

# A Study on Level of Awareness and Perceived Usefulness of Block Chain Technology in Boosting Financial Inclusion

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**Abstract** - The aim of this paper is to examine the perceived usefulness of Block Chain Technology in banking sector and to identify the awareness level of top level managers of select banks in Kerala with special reference to Palakkad district on Block Chain Technology(BCT) .This paper seeks to investigate how BCT can be used to boost financial inclusion in India where the problem of financial exclusion remains crucial irrespective of the success of various initiatives that is aimed at attaining much needed improvements. The paper surveyed a sample of 50 top level managers of select banks in Palakkad district, Kerala. The study found that most of the respondents believes that Block Chain Technology is the technology of the future. Further the results indicate that Block Chain Technology is a technological innovation that is having the potential to improve financial inclusion through various customer friendly characteristics of the Block Chain Technology, such as addressing the high fees issue, facilitating remittances which are cross border person to person payments of low value, reducing the time consumed, providing high security, and many other benefits which will bring the unbanked and under banked population of India into the financial net.

**Key words:** Block Chain Technology(BCT), Financial Inclusion, Unbanked and Underbanked population.

## I. INTRODUCTION

Financial inclusion is the delivery of access to appropriate, affordable, and accessible financial products and services to the helpless and low income individuals in a reasonable, supportable and transparent manner by institutional players<sup>1</sup>. Around 1.7 billion individuals in the world are living without having an account within a financial institution<sup>2</sup>. This segment is generally known as the unbanked. Along with the unbanked it is important to consider the underbanked population, which has non or limited transactional access to financial services. The unbanked and underbanked together constitute around 3.5 billion financially excluded individuals worldwide<sup>3</sup>. The statistics on financial exclusion are not just limited to individuals only, more than 200 million small and medium enterprises globally lack access to traditional banking system<sup>4</sup>. Until the governments and industry stakeholders are able to provide inclusive financial systems, the poorest of the world will remain relying on the limited savings in cash, which is unsafe and challenging to manage. The major reasons for the unbanked and under banked continue to remain not having an account are; limited geographical

access to financial institutions, insufficient fund to operate an account, too expensive financial services, lack of necessary personal documentation, religious reasons, family member already having an account, and lack of trust towards financial institutions<sup>5</sup>. All these problems are to be addressed immediately as the ignorance will lead to income inequalities and slow down the economy.

Hence to solve these large issues of financial inclusion studies recommend adoption of new methods, technologies and innovations irrespective of the repetitive traditional methods of financial inclusion (Roger Voorhies, The Bill and Mellinda Gates Foundation, 2014). The BCT which is an innovative technology and widely known as the “technology of 21<sup>st</sup> century” is now catching the eyes of everyone due to its wide range of benefits and potentialities for promoting financial inclusion. The major objective of this paper is to identify the level of awareness of the top level employees of select banks in Palakkad district, Kerala and their perception on the usefulness of BCT and to analyze how this technology can be used to boost financial inclusion for the unbanked and underbanked population. When internet came into existence in 1980s everyone thought that internet is going to give everyone with equal power and responsibility. But what

<sup>1</sup> Reserve Bank of India, 2018

<sup>2</sup> World Bank Report 2018

<sup>3</sup> First Data report

<sup>4</sup> International Financial Corporation

<sup>5</sup> Global Findex Database, World Bank Group

happened in was that some of the major companies in the world took advantage of the internet and the power got centralized with those large companies that are holding the data of most of the people in the world. BCT which is based on the concept of distributed ledger technology has now started creating a new world of equal rights and responsibilities to everyone as it decentralizes the power.

ITU-T Focus Group Digital Financial Services on their report "Distributed Ledger Technologies and Financial Inclusion" (2017) describes how a block chain operates intimately as below: A block chain is a chain of 'blocks,' which contain a header (with a unique block reference number, link to previous block, and the time at which the block was created) and the block chain's content. The content of a block (the block data) is generally a checked list of assets and instructions. This includes, transactions made, their amounts, and to whom they were made. The blocks are added and stored in a continuous manner one after the other, but a new block is created only if the participant's nodes in a distributed network reach a consensus. Hence it ensures transparency and security in transactions.

