BLOCKCHAIN VISION PAPER

Building the Blockchain Landscape for Pakistan

XORO

Contents

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PURPOSE OF THIS PAPER:

Xord, being at the forefront of blockchain technology considers the need for educating the local ecosystem about how blockchain can be utilized in different sectors. Since the advent of blockchain technology, Pakistan has been stuck in the dilemma of financial challenges that this technology will cause. Specifically, when it comes to cryptocurrencies, we keep an opinion that we cannot remove the cryptocurrencies altogether and still expect the true ownership value that blockchain technology promises its believers. However, we can start from the many other use-cases where blockchain technology can improve the processes without involving crypto and tokens at all.

Blockchain technology offers values like trust, security, transparency, and traceability of the data shared across a process. Currently, we are facing such challenges and many public and private sectors like Fintech, Healthcare, Education, Supply chain, Digital Identity, Governance, and more. We will talk about the blockchain solutions for such challenges later on in the paper.

We believe that the dream of a Digital Pakistan can be achieved if we embrace cutting-edge technologies like blockchain.

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MESSAGE FROM THE CEO

Blockchain promises to be one of the foundational technologies of the next industrial revolution. Over the last two decades, we have seen centralized platforms taking advantage of the open web to create platforms that concentrate value and power on a small number of companies. This gives companies massive power over the public opinion, and because the heads of those people are not democratically elected public servants, they work towards maximizing the profits to their shareholders at the expense of the public, and as a result wealth inequality is on the rise at an unprecedented pace.

For the first time in history, we have a technology that allows us to democratize institutions and processes in a trustless way. We can now build financial institutions that benefit the public and allow anyone to take part in them. We are seeing digital organizations called DAOs that are based entirely on the internet doing massive public good.

Blockchain can also be thought of as an experimental space where new financial, political, and economic models can be tested and can eventually be implemented in the real world.

Blockchain is the next step in the evolution of democracy, and countries like Pakistan who missed out on the value and wealth generated in the previous revolutions have a brand-new opportunity to nurture the next generation of entrepreneurs on its own soil to leapfrog and become the next innovation hub of the world.

Abdul Sami Khawaja

ABOUT XORD

Xord is a state-of-the-art blockchain research and development organization, progressively working to empower people to create an honest world. We can be described as a leading blockchain development organization situated in Pakistan, mainly focused on introducing new blockchain innovations through our research and powerful products in the blockchain and Web3 space. Moreover, we are initiating the concept of transparency and honesty in the world of businesses, by advocating for Web3 technology and inspiring individuals and businesses to adopt blockchain technology.

We believe in empowering people while executing innovative ideas and enabling growth-oriented opportunities for every individual associated with our organization.

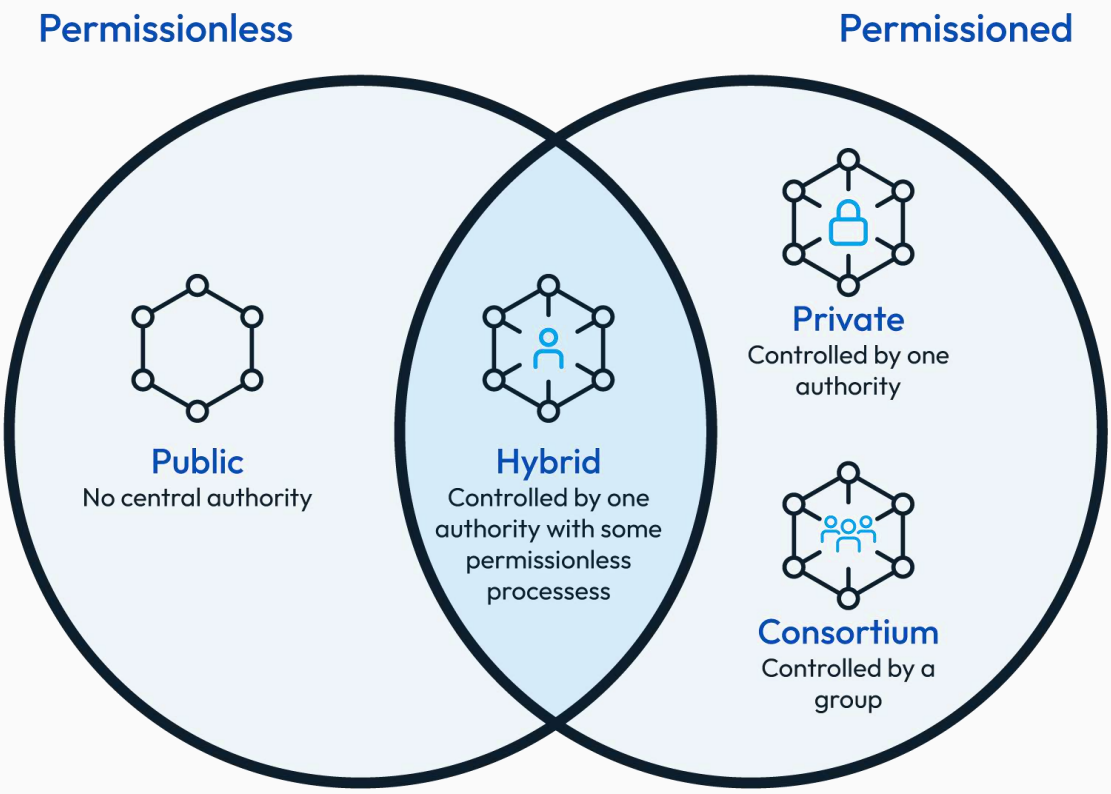
WHAT IS BLOCKCHAIN?

Blockchain technology is a decentralized database or ledger that stores the registry of assets and transactions across a peer-to-peer network in an immutable manner.

Consider blockchain as a decentralized network of many different computers that are together maintaining a ledger or database. Participants of the network can join the network in different ways and perform different operations. However, no one can tamper with the system in a way that violates the rules.

There has been no technology like blockchain which can keep the data unshakable, decentralized, and immutable. Blockchain is mainly the system of the internet that gives true authority and democracy to the user.

TYPES OF BLOCKCHAINS



Source: Foley

Blockchains can be categorized into four types:

Public Blockchains

Public blockchains are fully decentralized and allow anyone to join as they are trustless in nature. Furthermore, they provide equal access to all nodes to create new blocks on the network and validate them. Famous public blockchains are Bitcoin, Ethereum, and Cardano. As the name suggests, their purpose mainly revolves around exchanging and mining cryptocurrencies.

Private Blockchains

Private blockchains (also known as managed blockchains) are partially decentralized and controlled by a single organization. Unlike public blockchains, they determine who can be the node and give different rights to each node based on different conditions. In addition, since they are partially decentralized, they restrict the public's access to the network. Open-source blockchain applications or B2B currency exchange networks such as Hyperledger or Ripple can be excellent examples.

Consortium Blockchains

Unlike private blockchains, consortium blockchains are controlled by a group of organizations that promises a more secure network and save time and resources in finding solutions together. Although it can be complicated to link a number of organizations in addition to the antitrust risk. An educational institute collaborating with an enterprise software firm can be a great example.

Hybrid Blockchains

Hybrid blockchains have a touch of both private and public blockchains. Although the records are private but can be accessed when required through smart contracts. Users can have complete access to the network, and it is not only more scalable than public blockchain, but hackers cannot mount a 51% attack. IBM Food Trust is a hybrid blockchain designed to make the food supply chain more efficient.

01

BLOCKCHAIN IN DIGITAL IDENTIFICATION

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BLOCKCHAIN IN DIGITAL IDENTIFICATION

Digital Identity, also referred to as digital representation, is the body of information about a specific individual, organization, or group. The use of digital identity arises organically and consists of the individual's personal information/data, physical or e-mail address, pictures, bank account information, and much more information that could be used to track individuals for personalization. Despite the unique identifiers and patterns allotted to detect individuals or their devices, lately, many organizations and nations rang alarm bells on the rising case of identity theft and are demanding privacy and protection of citizens' personal and sensitive information.

