The Rise Of Blockchain Technology In Shariah Based Banking System

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A Shariah-based banking system tries to implement Islamic finance, which maintains Shariah. So, the users must know if they are taking riba or not, or if their money is invested in any halal business or not. That is why a Shariah-based bank needs to be transparent with its users. It is also based on partnerships. Here, they are mudarabah and musharakah. Blockchain can be helpful in this kind of scenario because of its features. This study aims to figure out how to use blockchain technology to make investments and returns of profit or loss more transparent and sharia-compliant. Blockchain networks can be used in the financial sector, like banking, to make secure sharia-based banking transactions. Islamic finance is raising cash in line with Sharia, Islamic law, by enterprises and people. It also refers to the sorts of investments allowed under this type of legislation. Islamic finance may be seen as a one-of-a-kind approach to socially responsible investing. This branch of finance is still developing. Riba (usury) and gharar (interest) are forbidden in Islamic banking (ambiguity or deception).

CCS Concepts: • **Security and privacy → Block and stream ciphers**.

Additional Key Words and Phrases: Bank System ,Islamic Finance,Blockchain, Smart Contract,Web 3.0,FinTech,Defi

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1 INTRODUCTION

Islamic banking is a type of shariah-compliant banking system. Two significant ideas of Islamic banking are the sharing of profit and loss and the prohibition of lenders and investors collecting and paying interest[TARVER 2021]. Islamic financial institutions adhere to principles of Islamic rules. Banking in Islam refers to saving money controlled by Islamic law, commonly known as Sharia law. The prohibition of interest (riba) collecting and payment and profit and loss sharing are two essential ideas in Islamic banking. Islamic law forbids gathering and collecting interest[Gordon 2021].
We focus on the banking system. Mainly on the Islamic banking system. Islamic banks are those banks that maintain Shariah properly in their approach.
In the finance sector, The security of a bank is essential. By using Blockchain, the deposit is robust[Monirujjaman Khan Minhaj Uddin Chowdhury Khairun nahar Suchana SyedMd Eftekhar 2021].

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Distributed ledger technology is what Blockchain is all about. As a result, when Blockchain is used in finance, it is referred to as Decentralized Finance (DeFi). Defi is a company that is always looking for new ways to make things better. Developers may create and test new applications without having to seek authorization. Interoperability is easy to maintain since Decentralized Finance is built on public blockchains and open standards. However, true interoperability in decentralized Finance has yet to be accomplished [Chena 2021].
We made the list of Blockchain and Blockchain implemented on Islamic finance and collected published papers from IEEE, research gets, Springer, ACM, Google Scholar, Microsoft Academic. All papers were published in reliable journals between 2010 to 2021.In the 2 section of this paper, we provided an outline of the definition of banks, the history of banks, types of banks, definition of Centralized banking and defi, Islamic banks. In section 3,Shariah Based banking system, Shariah Based banking system in Bangladesh . In section 4, Blockchain, history, description, classes, features, Smart Contract, Web 3. o The Decentralized Web . In section 5, Defi, definition,FinTech. Future research direction is followed in section 6. within the last section, we conclude the paper.

2 OVERVIEW OF BANKING SYSTEM

2.1 Banking history

A bank is a financial institution that lends money to customers and accepts deposits. In a country's economic status, banks play a crucial role. Banks offer a variety of items as security and support, including loans, accounts, deposits, credit, and borrowing money. Some people go to the bank to keep their money safe, while others take out loans. Bangladesh's financial system, on the other hand, differs somewhat from that of other countries. Bangladesh's financial system began in 1971 with the establishment of the Bangladesh Bank, the country's first bank[Siddikee and Hossain 2013]. Bangladesh's financial system at the time consisted of 6 nationalized commercial banks, 3 private banks*, and 9 foreign banks*. In Bangladesh, banking is now generally separated into 2 groups.

- `Banks that were scheduled:` The Bangladesh Bank was in charge of all banks.
- `Non-scheduled:` These are special banks that are not under Bangladesh Bank's supervision.

2.2 Banks that were scheduled

After independence, there were 56* scheduled banks[Hossain 2015]. However, in 2021, there are 61* scheduled banks in Bangladesh updated by Bangladesh Bank[Spe date]. Those banks do classify into,

- *State-Owned Commercial Banks (SOCBs):*The government of Bangladesh owns 6 SOCBs.

- *SDBs (Specialized Banks):*Three specialized banks are presently in operation, each with its own set of agricultural or industrial development goals. These banks are also entirely or primarily controlled by the Bangladeshi government.
- *PCBs (Private Commercial Banks):* 43 private commercial banks are mostly held by individuals.
- *Foreign Commercial Banks (FCBs):* There are 9 FCBs functioning in Bangladesh as branches of foreign banks.

PCBs are divided into two types:

- *Conventional PCBs:* There are now 33 conventional PCBs in use in the industry. They carry out traditional banking tasks as well as interest-based transactions.
- *PCBs based on Islami Shariah:* Bangladesh has ten PCBs based on Islami Shariah. They carry out banking activities in accordance with Islamic Shariah principles and the Profit-Loss Sharing (PLS) model.

2.3 Banks in Bangladesh

In Bangladesh, there are two types of Private Commercial Banks (PCBs).