Nowadays many countries are moving towards a complete block chain economy. A good example is Mauritius which is now called as etherium island. And many more examples are available for the wide adoption of BCT by many countries. Andhra Pradesh, an Indian state is gaining popularity for adopting Block Chain Technology for storing the record of entire agricultural land of the state, which lead to transparent and efficient functioning of the land department.

### **Theoretical literature on block chain technology and financial inclusion**

According to Morisse (2015) Block Chain Technology can be described as a significant innovation in general Information Systems Research. A universally acknowledged definition of the block chain has still not been attained; some authors define it as a distributed data structure (Garay, Kiayias, and Leonardos 2015; Wang, Chen, and Xu 2016), while others refer to it as a decentralized network (Kosba et al. 2016). Due to its early adoption this technology is still in the evolving phase (Wright and De Filippi 2015). Even though, Zhao et al (2016) states that there are 3 generations of BCT based on the proposed audience as BC 1.0 which included applications enabling digital currency transactions, BC 2.0 which comprises of smart contracts and set of applications which are beyond crypto currency transactions, BC 3.0 which is beyond the previous 2 versions deals with applications such as government, science, health and Internet of Things (IoT). According to Casino et al (2019) there are 3 types of applications of Block Chain Technology such as public BC, private BC, and federated BC. The features BCT offer are not exclusive if judged individually, hence appropriate BC and equivalent mechanisms should be selected to adapt the real needs of the applications. If all these issues are addressed correctly, then BCT applications will turn out to be more

efficient and long-lasting. Block Chain Technology has a crucial role when it comes to improving financial inclusion towards the unbanked and underbanked, a collective action from government and private sector is needed to improve the applications of BCT in boosting financial inclusion (Inside Magazine Issue 2019, Deloitte)

Financial inclusion refers to the "access to suitable, fair, safe and of low cost financial products and services from mainstream service providers" (Varghese & Viswanathan, 2018). It is very difficult for the financially excluded to benefit from the most basic financial instruments, like, affordable credit, insurance, remittances and even the savings accounts, without such access. Hence these financially excluded people need to depend on medieval practices such as store cash at home, borrow money from family and friends, rely on savings at home etc. which leads to mismanagement of cash and higher risk of losing money (NAFIS, 2017). Thus financial exclusion is a huge issue faced by our society for years which paves the way for a serious monitoring of the same to find immediate right solutions. To attain financial inclusion, some innovative solutions are required which can tackle all challenges by ways of increasing access, cost reduction, and raising the adequacy of financial products and services. The introduction of Block Chain Technology offers a potential solution to the challenges of financial inclusion such as geographical access, cost and inadequate financial products and services (Lacity, 2018). Hence it is high time to analyze the applicability of Block Chain Technology to boost financial inclusion.

### **Objectives**

- To understand the level of awareness of the top-level employees of select banks in Kerala with special reference to Palakkad district on Block Chain Technology.
- To identify the perceived usefulness of Block Chain Technology.
- To analyze how Block Chain Technology can be used to boost financial inclusion of the unbanked and underbanked population in India.

### **Data**

The primary data for this study was collected from surveying the top level employees of different banks' branches in Kerala with special reference to Palakkad district, using google forms and data was collected in march 2021. The survey used a probability sampling approach and included sections on demography, awareness level and perceived usefulness. The sample size was 50. The collected data has been analyzed using percentage method and factor analysis. Bar and pie charts also have been used for analysis.