BLOCKCHAIN IN DIGITAL IDENTITY

Today, the identity systems used in many sectors are now fragmented and unsecured. However, blockchain technology can eradicate current identity issues, such as:

- Fraudulent identities
- Data theft and insecurity
- Education verification
- Inaccessibility

This technology also offered blockchain-based solutions and management for digital identity in the following segment:

Official Documents

When the file system of an official record is based on blockchain technology, there can be instant verification on the location of any specific document, when it was last modified, who created it and detect any attempt of fabrication at manipulation. Implementing this technology also increases trust, transparency, security, and the traceability of data shared across multiple nodes.

National Identity Cards

Since 2007, Estonia has utilized blockchain technology to maintain national digital identity data and services in the private and public sectors. This system

conserves multi-purpose digital ID cards on the blockchain. It ensures that all data change is identified instantly, based on the "digital defense dust audit trails." All data about individuals is stored on a distributed ledger which individuals run and can pass to others.

In Pakistan, NADRA can make use of blockchain technology in the same way. As of now, the data stored in the NADRA database is prone to data breaches and data theft. This is a highly-critical issue as their database contains the personal data of all the citizens. Any leakage here can cause massive amounts of harm directed towards that person or through second-hand means.

In November 2021, a data leakage at the NADRA database caused the data of 115 million Pakistanis to end on the darknet. If the data is stored digitally on the blockchain, organizations such as NADRA can close off all the vulnerable points of entry in their database management systems. Doing so would remove the chances of any future data leakage or hacks such as the example stated previously. By using blockchain, we can make sure that such incidents do not happen in the future and the personal data of the citizens is highly protected where it is stored.

As of now, it is a common practice in Pakistan to use photocopied CNIC for any general-purpose be it verification of certain documents or a KYC instance. Carelessly using the certificates and cards that have all the personal information of a citizen is an extremely faulty practice. Whoever is on the receiving end of the document is certainly not verified nor has the authority to be able to handle this kind of critical information. Any misuse of data can have dire results.

We can safely store data using blockchain in such a way that the owner has complete authority and control over it. They would not need to provide copies of their identity cards, instead use cryptographic means to get the job done without actually revealing any personal information.

Apart from security, storing the cards digitally also proves to be efficient and accessible as compared to physical cards that can easily be lost or misplaced.

Passport and Educational Documents/Certificates

Blockchain offers a transformative effect on education, passports, documents, and certificates. It protects counterfeit certificates and grants easy verification of certificates. Blockchain can eliminate issues associated with the process and streamline verification procedures. The holder would be able to provide instant verification regarding the ownability and accuracy of the certificate/document in question, without the fear of it being used for any malicious purpose. It will enhance security, improve trust, simplify the hiring process, and give students the chance to own their academic records for life.

If organizations like NADRA and HEC make their shift towards decentralized technologies and use them to their advantage, they would be solving the deep-rooted issues that they have been facing for decades such as people using counterfeit documents and national identity cards.

BLOCKCHAIN CASE STUDY FOR GOVERNMENT ISSUED IDENTITY

Zug Digital ID:

The city of Zug in Switzerland is now exploring a self-sovereign government-issued identity (Zug Digital ID) on Ethereum, thus, allowing access to e-government services in a secured and convenient manner.

Martin Würmli, Zug Head Municipal Clerk, stated "Thanks to blockchain-based digital identities, the people are now getting back control over their data."

The implementation of blockchain technology also eliminates a user password or ID to access government services.

CONCLUSION

The Pakistan government can leverage blockchain technology to provide a more secured storage and management of digital identities. Implementing blockchain technology to the digital identity system of the country will provide an interoperable, unified and tamper-proof infrastructure to individuals, enterprises, and IoT management systems.

02

BLOCKCHAIN IN EDUCATION

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BLOCKCHAIN IN EDUCATION

Since the very beginning, the education sector of Pakistan has been struggling with challenges such as data storage and access, data verification, defective examination systems, and fraudulent grading mechanisms. Every year millions of students suffer due to these issues that plague the education industry and this has significantly reduced the quality of education in Pakistan.

The education sector is the foundation on which other sectors are built. Hence maximum attention should be given to it by way of seeking better ways to standardize its processes and reduce its challenges.

Blockchain has obvious solutions to some problems currently faced by the education sector.

HOW DOES BLOCKCHAIN IMPROVE EDUCATION TODAY?

Challenges such as easy data storage and access, data verification, and fraud that constantly plague the educational sector today can be seamlessly solved using blockchain and associated technology. Several features of the blockchain make it very useful in education. Features like accessibility, transparency, verification protocols, smart contracts, and programmability.

USE CASES

Fraud Free Grading:

Teachers could use smart contract technology to assist with grading. Educators could program entire exams — including questions, scoring parameters, and answers— into a blockchain and have students take the exams using computers or tablets. The blockchain's smart contract handles the grading. Then students' score becomes a part of their permanent academic record, stored securely on the blockchain with zero chances of tampering.

Such records can then be stored using Projects like Sia and Filecoin that offer record storage services.

Blockchain Certifications & Transcripts:

One key advantage of the blockchain is that data stored on it are easy to verify, challenging to change, and easy to access. Institutions can take advantage of this by giving blockchain certifications and transcripts to students. This allows them to control their records and makes it easier to share with potential employers or other institutions if they want to pursue a higher degree.

Examples of systems that can be used to initiate this include Credly, Blockcert, and Sony Global Education. It is also worthy of note that one of the first institutions to hand out blockchain certifications is Maryville University, and some other universities followed suit.

Identity Management:

Managing identity via the traditional means is quite difficult, and forgery can come to play in some cases. Using Blockchain identity management systems like Civic, educational bodies can quickly ascertain the true identity of students and ensure that the program benefits those it is designed for.

CONCLUSION

A lot of potential is wasted and misunderstood because of the technical issues arising due to traditional forms of saving data. Departments such as HEC can harness the power of blockchain to store the scores of candidates securely, which would also be easily accessible from anywhere in the world. It will be more convenient for the authorities to manage the data and for the students to see and manage their progress likewise.

Furthermore, there is a widely experienced issue of verifying certain educational documents through attestations which is neither efficient nor secure in the long run. However, with the availability of such documents on the blockchain, they would be verifiable anytime and anywhere in negligible time.

These challenges plaguing education are worldwide but a good number of institutions are embracing these solutions rapidly. educational bodies in Pakistan can join the growing throng and thus attain a more standardized system of education.

03

BLOCKCHAIN IN HEALTHCARE

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BLOCKCHAIN IN THE HEALTH INDUSTTRY

One of the biggest issues the Pakistan healthcare industry faces today is the lack of transparency in their management. This includes transparency in asset management such as rooms, beds, medicines and drugs, and even payment systems.

Speaking of drugs and medicines, corruption in drug supply and their registration has been a very common problem lately. Fraudulent businesses get their drugs registered through bribery and there is no proper way for the regulatory authorities to trace and monitor these businesses and verify them.

Furthermore, Patient Health Records data breach and selling has become an alarming trend in Pakistan. Data of such critical nature needs to be kept in high confidentiality to ensure the security and privacy of the patients. Alongside that, there are cases when data gets corrupted on transit or mutated either knowingly or unknowingly.

One example of a recent data breach is of the first confirmed COVID case of Pakistan, Yahya Jaffrey, after which his identity, photograph, and address were leaked on social media (source: privacyinternational.org). And many other cases of patients and medical staff followed suit.

Similarly, the entire COVID Vaccination data management system is centralized in Pakistan. We have witnessed multiple instances of data leakage and system failures which become a nuisance to the actual owner of the data in terms of availability and accessibility. Using blockchain we can securely store the data and make it verifiable anytime and anywhere.

All of the issues stated above can be efficiently solved by using blockchain.

