sectors intention to adopt BCT.

8.3 Perceived Complexity (PC)

Perceived complexity refers to the extent to which organizations consider BCT to be challenging to comprehend and utilize (De Castro 2020). The adoption of BCT is hampered by its complexity (Wong et al., 2020). Organizations are hesitant to embrace BCT because of its technical aspects, which include hashing blocks and using public and private keys (Sadhya, and Sadhya 2018). Consequently, businesses are less inclined to adopt block chain technology if they believe it to be more complex. Thus, it is possible to formulate the following hypothesis:

(H3) The Technological factor Perceived complexity negatively influences financial service sector intention to adopt BCT.

8.4 Perceived Trust (PT)

The convenience, adaptability, and perceived advantages of the technology for the users' activities serve as the foundation for the first trust (Koufaris and Hampton-Sosa, 2004). The adoption of new technology, such as blockchain technology, depends heavily on initial trust among users who are new to or less tech-savvy (Franque et al., 2023; Kim and Prabhakar, 2004; Oliveira et al., 2014). Thus, the following hypothesis can be put forth:

(H4) The Technological factor Perceived Trust positively influences financial service sector intention to adopt BCT.

8.5 Organizational Size (OS)

Numerous studies have demonstrated the impact of organizational size on the uptake of innovations (Premkumar and Roberts 1999; Rogers, 1995). Large companies usually have the financial wherewithal to test a new innovation and then decide whether to embrace it or not (Premkumar and Roberts, 1999). As a result, larger businesses are more likely to use blockchain technology. Hence the following hypothesis can be framed:

(H5) The Organizational factor the Perceived organizational size positively influences financial service sector sectors intention to adopt BCT.

8.6 Top Management Support (TMS)

Adopting new technologies within an organisation requires the full backing of top management. The likelihood of implementing an innovation like BCT is decreased when there is a lack of leadership backing (Koster and Borgman, 2020). The degree to which management's values align with those of new innovation adoption, thereby fostering a supportive environment and allocating sufficient resources for its adoption, is known as top management support (Useem, 1993; Teo et al., 2004). Thus, organizations are more likely to implement Block chain technology if top management shows a stronger commitment to the technology. In this direction, the following hypothesis can be framed

(H6) The Organizational factor perceived Top Management support positively influences financial service sectors intention to adopt BCT.

8.7 The It Expertise (IT)

Adoption of innovations depends on technological resources, which are embodied by suitable technical infrastructure and knowledgeable individuals. Businesses without sufficient IT knowledge might not be aware of new technologies or might not be able to implement them. IT expertise has been utilized as a key variable predicting adoption in innovation diffusion research (Kwon and Zmud, 1987; Premkumar and Roberts 1999). So it is possible to put forward the following hypothesis:

(H7) The Organizational factor Perceived IT resources positively influences financial service sectors intention to adopt BCT

8.8 Financial Resources (FR)

A corporation can get a longer-lasting competitive advantage in the market when more money is set aside for the implementation and upkeep of technical advancements (Kumar and Krishnamoorthy, 2020; Maroufkhani et al., 2020). For adoption to be successful, financial resources are essential, particularly in BT (Al-Hujran et al., 2018; Alshamaila et al., 2013; Amini and Bakri 2015; M'rhaouarh et al., 2018). Consequently, the following hypothesis is proposed:

(H8) The Organizational factor the Perceived Financial Resources positively influences financial service sectors intention to adopt BCT.

8.9 Competitive Pressure (CP)

It refers to the degree to which an innovation is adopted in the firm's industry. It is perceived to be positively influencing innovation adoption in an organization. (Kuan and Chau, 2001). Thus companies which experience greater competitive pressure are more likely to adopt block chain technology. The degree to which an organization fears losing its competitive advantage is referred to as competition intensity, sometimes called competitive pressure or external pressure. It has been established that the level of competition is a crucial component in the organizational adoption of BCT (Wong et al., 2020). In an attempt to stay competitive, rival organizations emulate an organisation that implements BCT. The adoption of BCT by an organization is driven by competitive pressure (Wong et al., 2020). So it is possible to put forward the following hypothesis:

(H9) The Environmental factor perceived Competitive pressure positively influences financial service sectors intention to adopt BCT.