## II. ANALYSIS AND DISCUSSION

**Table 1 demographic profile of the respondents**

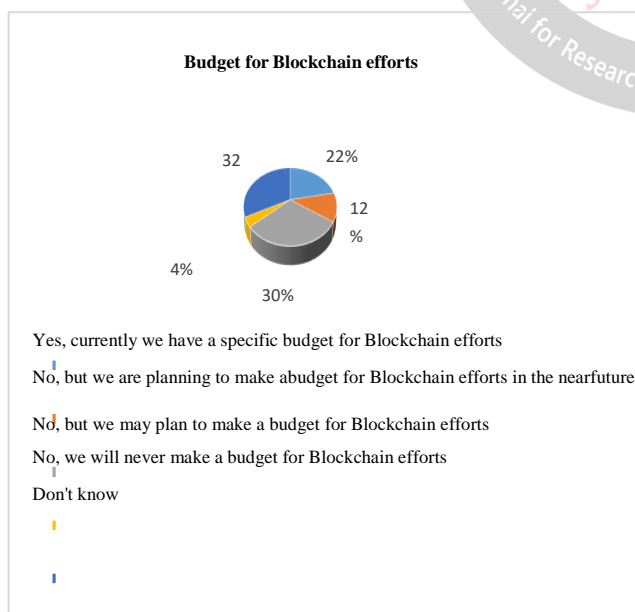
Years of experience	Less than 5 years	31	62.0
	5-10 years	11	22.0
	10-15 years	4	8.0
	Above 15 years	4	8.0
<b>Demographic profile</b>	<b>Variables</b>	<b>Frequency</b>	<b>Percent</b>
Gender	Male	33	66.0
	Female	17	34.0
Age	Less than 30	30	60.0
	30-40	16	32.0
	40-50	2	4.0
	Above 50	2	4.0
Educational qualification	Degree	16	32.0
	Post graduate	32	64.0
	Other	2	4.0

A majority of the respondents (66%) were male and of the age group less than 30 years (60%). Most of the respondents (64%) are post graduates. 62% among the respondents have a work experience of less than 5 years in banking industry, 22% have 5-10 years of work experience and 8% and another 8% of the respondents have 10-15 years and above 15 years work experience respectively.

### 2. Level of awareness on Block Chain Technology and Financial Inclusion

To measure the level of awareness of the top level employees of various select banks on Source: primary data – computed inclusion, certain questions were asked to 50 respondents and their responses are shown in charts below.

**Figure 1 Awareness regarding the budget for block chain activities by the respondents' organization**

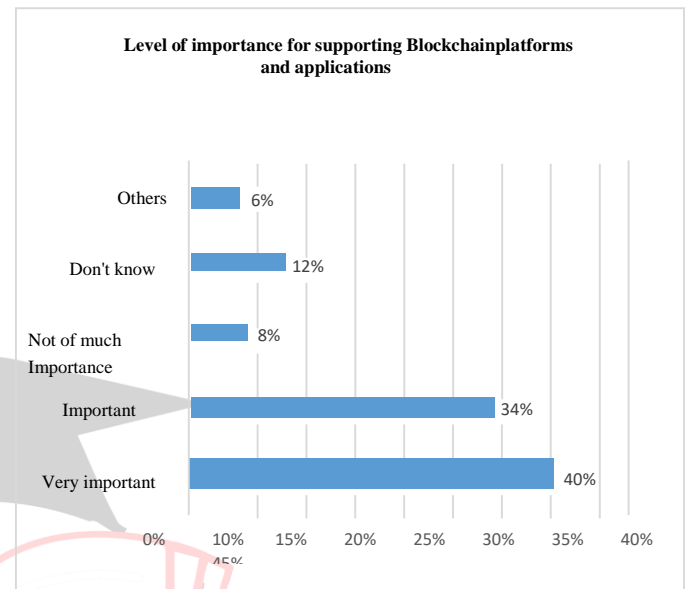


Source: primary data - computed

A major part of the respondents (32%) are unaware of

whether their organization is having a budget for its block chain efforts while a 30% of respondents responded that they may plan for a budget. While 22% of the participants stated that currently they have a specific budget for block chain efforts whereas a 4% told that their organization will never make a budget for block chain efforts. And a 12% of respondents specified that they are planning to make a budget for its block chain efforts in the near future.