WHAT CHALLENGES DOES BLOCKCHAIN SOLVE IN THE HEALTH INDUSTRY?

Blockchain technology solves the current challenge affecting digital storage and sharing. It provides a means of managing and transferring data in real-time, securely, and without fear of being corrupted or mutated.

Its applications in the health sector are numerous, but this article will focus on four use cases.

USE CASES

Record of Patients:

A blockchain-based system can be built to input patient records, update patient care routines in real-time, and view the patient's history. Such records are decentralized, i.e., can be accessed with due permission from anywhere in the world. It eliminates the problem of lost or incomplete patient records, wasting time to request a patient's record from previously used hospitals, and unfair treatment from incomplete information. It is also immutable which means the data can be trusted as it cannot be tampered with.

The most vicious side of the health industry is that Patient's Health Records are vulnerable to getting sold for marketing purposes without the consent of the withholder of the medical data. Records kept on the blockchain are intact under blockchain hashes which keep them secure and only accessible to the withholders of the medical records being the patient and the medical staff.

The Ministry of Healthcare Pakistan can shift towards blockchain for a secure form of data storing and security reasons

Medicalchain is a leading example of a company working with the healthcare sector to provide blockchain-enabled EMRs.

Drug Tracing:

The healthcare industry has had a hard time confirming the authenticity and timeline of medical and pharmaceutical supplies. Blockchain technology solves this problem via real-time data access and traceability. This means that with the use of a Blockchain-based system, suppliers, buyers, and even consumers of these supplies can monitor the supply chain and check its data such as expiry date in real-time. Blockchain technology allows traceability in the data which defeats the risks of availability of counterfeit drugs to the public. Let's suppose a blockchain is operating a system of pharmaceutical supply chain and every drug is traced and tracked in terms of transactions and sales.

This will make the process more transparent to trace counterfeit drugs and eliminate many risks attached with medicinal exchange among people.

Companies like MediLedger have such a system in place.

Data Security in Remote Patient Monitoring:

To remotely monitor the patient's status, there is usually a collection of medical data through mobile devices, body area sensors, and IoT (Internet of Things) devices. Blockchain can store, share, and retrieve such remotely-collected biomedical data securely and privately. Its immutable nature prevents the data from being tampered with, and blockchain cryptography ensures only permitted parties gain access to the data.

Examples of systems this can be used on include Diabetacare, intel &flex, and TELUS Home Health Monitoring.

Healthcare Workers Record-Keeping

Another issue the healthcare industry faces in Pakistan is the lack of proper tracking of staff and healthcare workers. The absence of governance and employee management causes issues in terms of accountability and transparency that are of utmost importance in the healthcare industry. This further impacts on employees being absent, illegal payments being made by the patients, as well as the possibility of data leakage and theft. Blockchain can resolve these issues by keeping real-time, and updated data of all the current employees and staff along with their working hours. The transparency that blockchain provides will allow us to detect any illegal activities that may happen and could easily mitigate them before any serious damage.

Payment:

The use of blockchain in finance is one of the most popular use cases. Workers can get paid, patients can foot their bills, and hospital supplies can be purchased using a blockchain-based system. The Best part is that all transactions would be transparent and free of fraud as the records would be accessible by all parties involved.

Hospitals like Nicklaus Children hospital, Jessada hospital, and several others accept bitcoin payments.

CONCLUSION

Healthcare in every country, including Pakistan, should implement blockchain-based systems if they genuinely want security, privacy, and permanence in their record.

04

BLOCKCHAIN IN SUPPLY-CHAIN

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BLOCKCHAIN IN SUPPLY CHAIN

The supply chain industry is literally and figuratively a moving industry globally, and it is moving towards more effective digital solutions to challenges facing the industry. Many industries turn to the blockchain for solutions. The supply chain industry has also benefited from some of those solutions.

Companies like DHL Pakistan and other large logistics companies are making great use of blockchain technology by adopting transparency in their informational, financial, and materials flow. Furthermore, using smart contracts, allow the automation of certain administrative and commercial processes that would otherwise require plenty of time and would be prone to human errors.

IMPROVING CURRENT INDUSTRY PATTERNS USING BLOCKCHAIN

The supply chain industry has many challenges in securing real-time data, automated payment, and real-time monitoring of sensitive goods from the supply point to their destination. Blockchain presents easy and cost-effective solutions to these challenges.

USE CASES

Asset Keeping is Secure:

With the advent of smart contracts, it has become easy to keep items in check, especially those requiring certain temperature stability.

On that note, SkyCell, a Swiss Tech Firm, created blockchain-based refrigerated containers that ensure the temperature-deviated rate is less than 0.1%.

Trading:

In trading, Blockchain technology promises to facilitate fast, secure, low-cost international payments through encrypted distributed ledgers that provide trusted real-time verification of transactions, e.g. Bitcoin.

Australian vehicle manufacturer, Tomcar uses Bitcoin to pay some of its suppliers. Currently, three partners in Taiwan and Israel accept payment from Tomcar using Bitcoin. Within the coffee industry. Bext360 uses blockchain technology to better track all stages of the worldwide coffee trade, from farmer to consumer. This blockchain application ensures payments are made directly to the farmers using cryptocurrencies immediately after their products are sold.

Tracing Goods:

Companies can use blockchain-based systems to record their product transition from one stage to another. These records are permanent, immutable, and easy to access in real-time.

A typical example is the global retailer Walmart. They use blockchain to trace sales of pork in China. The system lets the company see where each piece of meat comes from, each storage and processing stage in the supply chain, and the products' sell-by date. In a product recall, the company also gets to see which batches are affected and who bought them.

Testing to ensure Food Safety:

Many foods safety issues, like cross-contamination, are challenging to track and isolate. Blockchain-based smart chains can monitor and test conditions for such goods at each stage of the supply chain to ensure standards have not deviated to unhealthy levels. This can save the company in cost and embarrassment without such checks.

The IBM Food Trust uses the IBM blockchain technology to provide security by maintaining data integrity along with data ownership, efficiency through automation of transactions, enabling transparency, and accountability across the entire food supply chain.

A consortium uses blockchain within supply chain tracking to check the transparency of all product movement and status. Companies including Nestle, Unilever, and Walmart are using blockchain to reduce the time to locate and remove the contaminated products within the supply chain before they cause any damage.

IoT Devices:

IoT-enabled blockchains can address and resolve the hurdles faced by technologies in terms of transparency and tracing data. IoT allows respective organizations to keep track of every transaction data existing in a supply chain in the form of a distributed ledger on a blockchain. Having its popularity in the world of businesses linked with the supply chain constructs a group of interlinked devices which allows sharing of data among users.

Security being the top priority of every business use case, blockchain technology aligned with IoT creates a spectrum of effortless transactions, security, transparency along with flexible and recyclable elements. The supply chain benefits from blockchain-based IoT in various ways like creating a connection between data and encryption which enables production with traceability. Not only this, we can make use of certain IoT devices that can assist by providing real-time sensory data on the current conditions of the product and whether they are safe to consume or not.

Walmart Case Study:

Walmart is known for being one of the top companies in supply chain management worldwide. But even they had their fair share of issues regarding data discrepancies, payment delays, tracking and tracing of goods, and usage of multiple information systems. The solution? Using blockchain. Where all of the previously stated issues could be tackled.

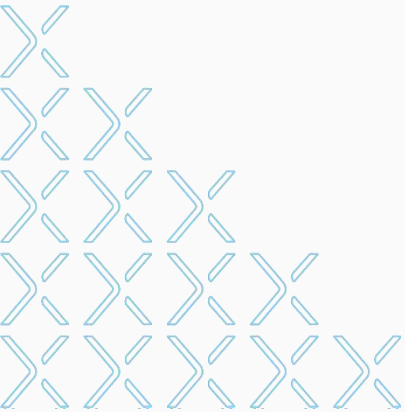
Walmart Canada used a private blockchain, built on Hyperledger Fabric, that allowed them to control the accessibility of the data, safely track the goods during transportation, and make payments.