- *Conventional PCBs:* Generally, conventional banks were not based on religious principles, and they are profit-making organizations known as Commercial banks. Conventional banks in Bangladesh give the interest in June and December also; if money has been withdrawn twice a week or more, for that interest is not given[Hossain 2015].
- *Islami Shariah-based PCBs:* Islamic banking: non-interest banking is called Islamic banking, which follows the sharia law based on Quran and the Hadith. Sharing the profit and loss is the first fundamental principle of Islamic banking and the second one is prohibited from collecting interest or *'Riba'* [Ahmad 2020]. Conventional Banking vs. Islamic Banking: Islamic Banking is an The ethical Banking system, and Conventional Banking is an Un-Ethical Banking system. Islamic Banking follows the law of Islamic Shariah, where Conventional Banking is based on Man-Made-Law.

This paper mainly focus on Islamic finance.

2.4 Banking System

Also, those banking systems could be divided into 2 types based on security and Service.

- *Centralized banking* Centralized banking is mainly a software base system, can be said as a core banking. Core means Centralized online real-time exchange. This software helps to keep records and allows access from everywhere. Before centralized the baking system, it used to take almost a day for a single transaction. Following 3 years, banks over the country can access the application from one data center. by this, people can withdraw or deposit their money from any bank branch[Prof. Dr. Philipp Sandner Benedikt Eikmanns 2021][Sneha Gedia Gauri Choudhari Tushar Adivarekar 2018].
- *Decentralized Finance* In short, Decentralized Finance is an umbrella terminology that covers the goal of a financial system that supports only through the authority of smart contracts, without the use of any intermediaries such as banks, insurance companies, or clearinghouses. DeFi apps aspire to provide traditional Finance (also referred to as Centralized Finance, or plain CeFi) functions in a permissionless, global, and transparent manner[Prof. Dr. Philipp Sandner Benedikt Eikmanns 2021; Sneha Gedia Gauri Choudhari Tushar Adivarekar 2018].

3 *ISLAMIC BANK*

Islamic Finance is a finance system that follows Shariah (Islamic Law). Islamic Finance started its journey in 1970 with an entire banking system. In the next 20 years, Ijarah and equity are included. Finally, in the year 2000, Sukuk was established. Now, the Islamic banking system comprises 30% of the total banking sector[Moniruzzaman 2018]. Shariah-based banking system tries to implement Islamic finance, which maintains Shariah's rules. So, the users must know if they are taking riba or not or if their money is invested in any halal business or not. Riba is haram for a Muslim person. a Muslim person can't take riba from any business or invest their money in any illegal company. According to Shariah, Islamic Finance should stress profit and loss sharing and ban interest[Moniruzzaman 2018]. The profit-sharing is dependent on shariah limitation.

Table 1. Islamic Banks' Financing Methodologies and Composition in Selected Countries

Country	Modes	%	Total	%Total assets
Bahrain	Musharaka	4	100	88
	Murabaha	96		
	Qard hassan[Sae 1994]	Less than 0.5%		
Bangladesh	Hire-purchase	13	100	57
	Murabaha	51		
	Bai mua'zzal	19		
	Qard hassan	4		
	Others[Kon 1993]	10		
Malaysia	Musharaka	2	100	33
	Mudaraba	Less than 0.5%		
	Ijraa	9		
	Murabaha	18		
	Bai mua'zzal	68		
	Qard hassan	Less than 0.5%		
	Others[Kon 1994]	3		

3.1 Shariah based banking system

The accompanying terms as utilized in this rule, if not disgusting to the subject or issues, will have the contemporary significance[Nafis AlamLokesh 2017]:

- "Shariah" signifies such standards and guidelines as having their starting point in the heavenly Qur'an and Sunnah to administer all parts of human existence.
- "Islamic Banking Business" signifies such financial business, the objectives, targets and exercises of which is to direct financial business/exercises as indicated by the standards of Islamic Shariah, and no piece of the business either in structure and substance has any components not endorsed by Islamic Shariah.
- "Investor" signifies somebody who holds an account with any Islamic Banking Company, specifically the current record dependent on Al-Wadiah standards, Savings, or long and transient store accounts under Mudaraba standards.
- "Speculation" signifies any such methods of financing which Islamic Bank Company does as per standards of Shariah or according to the Shariah supported modes like Mudaraba, Musharaka, Bai-Murabaha, Bai-Muajjal, Istisna, Lease, Hire-buy under Shirkatul Melk, and so on
- "Customer" signifies such an individual or foundation who/ which has any business relationship with Islamic Banking Company.
- "Pay" signifies such monetary punishment as is forced by an Islamic Banking Organization far beyond how much portion when a customer neglects to reimburse Bank's venture on due dates according to the arrangement executed by him[Nafis AlamLokesh 2017].

All the banks are not maintaining the same shariah principles. Different countries follow different principles. In Table2.

Distinct nations have different principles Table2. However, this is inaccurate; some assessment methodologies have been used to evaluate bank performance and have been established in particular standards like CAMEL and CAMELS. The CAMEL technique evaluates performance using capital, asset quality, risk management, earnings, and liquidity factors, whereas the CAMELS method adds market sensitivity to risk. Those valuation methodologies, on the other hand, simply use financial indicators to assess Islamic banks' performance and do not completely reflect *"maqasid"* shariah[Siti Amaroh 2018]. In Bangladesh,Islamic financial services and products are governed by some guidelines provided by IFIs. These are the ones[Rashidah Abdul Rahman 2021].