8.10 Government Support (GS)

The policies, programs, and rewards that a government offers to encourage the use of technology are referred to as government support. The Government backing is a key factor accelerating the BCT adoption process (Koster and Borgman, 2020). When a government doesn't offer appropriate assistance, including the creation of legislation, it is impossible for organizations to widely embrace BCT (De Castro et al., 2020). Support from the government is essential to the adoption of BCT (Kulkarni and Patil 2020 and Wong et al., 2020). Thus, the following hypothesis can be proposed:

(H10) The environmental factor Perceived Government Support positively influences financial service sectors intention to adopt BCT.

8.11 Perceived Risk (PR)

The financial sector is worried about perceived security threats, such as privacy concerns, system faults, password loss, incompatibility between operating systems, security software, low system quality, while utilizing cutting-edge technology like block chain in financial operations. The intention to employ BCT is significantly impacted by the security risk concerns. The Perceived security risk as an external factor impacting variables has been the subject of numerous research (Chao, 2019; Martins et al., 2014; Thusi and Maduku, 2020). Therefore, the following hypothesis can be proposed:

(H11) The perceived risk negatively influences organizations intention to adopt BCT

9. Direct and Moderating Effects of the Perceived Risk in the Study

Bauer is the one who initially put up the idea of perceived risk (Peter and Ryan, 1976). Subsequently, a great deal of research was done to assess how perceived risk affected technological advancements. The perceived risks is the kind and degree of risk that an organization considers while making decisions in unfamiliar situation (Peter and Ryan, 1976). The Perceived risks are inversely correlated with the adoption of new technology, according to research on IT adoption (Luo et al., 2010; Tseng and Wang 2016; Kesharwani, and Singh 2012). The Organizations are hesitant to use BCT because of the risk perspective (Erturket al., 2019; Abramova and Böhme 2016). The following hypothesis are put forth to explain how perceived risks may moderate the adoption of BCT in financial sector in India

(H9a) Perceived risks moderate the relationship between Perceived benefit and financial service sectors intention to adopt BCT.

(H9b) Perceived risks moderate the relationship between Perceived compatibility and financial service sectors intention to adopt BCT.

(H9c) Perceived risks moderate the relationship between Perceived complexity and financial service sectors intention to adopt BCT.

(H9d) Perceived risks moderate the relationship between Perceived Trust and financial service sectors intention to adopt BCT.

(H9e) Perceived risks moderate the relationship between Perceived organizational size and financial service sectors intention to adopt BCT.

(H9f) Perceived risks moderate the relationship between Top Management support and financial service sectors intention to adopt BCT.

(H9g) Perceived risks moderate the relationship between Perceived IT resources and financial service sectors intention to adopt BCT.

(H9h) Perceived risks moderate the relationship between Perceived Financial Resources and financial service sectors intention to adopt BCT.

(H9i) Perceived risks moderate the relationship between Perceived Competitive pressure and financial service sectors intention to adopt BCT.

(H9j) Perceived risks moderate the relationship between Perceived Government Support and financial service sectors intention to adopt BCT.

10. Methodology of the Research Process

A methodology framework outlines the steps that must be taken in order to conduct the research and the procedures that must be followed. This study is descriptive in nature. There are situations where the first step in the research process is always defining the general area of interest or finding a research challenge that aligns with the researcher's interests. The discussion with the subject matter specialists led to the identification of a wide research challenge. To focus the problem down to a particular one, a thorough literature search was conducted. An extensive review of the literature was done in order to inform the research that was done on the topic of BCT adoption, specifically the challenges of BCT in the financial service sector. After completing a thorough review of the literature, the researcher is able to describe the conceptual model, variables, express the hypotheses, and draw attention to the more crucial aspects of the issue. On summary, the researcher is well-versed on the kinds of data that would be required as well as the techniques for data analysis that would be used. After further development of the conceptual model, the researcher identified the most common scales for measuring the study's constructs. Following that, the scales were adjusted to meet the study's needs, and a new questionnaire was made to reflect those modifications.

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