They created an automated system to manage invoices and payments to and fro their 70 third-party freight carriers. This proved to be much faster, reliable, and resistant to errors. Such a magnitude of data (more than 500,000 shipments annually) was then handled by simply automating the processes on the blockchain. Not just this, they were able to track all the relevant information regarding the shipments such as stop locations, temperature maintenance, and gallons of fuel for each individual invoice.

The Walmart case is just one example of the many cases in the world that are using blockchain in their supply-chain businesses. Such businesses experience massive growth and financial gains by properly utilizing all the benefits that blockchain has to offer.

CONCLUSION

The supply chain is one of those industries that require trustworthy, efficient data management and accurate traceability that is backed by security and privacy. Through blockchain, we can completely revolutionize the supply-chain sector of Pakistan. Adopting this technology in all logistics and supply chain companies would create great ease, transparency, traceability, and convenience in the supply chain industry.



05

BLOCKCHAIN IN FINTECH

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BLOCKCHAIN IN FINTECH

Financial Technologies (FINTECH) are industries that constantly seek or adopt the use of modern technology for better enhancement of all the industries' financial processes and needs.

Constantly edging into modern-day technology fintech companies that have started adopting the use of the uprising blockchain technology would attain benefits and gain advantages in these areas

- Central Bank Digital Currency – CBDCs.
- Exchanges.
- Exchange-Traded Funds – ETFs.
- Payment Gateways.

Central Bank Digital Currencies | CBDC:

Blockchain technology makes it possible for finance and banking industries to create a digital currency that has a value that is solely reliant on the original fiat currency from which it is made. With this, fintech industries can gain larger outreach from all around the world from investors that can easily exchange any currency or token in the electronic or digital currency of the industry.

This gives fintech industries the possibility of a rising value in their fiat currency since shares are bought and owned by investors globally thereby driving the industry and its currency forward.

Exchanges:

Exchanges are internet-based platforms that foster the transfer and switching of digital currencies between one and another, without a CBDC, it becomes difficult for a financial industry adopting the use of Fintech to fully maximize easy conversion from its fiat currency into other known and globally accepted digital currencies.

Exchanges provide means for customers and individuals to quickly convert their Bank account capital holdings into any digital currencies and then also convert back other digital currencies into their fiat currencies. Customers would only face certain fees or charges that correspond to the T&Cs of the

exchanges used and the global exchange value and rates of the currencies or tokens converted into.

ETFs – Exchange Traded Funds:

Exchange-Traded Funds offer ownership or owning a share of a cryptocurrency token or a basket of tokens without having to manage the digital asset by the individual or industries.

Fintech companies benefit from this area of blockchain technology since owning shares or a part of the currencies would facilitate more earnings for the company and also reduce the costs of the management required for owning and handling intensive functions dependent on time and the outsourcing of knowledge required for learning more on the individual or selected crypto tokens.

Finance and banking industries or individuals adopting fintech using blockchain technology would have exposure to owning shares of fast-rising assets at a fraction of the actual cost to purchase the crypto with the aid of the cryptocurrency ETFs.

Payment Gateways

A Payment Gateway serves as means of retrieval of cash deposited or withdrawn by customers of all financial and banking institutions. Fintech industries provide an easier approach for allowing customers to interact with all financial assets and holdings they have in a particular industry through or by electronic and technological means.

Customers and the masses would no longer need to move to the physical location of these industries before gaining access to their financial holdings with major advancements in technology for the financial sector, several online and internet systems or services provide customers with a 24 hour all day any day in the week access to all the cash they currently own and possess in the banking industry.

Blockchain technology provides notable advancement in this area by providing much more secure and safer transactions between customers and internet payout gateway providers. Using the digital ledger, transactions are properly

stored and can be easily revisited for proof of payment or verifications. Blockchain technology also provides fintech industries with additional aid and access to electronic means of saving and storing digital currencies, be it CBDCs, tokens, crypto, NFTs, every currency in the blockchain universe backed by a secure transaction network.

APPLICATION OF BLOCKCHAIN ON VISA

One of the key examples of blockchain in the fintech industry is the adoption of blockchain by Visa. Embracing the concept of blockchain and crypto, Visa has made the jump into the technology that is going to become a necessity in the days to come, i.e., blockchain.

In 2016, Visa launched a preview of the Visa B2B Connect in collaboration with Chain, an enterprise blockchain infrastructure, to enable fast, transparent, cost-effective, and secure transactions all over the world.

Furthermore, Visa integrated the Hyperledger Fabric, an open-source blockchain framework by the Linux Foundation, into their system. This further facilitated the financial transactions on a scalable and permissioned network.

And it does not just end here. Visa has been working with regulated and licensed digital currency platforms such as Coinbase and Fold in hopes of bridging the gap between different digital currencies.

According to Visa,
"More than 25 digital currency wallets have linked their services to Visa, giving users an easy way to spend from their digital currency balance using a Visa debit or prepaid credential—anywhere Visa is accepted."

Recently, Circle also joined the Visa Fintech Fast Program, where they plan on allowing businesses to spend USDC (United States Dollar Coin) anywhere Visa is accepted by issuing a Visa Corporate card.

CONCLUSION

The world is slowly starting to see and embrace the potential of blockchain technology. The fintech industry, especially, can benefit massively from the

features provided by the blockchain. In Pakistan, where there is a need to make simple transactions easy and accessible to everyone, we can take the leap by using this revolutionary technology and making the necessary technical advancements as a nation.

06

BLOCKCHAIN IN NFTs

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BLOCKCHAIN IN NFT

Non-fungible tokens (NFTs) as explained in this article, kept increasing in recognition since introducing a test version of crypto in 2017. NFTs aren't the same as crypto. They differ from other cryptocurrencies, such as Bitcoin, Ether, and Monero, in terms of fungibility because of their unique characteristics and applications that cannot be replaced or exchanged with identical tokens.

The growing use of blockchain fuels the adoption of NFTs such that industries are now implementing blockchain with NFTs. NFTs as blockchain-based tokens symbolize art pieces, collectibles, properties, gaming, and other non-fungible creative work.

When any asset with non-fungible tokens (NFTs) undergoes a transaction digitally or in real life, blockchain technology will create a new 'block' with the new owner's data. This feature represents assets and also proves authenticity and ownership.

TOP USE CASES

Here are some of the use cases on how blockchain improves the current system in NFTs:

Art:

NFTs have taken the world of art by storm. It connects with people interested in acquiring art or digital work and doing away with exhibition and promotion of artwork.

Artists are experiencing huge sales thanks to a new crypto-audience. Celebrities are also joining because they spot a new opening to connect with their fans. NFTs also receive royalties every time their work is sold to a new owner. This makes sure that the original creator is always given their due credit whenever their artwork is sold.

In Pakistan, where artists are usually not given the recognition and value they deserve, the use of NFTs can bring a much-needed change to our community. It gives the power back to the creators and incentivizes them to create more. It

is high time that we bring forward the creative people that our country inhibits and provide them opportunities to showcase their art to the world and display how artistically rich Pakistan is.

The use cases of non-fungible tokens with the combined power of blockchain appeal to the domain through tokenization of real-world assets.

Music:

NFTs are similarly revolutionizing the way music sells. Many musicians like Portugal The Man, Shawn Mendes, Grimes, and Linkin Park's Mike Shinoda have accepted NFTs with open arms, and music NFTs have gone mainstream. It also earned massive revenue through the NFT marketplace.

Blockchain technology in NFTs offers the potential to re-establish a transparent and fair system for buying, selling, producing, listening to, and managing music. Artists can also use NFTs in stock-like distributed layouts.

Sports:

Similar to the art and music industries, NFTs have a major use case in the world of sports as well. There are already many instances where NFTs for different football clubs are being used and sold to the fans. So far, 24 different football clubs such as Manchester City have already launched or are planning to launch NFTs including 8 premier league sides. These NFTs have different utilities. Some allow the owners to vote on which songs will be played during the games, what will the kits of the players look like, etc.