- Cost-plus sales (Murabahah)
- *Cost-plus sales (Murabahah)*
- *Credit sales (Bai Bithaman Ajil)*
- *Leasing (Ijarah)*
- *partnerships (Mudharabah and Musharakah)*
- *various forward contracts are examples of such finance modalities (Bai Salam and Istisna)*

Table 2. Islamic Banks' Financing Methodologies and Composition in Selected Countries.

Country	Category	Category
Bahrain	Musharaka	Morabaha Commission Service charges
Bangladesh	Al-mudaraba Musharaka	Bai-mua'zzal Bai-salam Hire-purchase Ijara Murabaha Commission Service charges
Iran	Civil partnership Legal partnership Direct Investment Modarabah Mozaarah Mosaqat	Forward delivery Transaction Instalment sales Jo'alah Debt trading Hire-purchase
Malaysia	Al-musyarakah Al-murabahah	Al-mudharabah Bai bithaman ajil Bai al-dayn Al-ijarah Al-ijarah thumma al-bai Al-wakalah Al-kafalah Al-hiwalah Al-ujr

3.2 History of Shariah base bank in Bangladesh

The financial sector is crucial for every development of a country's economy. There are many economic sectors in Bangladesh like the money market, insurance companies, and several financial institutions[Mohd Yakub Zulkifli Bin Mohd Yusoff Issa Khan and Nor 2016]. The first insurance company started in 1938 in Indo-Pakistani. From 1947 to 1970, many insurance companies began while Pakistan controlled Bangladesh. Then in 2010, The first insurance company started its journey in Bangladesh[Mohd Yakub Zulkifli Bin Mohd Yusoff Issa Khan and Nor 2016].

Nazrul Islam stated that Bangladesh is the second-biggest Muslim majority kingdom and has the ninth-biggest populace inside the keynote paper. Since 2005/2006, it has stored its boom fee around 7%. Though the unemployment and poverty costs are nonetheless high and poorly ranked with inside the Global Innovation Index, Bangladesh is a kingdom of excess capacity because of its demographics, with greater than 60% and more youthful generations who can convey modifications inside the economy. At the cease of the October-December 2020 period, deposits and funding grew through 2.28%and 3.55%, respectively, while remittances and extra liquidity of the Islamic banking region accelerated through 19.24% and 60%, respectively, compared with the final quarter. Islamic banks accounted for a 40.51% proportion of remittances mobilized through the entire banking region throughout the equal period. It could be well worth sharing that the maximum complex elements in this region and the general banking device are the shortage of professional human resources, product diversification, using technology, and a sturdy criminal framework for Islamic banking in Bangladesh[Khan 2021]

Bangladesh follows the principle of "mudaraba" and "musharaka."

- *Musharakah:* Stakeholders share gains and losses in this partnership system, according to Musharakah. The partners also make management choices.

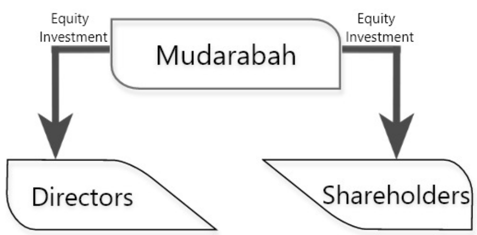

Fig. 1. Musharakah

- *Mudarabah:* In Mudarabah, one member shares the total required capital.Raab-ul-maal is his name. Another individual works hard to operate the company. Mudarib is the name given to them. Profit is distrusting in this case based on the ratio. In the event of a loss, however, only Raab-ul-maal is responsible[Mahdi and Rahaman 2020].

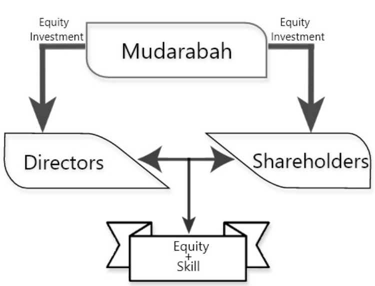

Fig. 2. Mudarabah

3.3 Shariah based Banking system in Bangladesh:

In light of the absence of Islamic monetary business sectors and instruments in the country, Bangladesh Bank had allowed some particular arrangements for creating Islamic banking in Bangladesh. Among these arrangements[Ahmad 2007], coming up next are critical:

- Since there is no benefit and misfortune bearing protections in Bangladesh, Islamic banks have been permitted to keep up with their Statutory Liquidity Requirement (SLR) with Bangladesh Bank at the pace of 10% of their complete store liabilities (Cash Reserve Requirement [CRR] at 5% and Valuable Reserve Requirement [SRR] at 5% in endorsed protections). Conversely, the necessity is 20% for traditional banks in Bangladesh. This segregating arrangement permitted the Islamic banks to redirect some liquid assets for venture and create additional benefits accordingly[Ahmad 2007].
- Under the circuitous financial approach system, Islamic banks were permitted free extension to fix their benefit and misfortune sharing (PLS) proportions and markups comparable with their strategy and banking climate. This opportunity to further develop PLS proportions and markup rates has permitted Islamic banks to follow the Shariah standards freely[Ahmad 2007].
- Islamic banks could repay 10% of their proportionate authoritative expense on their offsets held with Bangladesh Bank. This office has given some extensions to improve its benefit base[Ahmad 2007].