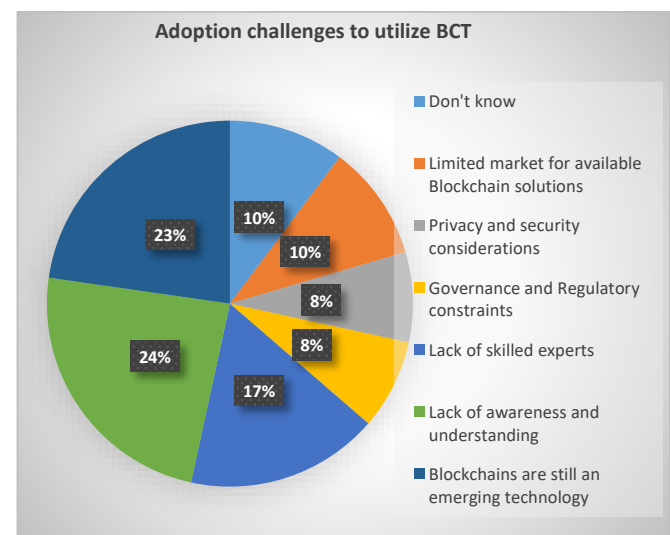
**Figure 2 The level of importance given by the respondents for supporting blockchain platforms and applications**



Source: primary data - computed

A larger chunk in the pie (40%) have opined that it is very important to develop industry standards and practices for supporting Block chain platforms and applications, similarly a 34% consider as it is important. However, an 8% of respondents have opined that it is not of much importance to develop industry standards and practices for supporting block chain platforms and applications where 12% are unaware of the same.

**Figure 3 The respondent's perspective on adoption challenges in utilizing blockchains**

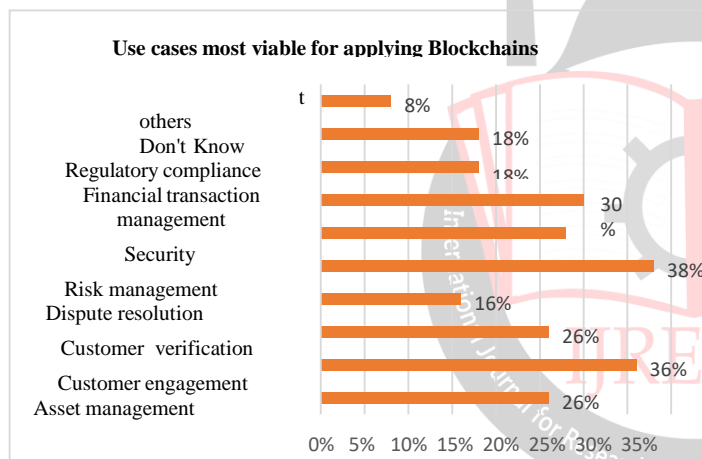


Source: primary data - computed

A majority of the respondents (42%) and another 40% considers lack of awareness and understanding of BCT and block chains are still an emerging technology respectively as the major adoption challenges to the organization's efforts to utilize BCT among the others. A total 30% of the respondents opined that lack skilled experts in the respective area is also one of the biggest challenges. The other factors mentioned was also considered as biggest challenges by many respondents, this includes, limited market availability for block chain (18%), privacy and security considerations (14%), governance and regulatory constraints (14%). Even though 18% of the respondents are unaware of what are the challenges in block chain adoption Perceived usefulness of Block Chain Technology

In this section questions regarding the perception of the respondents on the usefulness of block chain technology, it's challenges, reasons for financial exclusion, whether Block Chain Technology can be adopted to boost financial inclusion were asked.

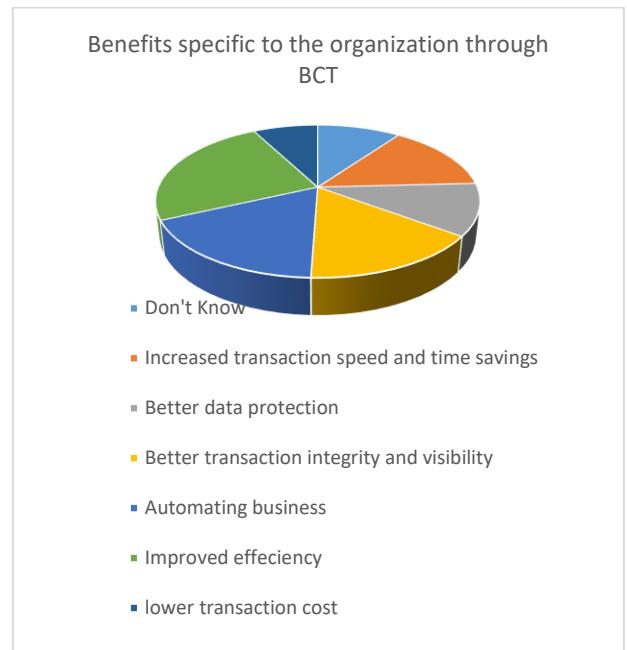
**Figure 4 Respondents' view on the most viable use cases for applying BlockChain Technology.**