Pakistan can also use NFTs in the sports sector. Recently, the Pakistan Super League and the upcoming international cricket series have been all the hype, the tickets for these matches can be made into NFTs and minted on the blockchain. Furthermore, they can make use of on-chain verification of the tickets on entry to the stadium. Doing so would filter out any fake tickets that people may be using and make the whole process a lot smoother and much more efficient.

Ownership:

Implementing blockchain allows NFTs to provide undeniable proof of ownership with a certification of authenticity that can be validated. Also, like cryptocurrency tokens, NFTs are gathered in a distributed ledger, preventing tampering.

Even in Pakistan, there have been many cases of music being stolen and the actual owner has no way to prove their ownership. With NFTs, anyone would be able to verify the first owner of a property. Even if that particular piece is sold to somebody else, it would be able to be traced back to its original owner.

CONCLUSION

Implementation of NFTs in Pakistan will give rise to productive improvements across different sectors of the economy and provide an array of valuable benefits.

07

BLOCKCHAIN IN DEFI

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BLOCKCHAIN IN DEFI

DeFi, short for Decentralized Finance, refers to peer-to-peer finance platforms enabled by decentralized technologies built on the blockchain. With over $13 billion worth of value locked in Ethereum smart contracts, DeFi has emerged as the most active sector in the blockchain space, with a wide range of use cases.

The most evident issue of the Financial Sector in Pakistan is the centralization and its control in the hands of a single organization or authority. Using DeFi, we can remove the barriers to entry and further make it accessible to everyone while keeping the security intact of the whole system.

WHAT MAKES BLOCKCHAIN USEFUL FOR BUILDING DEFI APPS AND PROTOCOLS?

Several properties make the blockchain the ideal system for building DeFi-based applications. They include:

- Decentralization
- Accessibility
- Programmability
- Interoperability
- Security

USE CASES

As a result of those properties of the blockchain, DeFi is used for the following purposes:

Staking:

This is when users lock up a part of their funds to earn a reward. This is similar to a fixed deposit in the traditional banking system. Blockchain entities that require a proof-of-stake mechanism to build new blocks use these and share earnings with users as rewards. Staking can be done on DeFi platforms like yearn.finance, and Compound.

Liquidity Mining:

This is a mechanism or process in which participants supply cryptocurrencies into liquidity pools, and are rewarded with fees and tokens based on their share of the total pool liquidity. This is similar to being paid incentives for leaving your money in the bank to be used to give to others who need cash. Liquidity mining can be done on DeFi platforms like Uniswap and Aave.

Stable Coins:

They are termed such because they are always equivalent to approximately $1. One way to achieve this is via the use of smart contracts, which are programmed into the blockchain with the sole aim of stabilizing the currency to equal $1. A typical example of this is DAI. Others that are backed by centralized authorities but still used for trading include USDT and USDC.

Trading:

In the DeFi space, Trading encompasses a range of activities, from token swaps to derivatives trading to margin trading, and happens across an ever-growing and integrated network of exchanges, liquidity pools, and marketplaces. Crypto traders on decentralized exchanges benefit from lower exchange fees, faster transactions, and full management of their assets. Aave, yearn.finance, and Compound can be used for trading.

DEXs:

It is important to mention the concept of Decentralized Exchanges (DEXs) here as they allow for the exchange of assets easier, seamless, trustless all without the presence of a third party (banks, payment gateway, etc.) in between.

Uniswap, the world's biggest DEX, has facilitated over 58 million trades and has a TVL of $6 billion USD. Uniswap has reduced the discrepancies between the sellers and buyers and most importantly, Uniswap uses Automated Market Maker (AMM) for improved functionality.

Lending and Borrowing:

Peer-to-peer lending and borrowing protocols are some of the most widely used applications in the DeFi ecosystem. Compound, for instance, allows users to earn interest on crypto that they've added to the lending pool.

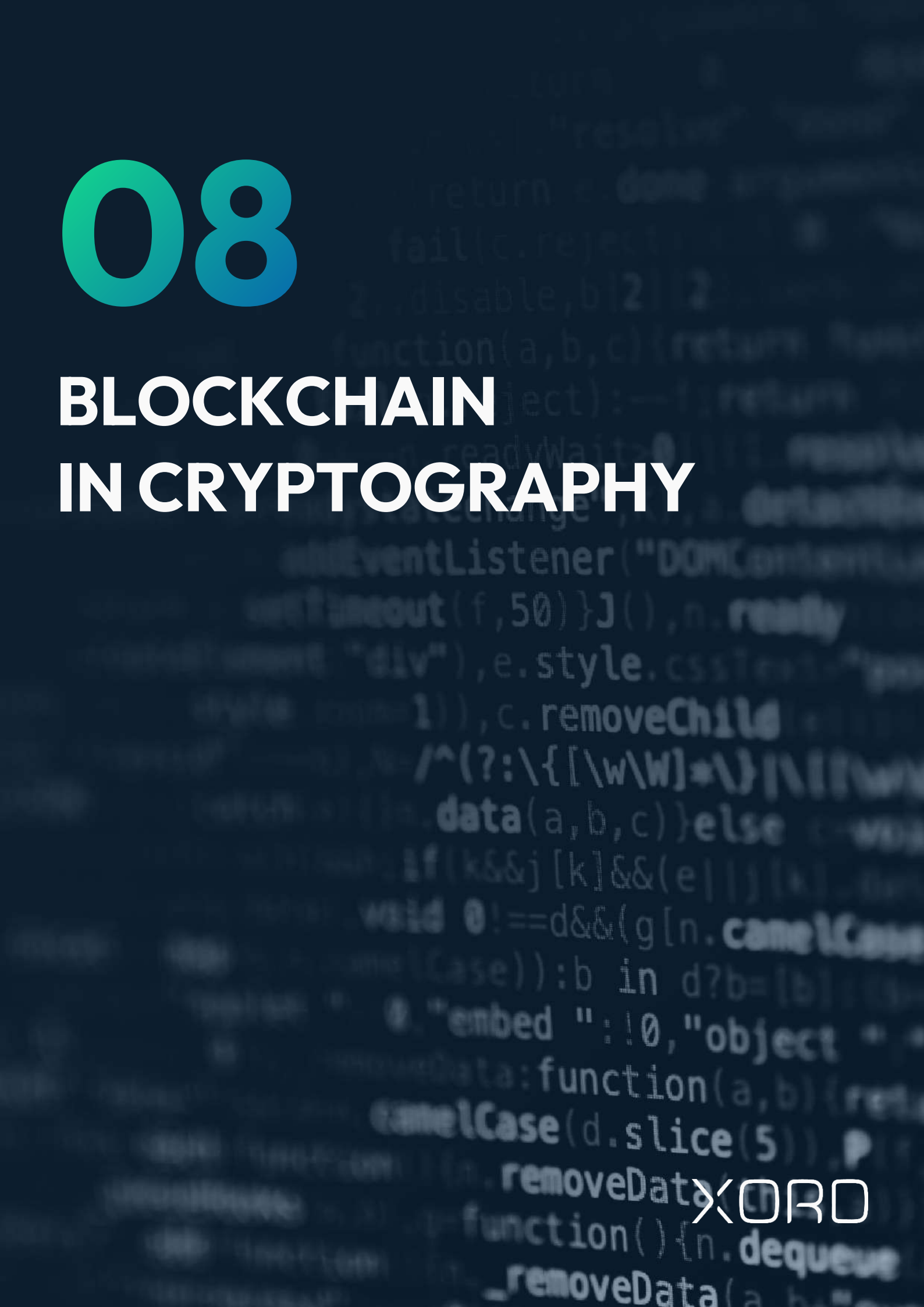
CONCLUSION

The DeFi space powered by blockchain technology has a wide range of income-producing services to offer. The government of Pakistan can look into some of these means to serve as national investments and seek ways of educating the populace to embrace these solutions to help boost their income level.