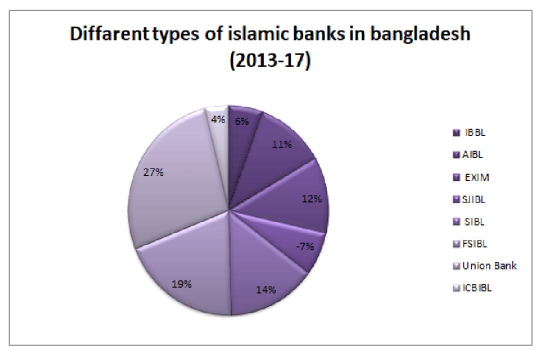

Fig. 3. Investment Growth Rate: Difference Islamic Banks in Bangladesh

The speculation development rate for a very long time of *IBBL, AIBL, EXIM, SJIBL, SIBL, FSIBL, Union Bank Ltd, and ICBIBL.* It addresses the effective administration of the organizations in contributing, controlling, and selling the items. It likewise demonstrates the organizations' ability to endure unfavorable monetary conditions. Despite worldwide economic emergency and public political and financial adverse circumstances, they are advantageous to get by. As indicated by the co-effective of variety, SIBL's speculation development rate is generally steady than other Islamic banks' development rate(from 2017). Rapid development in Islamic financing for corporates in a profoundly divided market could be poor guaranteeing principles. Corporate expanded funding to 75% of all-out Islamic subsidizing as of the finish of March 2021 from 52% five years sooner, while the extent for ordinary banks diminished to 71% from 75%

during the period," said *Tengfu Li, a Moody's expert*[Serajul Islam 2019].

3.4 Fact Checking Halal Attributes of Cryptocurrency

For the halal financial industry, Sharia law provides a set of severe laws that limit how money may be generated, spent, and invested. These rules stipulate that transactions involving cash must have a physical form and a defined value; digital cryptocurrencies does not fulfill any of these criteria[MELBOURNE 2021].

The majority views recognize fiat money, yet Shari'ah views on cryptocurrencies remain contentious.But if we compare fiat money and bitcoin, the bitcoin is Riba free and incorporates the principles of maslahah and risk-sharing. One modern and well-known Muslim scholar,

Sheik Imran Hussain, believes that any currency with intrinsic value cannot be considered good money. Consequently, in his opinion, only gold or silver money can meet the criteria of Shari'ah.

Imam Al-Ghazali says: "Allah created the dinar and dirham for circulation and to be an equitable and just standard between different assets and for another wisdom which makes them a means to all other assets. That's because they are precious in themselves (intrinsic value) but not desired for themselves..."

Imam Ibn Taymiyah states: "Whenever currencies are sold one for another on a different basis, it opposes the purpose of the Thamaniyyah (a measure of value) of money.

Imam Malik said in his famous Al-Mudawwanah: "And if people had permitted leather coins, I would dislike them (coins) to be exchanged with gold and silver on the deferred basis"

But nowadays, gold or silver is not used. It is commonly accepted that all financial liabilities, such as Sukuk, should be backed with tangible assets. AAOIFI (Organization of Accounting and Audit of Islamic Financial Institutions) was the first to officially announce that standard characteristic of money as liquidity[Oziev and Yandiev 2017a].

According to Muslim experts, the notion of blockchain and cryptocurrency is intrinsically anti-interest, hence crypto is kosher. Because Islamic principles are also against interest, many Islamic experts say that blockchain technology, pricing, and buying and selling cryptocurrencies are all halal, which is good[Hussain 2021].

- According to Islamic contract rules (Mal.), an element of consideration is required. Cryptocurrencies satisfy the requirements for ownership and effective storage since they may be owned, kept, and have economic worth (Mutaqawwam). Crypto is a real and legitimate digital asset. Its worth and value are based on the price you pay for it, and it can be held and traded professionally to meet Shariah rules[Hussain 2021].
- Shariah principles, which emphasize social justice, responsibility, and ethics, can be applied to current crypto analyses because they apply to all types of financial transactions. Shariah rules don't say that trading or investing in crypto should be illegal as long as there is no crime[Hussain 2021].
- As previously stated, the release of Mufti Muhammad Abu Bakr's working paper explicitly stated that bitcoin is permitted under Shariah standards. For Muslims throughout the globe, this might have major ramifications for the distribution of Zakat funds to the underprivileged and charities around the world. If Muslims account for 25% of the world's population and have around £1.04 billion in bitcoins, Zakat payments of £26 million are payable[Hussain 2021]. Many banks and financial institutions throughout the world are beginning to recognize cryptocurrencies as a financially legitimate means of exchange, making it simpler for investors to trade, buy, and sell bitcoin. When it comes to whether or not crypto contracts are Shariah compliant, the fact that crypto contracts are based on smart contracts utilizing blockchain technology implies that the process may be made more safe and automated. This not only eliminates administrative problems, uncertainty, and mistakes, but it also makes it more likely that banks will accept the contractual agreements that are set up[Hussain 2021].
- By demonstrating Shariah compliance, cryptocurrency is gaining legitimacy in the Islamic finance world. Cryptocurrency exchanges, such as One Gram in Dubai and Hello Gold in Malaysia, are sprouting up all across the Muslim world. This gives the judgment that bitcoin is halal and may be used by Muslims and Islamic financial organizations even more weight[Hussain 2021].