Source: primary data - computed

A majority of 38% of the respondents considers risk management and a 36% of respondents considers customer engagement as the most viable use cases for applying BCT. Financial transaction management has been considered by 30% of the respondents as an important use case. While 28% of the respondents opined that BCT can be applied for security purpose and 26% opined that it can be used for customer verification and asset management (26%) respectively. Other most viable use cases of BCT include regulatory compliance (18%) and dispute resolution (16%).

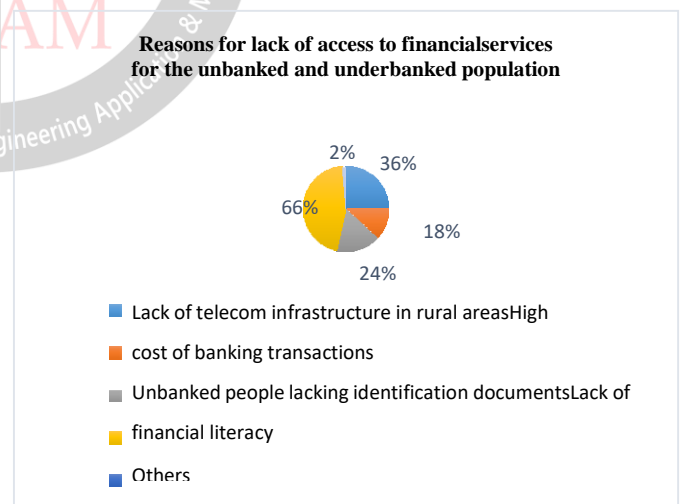
**Figure 5 The perception of respondents regarding the benefits specific to their organization to be obtained from using BCT**



Source: primary data - computed

Majority of the respondents (44%), expressed that improved business efficiency is one of the foremost benefits specific to the organization that can be obtained from using block chains. The other benefits specific to the industry that can be obtained from using block chains include; 32% identifying new ways of automating business process (32%), better transaction integrity and visibility (28%), time savings (26%), data protection (20%), lower transaction cost (14%). However, an 18% of respondents are unaware of the benefits.

**Figure 6 The respondent's perception on the reasons for lack of access to financial services for the unbanked and underbanked population**



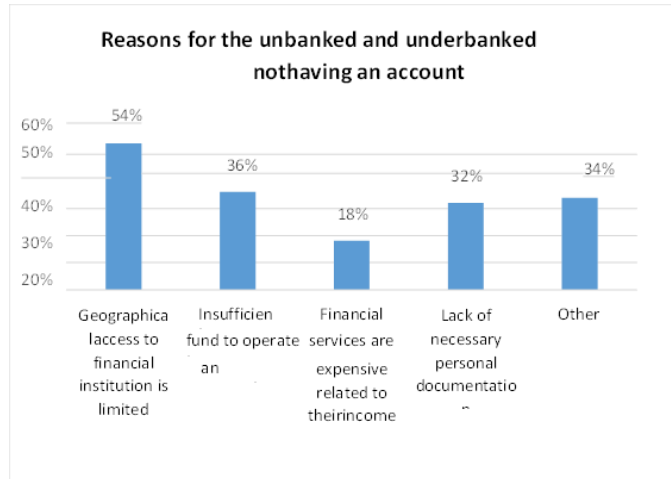
Source: primary data - computed

A major part of the respondents (66%) have opined that financial illiteracy is the major reason for lack of access to financial services for the unbanked and under banked population. Although 36% responded that lack of telecom infrastructure in rural areas is also a reason for financial exclusion. While 24% of respondents stated lack of



identification documents by the unbanked population, and 18% of respondents opined that high cost of banking transactions are also causes of financial exclusion.