Blockchain offers a wide variety of opportunities and solutions to the problems currently existing in the fintech industries especially in Pakistan. Using DeFi allows for a better user experience and accessibility to everyone. This is not normally seen in the traditional financial systems of Pakistan. The people working in the Fintech industry can greatly benefit through the decentralized, secure, and efficient solutions that blockchain provides them in their day-to-day businesses.

08

BLOCKCHAIN IN CRYPTOGRAPHY



BLOCKCHAIN IN CRYPTOGRAPHY (ZERO-KNOWLEDGE PROOFS)

"Cryptography" which also means "secret writing" can be described as the aptitude to exchange messages that the intended recipient can only read. This technology also ensures pseudo- or full anonymity depending on its configuration.

Cryptography has been used for multiple purposes which include securing several transactions on the network, verifying transfer of digital tokens and assets, and controlling the generation of new currency units.

HOW DOES BLOCKCHAIN IMPACT CRYPTOGRAPHY

Right from its inception, cryptography has been associated with blockchain.

Recently, the combination of blockchain technology with cryptography has attracted people's attention, especially after Zero-Knowledge Proof (ZKP) was introduced. These techniques are used for privacy and security purposes and to also secure transactions fully on a blockchain platform.

Zero-Knowledge Proofs allow the person to verify a piece of information without revealing the actual information. This way, the concreteness and secrecy of the information remain intact and the purpose (verification) is also fulfilled.
To get more understanding of Zero-Knowledge Proofs, read this article.

In summary, the combination of cryptography with blockchain technology has created a secured mode of financial transactions.

Also, while blockchain technology come up as a promising innovation, Zero Knowledge Proof or ZKP is a good option to support blockchain as an additional security standard for maintaining security in transactions

USE CASES OF CRYPTOGRAPHY (ZERO-KNOWLEDGE PROOF) ON THE BLOCKCHAIN

Data Security:

Industries in charge of sensitive data, like banks and hospitals, are expected to keep their data free from third-party access. With the amalgamation of blockchain in cryptography, data will be made more secure, and accessing data will be impossible.

Furthermore, intelligence agencies can use these cryptographic techniques for safe data transfer without the fear of data leakage.

Protection of storage:

With the decentralized features embedded in blockchain and implemented to ZKPs, it will enable cryptography security protocol to safeguard information by creating a highly secured and seamless ecosystem.

Next-gen file system controls:

Blockchain supports ZKP by adding multiple layers of security to files and logins. This procedure also allows ZKPs to present obstacles for manipulators or hackers.

Messengers on blockchain:

Zero-Knowledge Proofs and blockchain can both create a value-added messenger platform that is secured for individuals and organizations.

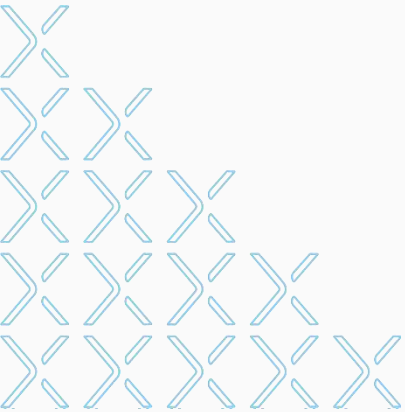
Systemization of Knowledge (SoK) gives a complete picture of the impact of cryptographic concepts deployed in the blockchain. To know more, here is a related write-up.

CONCLUSION

The adoption of blockchain technology in cryptography will serve as great potential in Pakistan in procedures like saving costs and preserving the privacy

of the users. Moreover, blockchain technology offers easy-to-use features that support Zero-Knowledge Proofs efficiently.

Most of the industries are handling some sort of sensitive data such as real estate, banking, health, insurance, and especially intelligence agencies. Using cryptographic proofs can help these industries keep their data safe and resistant to data theft, forgery, and data manipulation.



09

BLOCKCHAIN IN METAVERSE

XORD

BLOCKCHAIN IN METAVERSE

2021 has been a massive year for blockchain and crypto, from various coins springing up to NFTs. The second half of the year has brought us another trend: The Metaverse. With the dreams of combining our real-world, social lives, work, and immersive technology, the Metaverse has captured the public's attention.

The Metaverse is a connected, online universe explorable via 3D avatars. Users can work, socialize, create, and learn all in one place. Think of it as an online 3D virtual space connecting users in all aspects of their lives. It would connect multiple platforms, similar to how the internet connects different websites accessible through a single browser.

Although relatively new, the blockchain has enormous use cases in this virtual world called the Metaverse, a fusion of virtual and real worlds as captioned in a previous article.

HOW DOES BLOCKCHAIN IMPROVE THE METAVERSE?

Blockchain has proven to be a valuable technology for the Metaverse due to these six key characteristics:

- Digital proof of ownership
- Digital collectability
- Transfer of value
- Governance
- Accessibility
- Interoperability
- Transparent and cost-effective solutions

USE CASES

Using the advantages of the characteristics mentioned earlier of the blockchain, it is used in GameFi and Virtual land/property ownership, and even education.

Education:

The quality of education is the basis for the progression of a country. The aid that metaverse can provide to improve the education sector of Pakistan is limitless. Using metaverse, you will no longer be bound by physical restrictions or unavailability of resources. The visual education that metaverse can provide will boost up the quality of education and make it a fun learning experience.

It is evident that we have been struggling as a nation to provide good education, especially in rural areas. With the concept of metaverse, by just setting up the right equipment in these areas and providing them with an internet connection, we can allow the kids to get the education that they have the right to. Even the teachers would no longer need to be on-site. The whole process could be carried out remotely.

GameFi:

As the name suggests, it is a system built on the blockchain that allows you to perform financial transactions while playing video games. Most GameFis come with a play-to-earn feature. Being on the blockchain affords the user ownership of what he earns within the game. This could include NFTs or cryptocurrencies. He can thus use this to exchange for other items within the Metaverse or transfer his token to an external address. Typical examples are Axie infinity, sandbox, ultra, and many others.

Virtual Land/Property Ownership:

Blockchain would enable virtual reality to become a possibility in the Metaverse. Blockchain cryptocurrency tokens would be required to buy virtual land and properties and access features to build on them. Virtual worlds like Decentraland, Bloktopia are examples of these implementations.

The effects of the virtual world would tremendously change the affair of things as we see them today. For example, Blocktopia mentioned above is a 21-storey building that would feature games, virtual offices, social centers, learning hubs for cryptocurrency, and even a portal where users can create the kind of world they want.

NFT Creation:

There is no news that users can earn from the Metaverse, and blockchain is a significant contributor. Blockchain-based entities can be used in the Metaverse to create NFTs, which can be used as avatars or sold to other users at an agreed price. This ultimately favors users and is a form of job creation. An example is Enjin,

CONCLUSION

The uses of Blockchain in the Metaverse are enormous, and more are being crafted daily pending when the Metaverse becomes ubiquitous. Pakistan can adopt some of these blockchain-enabled features in the Metaverse, like the work-from-home settings using virtual offices. It can create jobs for youngsters via some of the earning mechanisms in the Metaverse.

10

BLOCKCHAIN IN DAOs

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BLOCKCHAINS IN DAOS

A decentralized autonomous organization (DAO) is a virtual organization with no central leadership. Decisions get made from the bottom-up, governed by a community organized around a specific set of rules enforced on a blockchain.

In a nutshell, DAOs are built on a blockchain network.

DAOs are essentially used to reduce human errors. The smart contracts on which the rules are encoded, execute immediately a set of criteria are met.

WHAT MAKES THE BLOCKCHAIN USEFUL FOR MAKING DAOS?

Several qualities make blockchain an ideal system for building DAOs including:

Decentralization:

Being a community-owned organization with no location boundaries, the blockchain is ideal for hosting DAOs. This makes it accessible from anywhere in the world.