The Holy Qur'an has stressed the importance of fairness in business: "And, O my people, give full measure and weight justly, and defraud not men of their things, and act not corruptly in the land making mischief. What remains with Allah is better for you, if you are believers"(Qur'ān :11.85-86)
So there is a controversy about whether digital cryptocurrencies is halal or not. But if all over the country accepted digital cryptocurrencies, it could be halal.

Even though cryptocurrency being halal has been a controversial topic. Most of the debates regarding this issue by Islamic scholars were based on the applications of Bitcoin. This cryptocurrency is one of the first of its kind and was not regulated by any financial guidelines. It was forced to have price fluctuations and was considered an illegal activity.This does not justify the fact that other cryptocurrencies cannot be regulated and also that all digital cryptocurrencies don't have the same use cases. Rather, it was uncovered that Shariah compliance was verified in Islamic finance with applications such as One Gram in Dubai and Hello Gold in Malaysia, which are sprouting up all across the Muslim world. Therefore, based on the right development protocols and guided monetary rules, it is possible to utilize the application of digital cryptocurrencies in the domain of Islamic finance. (Some Inferences for Justifying Halal Statements)

4 BLOCKCHAIN

4.1 History of Blockchain

People believe that the first blockchain technology comes from Satoshi Nakamoto in 2008. it is a mystery who Satoshi Nakamoto is? is they are a person or a group of people?.Noone knows the truth behind this. *Satoshi Nakamoto published a paper, "Bitcoin: A Peer-to-peer Electronic Cash System,"* mainly an online payment system without using any third party. With this evolution, bitcoin start there journey. Bitcoin is the first digital currency. In 2009 Bitcoin entered the market. At that time, the value of bitcoin was$.06; in 2017 December the value rose to $19,000[Popovski and Soussou 2018] and nowadays in 2021, the value reach 9.7 billion US dollars[Petr Martynovich Elena A.Kirillova 2020]. Blockchain nowadays plays an important role in the entire world[Popovski and Soussou 2018].

In terms of the resources required to properly construct a node and confirm transactions, older generation blockchains may be sluggish and costly. Scaling has been a significant problem. At the same time, technology advances, and new generations of blockchains become more affordable and accessible. Concordium, a science-based blockchain, is a nice example.
On a global scale, it features quick transactions and great throughput. It even features smart contracts that are simple to set up. New types of blockchains that are based on science should make it easier for people to get in. At the end of the day, keep in mind that all public blockchains are decentralized and created to be accessible to everyone. As a result, making it pricey would be counterproductive.

4.2 Blockchain

Blockchain may be a public and shared digital trusted distributed immutable ledger. Open-source, decentralized technology, so nobody controls it. In other words, Blockchain could be a collection of transactions recorded in blocks; every block is linked to the previous block by the encrypted signature. All nodes of the Blockchain network have an identical ledger or database copy. Therefore, all nodes update their copy with any new block added[et al Atlam 2020]. Before adding any block, it must get approval to feature is based on a consensus mechanism[et al Atlam 2020]tolerant of crashing and byzantine failures[?]. Blockchain's transaction from version two can contain a sensible contract. More specifically, Smart Contract or Chaincode[Radovanovic M. Pesic and Ivanovic 2019]is a program agreement contract executed on the Blockchain network. Ethereum is that the most typical example for using smart contracts. Additionally, Ethereum is the biggest Smart Contract blockchain platform[Eleyan 2021; Samiur Khan 2020].

4.3 Sorts of Blockchain

There are 3 types of blockchain. Those are

- *Public Blockchain:* A public blockchain doesn't have limitations. Anybody with a web association can gain admittance to the organization and begin approving squares and sending exchanges. Regularly, such organizations will, in general, offer some impetus for clients who agrees with the courts. In any case, this organization will, in general, utilize Proof of Work or Proof of Stake agreement calculations for approving the exchanges. It is a "Public" network from a genuine perspective[Geroni 2021].
- *Private Blockchain:* A private blockchain network is almost similar to the public blockchain, and it is a decentralized P2P network. But one organization controls the network, the participants, executing a consensus protocol, and maintaining a shared ledger. The use of a private blockchain can significantly improve participant trust and confidence. The private blockchain is on-premises or behind a corporate firewall[Geroni 2021].
- *Hybrid Blockchain:* A hybrid blockchain combines the most delicate features of both private and public blockchain technology. A hybrid blockchain would allow for both regulated and unrestricted access in an ideal world. A hybrid blockchain combines the best features of both private and public blockchain technology. A hybrid blockchain would allow for both regulated and unrestricted access in a perfect world [Geroni 2021].

4.4 Features of Blockchain

- Changelessness: The digital ledger is duplicated on every node in the system. To add a transaction, other nodes must first verify each ledger. This increases transparency and makes it impenetrable to corruption[Iredale 2020].
- Decentralized: Decentralized means there will be no signal person who controls the network. There will be a group of people who validate the network.[Oba 2010; Iredale 2020].
- Enhanced Security: Blockchain is a never-ending chain of blocks interconnected by chains that encrypt blocks and can't be changed by anyone in the world [Novak03, JoeScientist001]. Distributed Ledgers: Ledgers are mainly one kind of database. A distributed Ledger is consensually shared and synchronized across multiple nodes[Iredale 2020; MAJASKI 2021].