**Figure 7 The perception of the respondents about the reasons for the unbanked and underbanked not having an account**



Source: primary data - computed

Among the reasons for the unbanked and underbanked not having an account, limited geographical access to financial institution has been considered as a major reason by 54% of the respondents where 36% and 34% of respondents considers insufficient fund to operate an account and other reasons respectively. Likewise, 32% of the respondents opined that lack of necessary personal documentation is a major cause of people not having an account while 18% considers the high cost of financial services as a main reason.

### III. FACTOR ANALYSIS

The exploratory factor analysis has been implied to identify the factors influencing financial inclusion by adopting Block Chain Technology. The below Figure illustrates the sampling adequacy.

**Table 2 KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.853
Bartlett's Test of Sphericity	Approx. Chi-Square	431.839
	Df	45
	Sig.	.000

Source: compiled and calculated from primary data (SPSS Output)

The above Table reveals that the (KMO) Kaiser-Meyer-Olkin Measure of Sampling Adequacy is 0.853 and Bartlett's Test of Sphericity significant value is 0.000 at 5 per cent level of significance. It becomes clear that the factors are significant statistically and the data reduction may be employed to explore the components.

**Table 3 Factor Analysis**

Components	Perception towards BCT adoption for improving financial inclusion	Component	
		1	2
Cost benefits	Creation of a KYC block chain can cut the cost on KYC software	.916	
	BCT adoption reduces the cost to open a bank account	.863	
	BCT adoption reduces the cost by cutting out intermediaries and automating the process	.775	
	BCT addresses high fees issue	.661	
	BCT adoption saves time	.649	
Implementation Benefits	BCT is faster and safer in verifying information		.890
	BCT ensures high security to the participants by usage of Cryptography		.735
	BCT addresses issue of lack of identity		.712
	BCT is having the potential to facilitate remittances		.707
	BCT is having the potential to improve financial inclusion		.642

Source: compiled and calculated from primary data (SPSS Output)

The factor analysis Table infers about the factors explored for analyzing the perception of usefulness of BCT application to foster financial inclusion. The first entitled "Cost Benefits" explores that BCT adoption reduces the costs of financial transactions through various means such as reducing cost to open a bank account, reducing cost by cutting out intermediaries and automating process, addressing high fee issue and by saving time.

The second factor named as "Implementation Benefits" consists of items BCT implementation provides such as high security, speed up verification of information, potential to facilitate remittances, addresses the issue of lack of identity and the potential to improve financial inclusion.

### IV. LIMITATIONS OF THE STUDY

The study is limited only to the Palakkad district in Kerala, and it surveyed only the top level officers in the selected branches of the bank. Further studies can be carried on in another sectors other than banking and involving a wider region for the study.

And another limitation of the study is the small sample size used for the study. This study majorly focuses on the awareness and perception and usefulness of block chain technology and it can be further extended to areas such as applicability, benefits, disadvantages., etc.

### V. CONCLUSION

This study concludes that the major reasons for the unbanked and underbanked population in India not having an account in any financial institution are; the limited geographical access to financial institutions and the high cost to operate the account. Block Chain Technology adoption in financial

services industry will eliminate the major hindrance of limited geographical access as this technology can be used with systems and even with smartphones. BCT adoption also reduces the cost of financial transactions by cutting out intermediaries and automating the process. Block Chain Technology ensures high security to its participants and reinforces trust through cryptography and similarly reduces the time needed for resolving disputes, collecting information, and authenticating transactions, paving the way to a quicker settlement and deliveries. Further it is evident from the study that majority of the top level managers are having moderate knowledge on BCT, and hence its adoption and application will be easier in banking sector. It is sure that Block Chain Technology is a technological innovation with high potential to boost financial inclusion.

## VI. RECOMMENDATIONS

Block Chain Technology can be adopted in banking industry with the cooperation of the governing authorities and related parties, in a way such as a KYC block chain, which can be formed to reduce the cost on KYC collection software of the banks and on the other hand which will reduce the formalities faced by customers each time they approach different banks for various purposes even though they are providing the same KYC details to different financial institutions.

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