Immutability:

The fact that codes cannot be changed easily without notice on the blockchain is an attractive feature to DAOs making it a trustless system with less tendency to be exploited by any individual within the organization. It also makes members feel safe investing their funds in the organization.

Although due to the DAO name "The DAO" which was hacked, some have expressed doubt in the system. It is noteworthy that the flaw that was exploited was due to codes on the smart contract of that DAO. A hard fork was an easy solution that prevented the loss of investors' money hence if for any reason such occurs, there is a precedence in place with regards rectification.

Programmability:

The smart contracts containing the set of rules guiding a particular DAO can easily be built on the blockchain network.

Due to these exceptional characteristics of the blockchain, several types of DAOs have been built on the blockchain as we would see in the use cases.

USE CASES

There exist different types of DAOs based on uses and they are all built using blockchain technology. They include:

Protocol DAO:

These are created to help build a protocol. Examples include the Maker DAO, Sushi, Uniswap, and Compound, though each operates according to its structure.

Social DAOs:

These DAOs are typically known for bridging online to offline, hosting IRLs for meetups and other community-related activities. Examples include Friends with Benefits(FWB), Seed club, CabinDAO, and Bright Moments.

Investment DAOs:

These DAOs have the sole purpose of targeting profits/returns hence these projects aggregate capitals and investors for deployment. Examples include The LAO and MetaCartel.

Grant DAOs:

These types of DAOs seek to advance the broader ecosystem, support promising projects, and open pathways to new contributors. Examples include Uniswap Grants and Audius.

Service DAOs:

These DAOs act as aggregators, pulling together human capital which can be directed towards certain projects. Examples include RaidGuild, PartyDAO, and DAOhaus.

Media DAOs:

These entities produce public content, often collaboratively. Examples include Forefront, Bankless, and Darkstar.

CONCLUSION

DAOs as seen above can be used for various purposes that are of benefit to organizations. For example, the government of Pakistan can use DAOs to carry out voting activities without the fear of it being rigged or misused by one person or authority. Since no single person or entity owns the DAO, it gives the chance of fair governance and on-chain verification. Instead of waiting in long lines to cast votes and being dependent on the people to count the votes fairly, we can simply automate the whole system and carry out the processes transparently.

The media industry in Pakistan can also adopt blockchain use in making media DAOs that create automated adverts and reward active audiences with tokens. This can help boost the economy in the long run.

11

BLOCKCHAIN IN SOCIAL MEDIA

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BLOCKCHAIN IN SOCIAL MEDIA

Social media are interactive internet-based technologies that facilitate the creation and sharing of information, ideas, interests, and other forms of expression through virtual communities and networks. Over 3 billion people worldwide have a profile on Facebook, Twitter, Instagram, or some other social media platform, a total figure that has risen by roughly 13% year-over-year.

These users have, for some time now, expressed concerns about their privacy. Several allegations have been leveled against various social media platforms about selling personal data of individuals. Unfortunately, the answer to that has been a public apology and, in some cases, that users gave them permission to use or manipulate their data.

WHAT IS THE SOLUTION TO THIS CHALLENGE?

The blockchain has several properties that help it solve social media issues. they include:

- Decentralization
- Cryptography
- Digital identification

This makes blockchain able to solve issues such as data privacy, data manipulation, and bot manipulations.

USE CASES

Decentralization of Social Media Platforms:

Several known social media platforms today allow centralized overseers, such as Facebook or Twitter, to hold, access, and disseminate the content posted on our social profiles, sharing it with advertisers or even sometimes selling for personal gains. By replacing centralized strongholds of endless user data with a distributed network of storage known as decentralized servers, no central authority will have the capacity to use our information for their purposes, essentially freeing social media users from their current predicament. This would thus solve the challenge of data manipulation.

Several platforms already do this, including Mastodon, Steem, Sapien, and killi.

Monetization Access:

Blockchain technology is an internet concept of true democracy. Every piece of content shared on a blockchain is attached with a unique identity of its own without any threats of stealing and monetization. Every blockchain hash attached with content is enclosed with smart contracts aligned with the policies of that content.

One of the best advantages that come with blockchain is content monetization and revenue generation without any prior investments. The sudden rise of NFTs has caused outrage on the news. It's one of the miracles of blockchain that has given the relevant authority and spotlight to creators online. Moreover, blockchain gives credits and power back to the people by the concept of earning royalties. The original creator will always benefit whenever their content is being used without the fear of it being copied or fabricated.

Many blockchains like Creator.ai and Curate are solely dedicated to giving content creators the highlight of their careers while staying secure from all the threats present on web 2.0.

Data Privacy:

Although it might seem ironic that people who want to put their information out there for a large number of people to see would want data privacy, the reality is that a lot of social media users do not want their private data to be public. This is the reason you will see several private accounts on Facebook or Instagram. Blockchain-based applications can allow users to use public-private cryptography encryption that enables them to decide what they want accessible on their pages and what is private and thus can only be accessed by them or by authorized parties. SoMee is one social media platform currently doing this.

Verifying Online Identity:

As of 2017, research suggested that as many as 48 million Twitter accounts were actually bots. This doesn't stop with Twitter, as almost all social media platforms seem to be having the same issue. The blockchain solves this

problem easily with the use of identification protocols that ensure a user is human and weed out bots.

Civic is one company that provides digital identity services on the blockchain.

CONCLUSION

Social media today has an impact on virtually all sectors of life, especially on information sharing. Pakistan can embrace decentralized social media to help ensure verifiable information from actual humans whose privacy is valued, gets across to the right people.

12

COVID-19 IN PAKISTAN

XORD

COVID-19 IN PAKISTAN

The recent COVID-19 pandemic outbreak has tested the limitations of healthcare systems all over the world. From management to tracking and patient security, healthcare was vigorously tested and many nations failed to provide the basic healthcare needs to their people. Throughout this phase, many countries opted for digital technology to help them efficiently manage the concerned tasks.

Blockchain, being an emerging technology, provides unique characteristics such as privacy, immutability, decentralization, and transparency that can be very useful in this domain.

Here is how we can use blockchain to efficiently manage all the processes related to the COVID data management, vaccinations, and distribution systems.

Data Verification and Validity

As the pandemic spreads, accurate data verification plays an important role in deriving conclusions based on reported and recorded data statistics. The said data verification can be in terms of the number of cases reported, the percentage of positive cases, mortality rate, the geographical areas that are most affected by COVID, etc.

All in all, proper data monitoring helps to track the progress of the pandemic. Blockchain allows all this data to be stored and monitored in a decentralized way so that anyone who is authorized can verify the data whenever needed instead of depending on a single entity to provide accurate information.

Data Privacy and Integrity

It is difficult to store such massive amounts of data in a secure way in traditional data management systems. They are prone to system crashes and cyber hacks due to which data can be mutated and get corrupted, thus resulting in data loss.

When such critical information is being handled in a system, it should a priority to make sure that its integrity is not hurt. When stored on the blockchain, the

data becomes immutable and auditable i.e., no one can tamper with the information stored and anyone can validate its authenticity.

Furthermore, the private data is stored using cryptographic techniques so that the patients' personal information is not revealed to any third parties.

Decentralized Nature

The decentralized nature of the blockchain makes it highly fault-tolerant. It does not contain a single point of failure which makes it resistant to data loss. COVID data can be safely managed on the blockchain without the fear of being subjected to data loss or data tampering.

Clinical Trials and Research

Blockchain technology provides a reliable, secure, and transparent platform that can be used to store data regarding the trial research, such as managing data access, safe transfer of clinical data, as well as auditing the clinical trials. The supply chain of drugs being used in these trials can be stored on the blockchain to ensure real-time traceability and record-keeping.

Vaccine Supply Chain Monitoring

Vaccine hoarding has become a common practice in this pandemic where many rich countries are keeping the vaccines for themselves in case, they need them in the future and not giving a chance for the developing and under-developed countries to fight off the pandemic. Blockchain solves this issue as well.