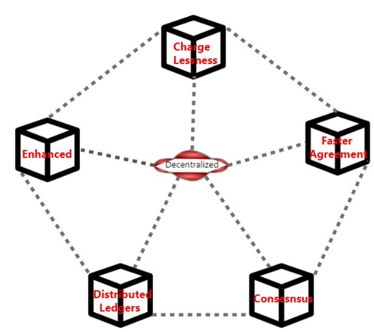

Fig. 4. Features of Blockchain

- Consensus: All companions in a Blockchain network concur upon the present status of the circulated record[Andler 2020; Iredale 2020].

- Faster Agreement: Every agreement in Blockchain is done using smart contracts. Smart contracts are automated agreements. The rules are pre- definned [Andler 2020; Iredale 2020; LIEBKIND 2019].

4.5 Challenges of Blockchain

Most of the applications of blockchain we have seen so far are based on first and second generations Table3. Those blockchains initially had usability and performance issues that steered the need for a more improved version. As such, in the coming years, the ongoing development ushered in the third generation of blockchain that arrived with better transaction rates, power consumption, and scalable facilities.
In terms of the resources required to properly construct a node and confirm transactions, older generation blockchains may be sluggish and costly. Scaling has been a significant problem. At the same time, technology advances, and new generations of blockchains become more affordable and accessible. Concordium, a science-based blockchain, is a nice example.
On a global scale, it features quick transactions and great throughput. It even features smart contracts that are simple to set up. New types of blockchains that are based on science should make it easier for people to get in. At the end of the day, keep in mind that all public blockchains are decentralized and created to be accessible to everyone. As a result, making it pricey would be counterproductive.

4.6 Smart Contract For Islamic Finance:

Smart contracts allow yield aggregation and traditional crypto assets; their work is based on predefined rules. Its main goal is to maximize the yield while controlling risk. And traditional crypto tracks a portfolio of crypto assets to the practice of passive investing[Kirschmer and Voight 2020; von Wachter Johannes Rude Jensen and Ross 2021]. Technology isn't the only way standard contracts are forming. Examining the language and actions of the parties and other relevant circumstances provides flexibility to determine whether an offer has been made and accepted. If specific criteria are satisfied, a smart contract can become a legal contract.
A smart contract could uphold Islamic money items. The terms and legitimate conditions are determined in authoritative archives and should be appropriately aligned to guarantee consistency with Shariah. As such, Islamic monetary foundations and mechanize the whole legally binding interaction. Smart contracts are relied upon to help the Islamic financial industry in a few regions[Juliana Abu Bakar 2018],

- The same Islamic capital business sectors banking (Sukuk, Islamic stock trade, Islamic abundance the executives),
- Islamic bank (exchange finance, Islamic Reit's, swarm subsidizing),
- Takaful industry (computerized claims, recharging of general takaful items)[Juliana Abu Bakar 2018].

4.7 Web 3.0 for Islamic Finance

The third era of internet providers called web 3.0 and applications will give a piece of information-driven and Semantic Web using a machine-based comprehension of information. Web 3.0's ultimate objective is to make websites more intelligent, connected, and open. Blockchain technology has demonstrated our transition from a centralized decision-making network to a distributed, transparent, and inclusive one. We want to use the same idea in our DWeb protocol to establish a decentralized online infrastructure for static items. To protect the network from physical assaults, we employ mesh networks and point-to-point protocol (PPP) connectivity. It provides blockchain-backed data storage that is highly replicated and immutable. This type of data storage prevents logical attackers from gaining access to information[Andrew Donegan 2021].
To keep away from the quickly expanding loan costs, Islamic banks can assist with brilliant agreements. It will assist with decreasing vulnerability and theories. There are various sorts of agreements accessible in Islamic financing that will assist with overseeing benefit sharing arrangements, organization game plans, and associations. Legally binding arrangements are key empowering influences for exchange and trade, which record commonly settled upon terms for execution or question goal. The Quran (Surah Al-Baqarah: 282–283) order Muslims to compose contracts for decency and responsibility. Accordingly, Muslim brokers depend upon an Islamic legitimate and institutional structure for bookkeeping and obligation, while Muslim researchers characterize lawful standards and go about as middle people in business questions. Having put down accounts is imperative to the proficiency and straightforwardness of business and for checking exchange and arrangements. Islamic law is the focal institutional system of being Muslim, and its innate legitimate structure directs, in addition to other things, the moral standards of business conduct to frame the establishment for trust, equity, and decency[Elasrag 2019].

5 DECENTRALIZED BANKING

Decentralized Finance, or" DeFi" as short, is an umbrella terminology that covers the goal of a financial system that supports only through the authority of smart contracts, without the use of any intermediaries such as banks, insurance companies, or clearinghouses. DeFi apps aspire to provide traditional Finance (also referred to as Centralized Finance, or plain CeFi) functions in a permissionless, global, and transparent manner[Yaseen AlJanadi Rashidah Abdul Rahman 2010]
These days, defi has become exceptionally famous in light of the imaginative agreement highlight and blockchain. The center innovation of Defi is ABCDS[Douglas W. Arner and Buckley 2020]. There are A for AI, B for blockchain, Cloud, Data, Smart agreement. These days, numerous nations start defi in light of the security and well-being. Additionally, no illicit cash will be moved to utilize the smart agreement. Additionally, the frameworks are straightforward and stateful. Nobody can change its capacity once a brilliant contract is created using a calculation. So there will be no change for making any unlawful cash move. The clients need to pay for the interaction[Victor von Wachter and Ross 2021]. Fundamentally on defi utilized public blockchain. A public blockchain is straightforward and additionally extremely quick. The security level on a public blockchain is exceptionally high. Blockchain innovation uses a P2P organization. When the exchange occurs, embedded in a blockchain, and the proprietor adjusts to the progress, then, at that point, the

Table 3. DApp development is supported by most of these Blockchain platforms

Platform	Type of Blockchain	Consensus	Scalibilty Option	Transactiper second	Generetion	Deposit Time	Decentraliazed Finance
Ethereum	Public	PoW	None (planned ETH 2.0)	70 5tps	2nd gen	5min	Yes
Cardano	Public	PoS	None (planned Hydra)	5.000 250TPS	1st gen	10 minutes	No
Cosmos	Public and Private	BPoS	Zones	10.000(HUB) 1.420 TPS	3rd gen	Near instant	Yes
Polkadot	Public	NPoS	Parachain	6.000(relay) 1.000 TPS	3rd gen	2 minutes	Planned

square advised of the business is made. The exchange information or yard is shipped off to each individual in a blockchain. Then, at that point, the hubs approve the exchange; then, at that point, the business is finished. Additionally, hubs will dismiss the conversation if the seat isn't confirmed. Notwithstanding, in defi, individuals can't acquire finances using a credit card in light of the pseudonymous idea of blockchain. Pseudonymous nature implies nobody can see the addresses. When anybody needs to take credits, they need to surpass other crypto resources like bitcoin or different tokens. It gives advances comparative with 70-90% of the insurance resources. In Defi, there are some conventional subordinates, for example,

- Choices,
- Engineered.

These days, engineered resources have entered the market as a token fixed. The token fixed can be gold or stock. On the planet, banks use digital money as a token. Since in the decentralized a framework, there will be various places of distribution[Victor von Wachter and Ross 2021].

5.1 Story of Decentralized Finance

It's contended that DeFi began in 2009 with the dispatch of Bitcoin, which was the first p2p advanced cash based on top of the blockchain network. Through Bitcoin, guiding change in to the conventional monetary world utilizing blockchains turned into a fundamental subsequent stage in the decentralization of heritage monetary frameworks. The dispatch of Ethereum and, all the more explicitly, shrewd agreements, in 2015 made it all conceivable. The Ethereum network is a second era blockchain that previously augmented the capability of this innovation inside the monetary business. It urged organizations and ventures to fabricate and convey projects that shaped the biological system of DeFi[897 2021].
Mainly Defi is open for everyone, and there is a central authority developed using public networks[SHARMA 2021].

5.2 Benefit of Defi

- *Account creation:* Creating a wallet allows you to open an account or apply for anything.
- *Pseudonymous:* You are not required to submit your name, email address, or other personal information.
- *Flexible:* You may move your assets anywhere you want, whenever you want, without obtaining permission, waiting for long transfers, or paying outrageous costs.
- *Fast:* Interest rates and prizes often change (every 15 seconds or less) and may be much higher than Wall Street.
- *Transparent:* Everyone involved can see the entire set of transactions (private corporations rarely grant that kind of transparency)[Mul 2021].

5.3 Fintech

Fintech is changing the universe of money for shoppers in a heap of ways. For instance, you would now be able to open a ledger over the web, without actually visiting a bank. You can interface the record to your cell phone and use it to screen your exchanges. You can even transform your cell phone into a "advanced wallet" and use it to pay for things involving cash in your record. Fintech was conceived because of the innovation of Citicorp with an exact venture. Over the long run, this peculiarity has fascinated people in general. Imran (2014) observed that Fintech had been utilized in the assistance area. It proposes a change particularly in the financial administration's area (Imran, 2019)[Giglio 2021].

5.4 Defi for Islamic Finance

Decentralized finance, or DeFi, is a type of decentralized finance that pays those who lend their money interest in exchange for sending money to lending pools, where borrowers may borrow the asset but must pay interest on it[SAINT JOHN 2021].

As a result, the interest ban has ramifications for DeFi. Anyone working in the DeFi industry is fully aware of standard loan products.DeFi includes both collateralized and uncollateralized loans and the flashier, newer versions. Lending and borrowing are frequently used to make money in DeFi[Young 2021]. Furthermore, providing liquidity for swaps or insurance will not be effective. In Islamic Finance, interest in the form of Annual Percentage Yield (APY) is banned[Young 2021].
Blockchain innovation enjoys a few benefits because of its tendency and mechanical construction. Blockchain is an assortment of connected squares on a shared organization where squares are associated utilizing cryptographic hash code, on account of which there is no weak link. Whether a couple of hubs fizzle in the distributed organization, different seats will keep on working, making

blockchain more solid to work and keep up with. The second indispensable component of the blockchain is a computerized innovation that empowers it to be applied in different applications. One more essential blockchain component is straightforwardness; blockchain exchanges are discernible and apparent to all blockchain clients. Permanence is one more key element of the blockchain. It is challenging to roll out any improvements to the exchanges on the blockchain or blockchain. Be that as it may, some irregular cases have been found for blockchain changes. Numerous scholars have foreseen that monetary administrations will be upset utilizing blockchain innovation in the coming future [Mustafa Raza Rabbani 2020].
Using all of the defi features, there could be a possibility banking system called Decentralized Islamic Finance, where will strictly maintain proper Shari'a Law with Trust Secure. Because of the Transparency system, there will be no hidden transactions. As it is impossible to modify anything in the block, there will be no chance to access by Third-party and any Modification of any information or data.