After the vaccine is approved by the regulatory authorities, its supply throughout the world can be stored and monitored on the blockchain with real-time sharing of information with the concerned authorities, thereby, making the whole process a lot smoother, fairer and faster.

USE CASES

Vaccify.pk, an open-source, decentralized digital wallet is used for storing and sharing PCR tests and vaccination certificates via global identity standards. It also allows anyone to verify PCR tests and vaccination passports in a very

authentic manner. Xord, believing in the potential of blockchain, has been a major contributor in providing this solution.

Also, Triall is using the power of blockchain technology to ensure safe, and tamper-proof clinical trials and the development of new vaccines.

CONCLUSION

The COVID-19 outbreak has questioned the health organizations and governments all over the world in these past couple of years over their management and healthcare standards. During this time, many nations realized the need to move towards digital data-keeping and monitoring. And blockchain has proved to be one of the most dependable and secure technologies for this purpose.

13

TESTIMONIALS

XORD

What started in late 1990s as the underground movement for digitization of cash, has led to a historical protocol design in 2008. Blockchain has superseded its initial use case and have become a universal medium of transfer of value. Companies like Xord, are revolutionizing our world with new products and solutions development which were unthinking just five years ago. DLTs and Blockchain have the potential to digitally transform and automate governance, citizen services, and make red tapes a thing of past. We have seen the benefits in Estonia, Dubai, and Singapore, and are eager to have them implemented in Pakistan.

Osman Nasir
Managing Director, Pakistan Software Export Board Member,
National Blockchain and DLT Policy Committee, Government of Pakistan.

The promise of Blockchain is that it will forever change how we transact just like Internet has forever changed how we access and process Information. With its disruptive potential it transforms the user experience for individuals and businesses across all sectors be it Government, Financial Transactions, Real Estate, Healthcare, Identity, Education, Transportation, Energy, or Supply Chain and Logistics. It has enabled new business models, new industry ecosystems, new actors and new assets by enabling a stack that provides decentralization, immutability, programmability, provenance and autonomy.

Dr Sohail Munir
Adviser, Emerging Technologies and Digital Transformation, Dubai Digital Authority

Blockchain is the revolutionary technology just like internet, it will change the world the same as internet did 3 decades ago, always remember Blockchain in never about only bitcoin or crypto-currencies then same way like Internet is in not only about email or communication systems, it's far more than that.

Where you need transparency, verifiable and resilient data you need Blockchain. We all need to understand the real worth of Blockchain not only run behind crypto-currencies.

Ahmad Manzoor

Founder & CEO, Pakistan Blockchain Institute & AnZ Technologies

Tokenization is the distribution, democratization and decentralization of ownership and consensus in fractionalized virtual and physical assets. Tokenization sits at the core of cryptocurrencies, NFT's, DeFi, GameFi and Web3.0.

When you understand the dynamics of building a tokenized economy you start to see things differently. You see opportunity everywhere and start to visualize old ideas in a new world. The biggest area of blockchain in terms of value I think will be in tokenized equity. It will allow immediate liquidity in a previously locked investment space where capital is unable to be moved and redeployed efficiently.

Abdul Alim

Co-Founder, bitblaze.co

There are several use cases of blockchain in Pakistan. Pakistan, as an ascending nation, it's growing right very rapidly and the median age of Pakistan is 22.8 years. Pakistan has recently seen a huge growth in the adoption of technology. This makes Pakistan ideal for implementing latest and greatest technology her economy and users grow.

Let's take some examples of application of blockchain in Pakistan. One of the biggest issues in Pakistan currently is the provenance of ownership of land. In some cases, we have seen the ownership change hands without appropriate paperwork. There are also cases where people claiming ownership of land but do not have the correct documentation to prove their ownership. this has led to people losing a vast amount of money and we have also seen resources tied up in providing provenance and ownership of these properties. In some cases, we have seen families lose their ancestral home due to lack of documentation. This means that Pakistan is in need of a solution where we can digitalize the property sector and make it easy to issue deeds and ownership proof to the owners/buyers of these properties. These deeds and ownership documents can be issued on block chain. Blockchain will provide irrefutable record of these details which can be verified by public and government organizations easily, quickly, and without tying up a lot of resources. If we can achieve this, we can improve the influx of capital from Pakistanis living abroad which will help the economy overall. This will also help Pakistanis living abroad to prove that they are the rightful owners of the properties.

Another very good use case of blockchain in Pakistan can be digitalization of educational credentials. the quality of education in Pakistan and the talent it produces is rapidly increasing. However, the issue of fake degree certification and institutes are on the rise. this gives an incorrect impression of Pakistani education system worldwide. The higher education Commission in Pakistan can adopt blockchain for authenticating and verifying educational degree certificates. The high education Commission in Pakistan can then roll this out two universities and other educational institutes so that the provenance can be proven. this will increase the confidence of employers globally and make the youth of Pakistan employable more easily and readily. Companies like KwikTrust, incubated in National Incubation Centre Karachi, provide provenance solution on blockchain to the above issues in Pakistan.

Yasir Qayam
COO & Head of Product, Kwiktrust

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OUR CONTRIBUTION

XORD

OUR CONTRIBUTION

GITEX Technology Week 2021

GITEX is an annual technology expo that is hosted in Dubai Trade Centre where innovators and tech specialists from all over the world represent their contributions to the future of technology. In GITEX 2021, Xord also represented Pakistan in terms of blockchain technology. We attracted a large number of entrepreneurs and tech geeks to this event by interacting with many intellectual individuals and giving out free NFTs to everyone who reached out to our stand.

Xord's representation in GITEX 2021 Tech Week-Dubai has been successful advocacy of Blockchain and our services to the world. We have also received appreciation from Pakistan's Technology Minister, Syed Amin Ul Haque, and Federal Minister for Information, Fawad Chaudhry.

Xord's Contribution on Ethereum

Xord is the first company from Pakistan to have contributed to the Ethereum blockchain. Our research team worked on an open-source Typescript project named Lodestar to enable support between remote signers and validators of the Ethereum blockchain. The initiative was soon approved and merged by the Chainsafe Systems.

The contribution to Ethereum is a national milestone for us. Xord being an identity of blockchain advocacy, looks at this opportunity as a revolution for blockchain technology on a national scale and envisions to further escalate the process of blockchain development globally.

BLOCKSHIP – XORD'S COMMUNITY INITIATIVE

Understanding the sudden increase in the curiosity among the people about blockchain technology locally and internationally, we have gathered a great influence from talented people from all around the world and built a community named "Blockship" where we aim to create thought leaders and empower the transition towards Web3.0 by providing an ecosystem to ensure the growth of blockchain technology by advocacy.

Our intellectual team of Xord is operating this community online on Discord. It's always an amusement to witness such a growing and interactive community on our servers which is surely capable of bringing the blockchain revolution.

Blockchain Development Bootcamps

The Blockchain Bootcamp by Blockship is an intensive hands-on course where students learn to build decentralized applications (DApps) and gain exposure to smart contract programming. The Bootcamp is focused on shortening the learning curve for developers to become proficient in building products that are scalable and secure. It's a great opportunity for people to learn from the best developers of Xord and become impactful contributors in the web3 world.

Our Educational Meetups

We also have conducted several meetups and carried out training programs to promote blockchain technology.

BlockUnblock was a successful event conducted by our team at NED University where we highlighted the importance of research in blockchain and the future innovation in the world. We had a vast audience of tech-enthusiasts including students, teachers, and professionals, and our efforts were appreciated by all. We actively participated in answering the questions of blockchain-curious people. It was a delight for us as blockchain devotees to see the growing interest among people of Pakistan about blockchain technology.

Furthermore, our design team, Expedite, has also stood up towards escorting multiple UX Design Meetups advocating for the blockchain realm in reference to designing and improving the user experience. Where our team was seen targeting all the complexity of designing and busted many myths that come along the lines of branding in reference to blockchain technology.

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