5.5 Bitcoin for Islamic Finance

The creator of bitcoin creates a process in each of the transactions proved by all miners distributed in-network. Every bitcoin holder can get an encrypted digital copy of every network participant. Then the first miner approves the transaction, the transaction adds to the queue. They get their result when a new transaction is included in the ledger. When all miners agree with the transaction, the person receives funds. Once a transaction is included in a block, that can't be modified. If anyone is changing the data, they have to modify blockchain history, and it's pretty impossible for each block transaction defi used peer to peer network. In a blockchain, there are several nodes. Many risks are solved by defi like

- standard risk,
- information security risk,
- strategic risk,
- reputational risk,
- regulatory risk,
- supplier risk[Tushar Adivarekar 2018].

Bitcoin can now be utilized in Islamic finance, according to consensus. When we compare fiat money to bitcoin, we can see that bitcoin is Riba-free and integrates "maslahah" and risk-sharing concepts. Sheik Imran Hussain, a well-known Muslim scholar, thinks that any currency having intrinsic worth cannot be regarded acceptable money. As a result, only gold or silver money, in his perspective, may fulfill the Shari'ah's standards."Says Imam Al-Ghazali: "Dinar and dirham were created by Allah for the purpose of circulation and as a fair and reasonable standard amongst various assets, as well as for another knowledge that makes them a means to all other assets. That's because they're valuable in and of itself (intrinsic worth), yet they're not sought for their own sake..."[Oziev and Yandiev 2017b].

5.6 Fiat money For Islamic finance

Fiat money is a physical form of cash that has been designated as money by government legislation. It has no intrinsic worth. Fiat money has no intrinsic worth; its value is determined by the government, which also maintains its value. Alternatively, the parties that trade fiat money agree on its worth[Rubyet Hossain 2020].
Islamic financial frameworks ought not to follow common economic frameworks yet ought to figure their essential acclimations to give investors premium free monetary instruments. The personal investigation has shown the abundance of move mechanics of the FRB framework[Adams and S. 2009]. According to a Shariah viewpoint, the unfavorable financial impacts of government-issued currency refute Muslims' prerequisites to accomplish *"maqasid al-Shariah."* Meera and Larbani[Meera and M. 2009] have contended that business banks' formation of store cash can be thought of *"riba"*in Islam. This is because the aftereffect of government-issued currency by banks from different stores makes cash "out of nowhere"; for some Muslim researchers, this resembles misdirecting borrowers by giving them the feeling that they are getting something substantial when it just exists in the virtual structure. As indicated by Al-Ghazali, the goal of Shariah is to advance the government assistance of individuals by defending their confidence, lives, minds, thriving, and abundance. Every one of the impacts of government-issued currency, its monetary, social, political, and natural impacts[Meera 2017].

6 FUTURE

We take help from different kinds of Intermediaries for making connections and transactions, which gives them the power to control the whole sector. Though we have introduced FinTech, which may reduce transaction costs and open doors for new possibilities, but still does not remove the Intermediaries. So, a blockchain-based decentralized finance system can be the next step to make this sector more decentralized. With the help of blockchain, peer-to-peer transactions and connections will eventually remove the Intermediaries. That will make the whole system decentralized, innovative, interoperable, borderless, and transparent. The current and widely used technique is built upon transaction cost economics (TCE). This focuses on opportunism. On the other hand, blockchain is founded on distributed trust. This technology builds trust because the recorded transactions are valid, immutable, verifiable, and protected through advanced cryptography. By using blockchain, decentralized finance has a few things to offer. Firstly, it provides decentralization. In the centralized finance system, intermediaries have the power and opportunity to dominate the system. But in a decentralized financial system, we are cutting the intermediaries by using decentralized peer-to-peer networks. If this finance system becomes popular, no single entity can have enough power to create a monopoly.

Blockchain works at the foundational level of any application architecture, and all banking transactions can be handled securely with its implementation.A shariah-based banking solution established on Blockchain technology will have its own set of challenges when implemented in real-time finance. A flexible blockchain system that can provide Shariah-based banking services is something we will work on in the future.

7 CONCLUSION:

In the capacity of intervening establishments, Islamic banks help financial frameworks that focus on the speculation in the government assistance of society. These destinations obliged *maqasid shariah* that adjusts exercises for human interest, ability improvement, and regard for the environment.

In the first place, these examination discoveries infer that a vigorous monetary framework should be adaptable, challenging, and stable. They ought to oblige any change, defeat financial issues, and keep up with their internal strength. Primarily, Islamic banks depend on the premium free-based framework to accomplish their business mission. In the practices, Islamic banks additionally balance business objectives, social undertakings, and otherworldly objectives through items and guidelines dependent on Islamic law and government strategy. Second, as a component of the Islamic monetary framework, Islamic banks work dependent on premium free and benefit-sharing. For charitable misfortune sharing financings, like *Murabaha and ijarah*, it has turned into a snag to maqasid shariah accomplishment since benefit boost isn't a definitive objective of Islamic bank improvement. . But we argue that, in a Shariah-based baking system, both the user and banks impact each other and should evolve amicably for both sustainability. This research aims to put an intensive exploration on this issue and identify facts behind the transaction. Using Blockchain, we can solve these types of problems. So the future of Islamic finance will be prevalent and highly secure.

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