The Blockchain: The Next Technological Revolution In The World of The Economy

Maher Fuad Abu Farhah

Postgraduate School || Limkokwing University of Creative Technology || Malaysia

Abstract: The study aimed to demonstrates that the world is more inclined to take use of blockchain (BC) systems and their favorable effects on all economic sectors, development, and quality of life enhancement. Because many states already have well-developed industries, government agencies, financial organizations, and educational institutions recognized the need to stay up with the trend and begin planning and preparing for the BC revolution. This paper also identifies 3 realistic examples for Institutions that have rated or made recommendations about this technique "BC". The paper explains how blockchain systems function in practice and why their adoption improves development, innovation, and competitiveness by reducing and simplifying operational procedures. It is one of the most important technical topics in our time, especially with the beginning of the twenty-first century, especially in financial technologies because of the major developments and changes that they have witnessed and their important impact on the global economy. This paper reviews the current academic research on BC, especially in the subject area of business and economics. Based on a systematic review of the literature retrieved, explore the most frequently cited publications, the most economic countries, and the most commonly used keywords.

BC technology is the main topic of this paper, which has profound effects in most areas, and the paper aimed to analyze the current application and concept of blockchain systems. The use of block technology generally helps the digital transformation of the economy and promotes transparency. The outputs of this technology are compatible with the rules and regulations of many nations in the sphere of banking and business. It is a tool for improving transparency, decentralization, and security while reducing cost and time. Understanding the processes through which it impacts business and market efficiency will necessitate further academic research.

Keywords: Blockchain, Technological Revolution, Economy, Application, Decentralization, Distributed ledger.

البلوكشين؛ الثورة التكنولوجية القادمة في عالم الاقتصاد

ماهر فؤاد أبو فرحة

كلية الدراسات العليا || جامعة ليمكوكوينج للتكنولوجيا الإبداعية || ماليزيا

المستخلص: هدفت الدراسة إلى إظهار أن العالم يميل بشكل متزايد إلى الاستفادة من التقنيات الحديثة كتقنية سلاسل الكتل أو البلوكشين (BC) وتأثيراتها الإيجابية على معظم القطاعات الاقتصادية، والتنموية، والتحسينات النوعية التي تتميز بها هذه التقنية. نظرًا لأن العديد من الدول تمتلك بالفعل قطاعاتٍ مهمة بحاجة لتطوير، فقد أدركت الوكالات الحكومية والمؤسسات المالية والتعليمية مدى الحاجة إلى مواكبة هذا الاتجاه والبدء في التخطيط والاستعداد لتحول نحو هذه التقنية. تقدم هذه الدراسة 3 أمثلة واقعية للمؤسسات التي صنفت تقنية بلوك شين أو قدمت توصيات حول هذه التقنية.

كما تشرح الدراسة الحالية آلية عمل أنظمة البلوكشين عمليًا ولماذا يؤدي اعتمادها إلى التطوير والابتكار والقدرة التنافسية من خلال تقليل الإجراءات التشغيلية وتبسيطها. تعد البلوك شين من أهم الموضوعات التقنية في عصرنا، خاصة مع بداية القرن الحادي والعشرين، في التقنيات المالية بشكل رئيسي بسبب التطورات والتغييرات الرئيسية التي شهدتها تلك التقنيات وأثرها المهم على الاقتصاد العالمي. تستعرض هذه الدراسة الوضع الحالي حول هذه التقنية، خاصة في مجال الأعمال والاقتصاد. استنادًا إلى مراجعة منهجية للأدبيات والأبحاث العلمية المرتبطة بهذه التقنية، والكلمات الرئيسية الأكثر استخدامًا.

تقنية سلاسل الكتل هي الموضوع الرئيسي لهذه الدراسة، والتي لها تأثيرات عميقة في معظم المجالات، بذلك هدفت الدراسة إلى تحليل التطبيق الحالي لهذه التقنية وبيان مفهوم أنظمة سلاسل الكتل وأثرها الاقتصادي. يساعد استخدام تقنية الكتلة بشكل عام في التحول الرقمي للاقتصاد ويعزز الشفافية. تتوافق مخرجات هذه التكنولوجيا مع القواعد واللوائح المعمول بها في العديد من الدول في مجال الأعمال المصرفية. وعلى الرغم من كونها أداة لتحسين الشفافية واللامركزية والأمن مع تقليل التكلفة والوقت. ومع ذلك، فإن فهم الآليات التي تؤثر من خلالها سلاسل الكتل على كفاءة الشركات والسوق سيتطلب مزيدًا من البحث الأكاديمي.

الكلمات المفتاحية: سلاسل الكتل، الثورة التكنولوجية، الاقتصاد، التطبيق، اللامركزية، دفتر الأستاذ الموزع.

1- Introduction.

A blockchain is now recognized as a key element of the fourth industrial revolution. Which has changed a global the structure of the economy while providing chances for development, innovation, and enhanced quality of life. Our society is moving from an industrial economy to one characterized by emerging technologies ranging from digitalization to nanotechnology. Blockchain is one of the most recent waves of digitalization, and many believe it has the potential to reinvent trust, transparency, and inclusiveness around the world. Knowledge sharing, not just within corporations, requires a decentralized, autonomous method so that knowledge can be shared fairly among all peoples of the world. A blockchain technology and distributed database technologies are the major technological enablers of recent achievements in a distributed transaction and ledger systems. These technologies bring up new gates for open source prospects, particularly new types of digital platforms and services [10]. Claims processing, transparency and auditing of operations, identity management, supply chain province to handle the risk of counterfeit items, and data integrity collected directly from the internet of things (IoT) devices are some of the technology's possible applications [14]. Nano-technology and BC will decide the future both path of scientific, and technological growth in the coming decades, since this technology is already used in practically every aspect of life, and the usage of BC technology appears to be necessary for performing transactions safely [13].

2- Research Problem:

There is an increasing global trend towards the use of BC technology due to the major role it plays in strengthening the foundations of economic development and digital transformation, which is the same trend that Arab countries seek to engage in to reach greater integration into the global economy, by developing plans and strategies, and providing the appropriate infrastructure to adopt BC technology is used in all aspects of the national economy, thus bringing about promising economic development as

businesses cope with the effects of COVID-19 and the way the pandemic has expedited numerous trends, such as the transition to more digital modes of working, communicating, and interacting with clients, they are reconsidering how they operate.

From this point of view, the research will attempt to answer the following problem:

What are states' and international institutions' perspectives on this technology? What are the ramifications of this technology's use for the economy and the problems it aims to solve?

3- Research Hypotheses

The study revolves around a basic premise that all strategies taken to lay the foundations for BC technology in the world are complementary measures, because the digital infrastructure is well developed in those countries, and there is wide use of the technology compared to others.

4- Research Objectives.

The research aims to the following

1. To determine the reality and characteristics of this technique, its impact on institutions and aspects of its application.
2. To identify the States and institutions that have adopted this technique and the legal effect of its adoption.
3. Investigate the characteristics of this technology and its effectiveness in performing tasks compared to centralized systems and applications.
4. To know the economic impacts on domestic and international institutions and the challenges following the adoption of this technology.

5- Research Importance:

1. To clarify the need to keep pace with technological development, especially financial and digital technology, and its impact on the economy in order to increase the efficiency and effectiveness of Arabic financial institutions, by providing better services and achieving greater customer satisfaction.
2. The possibility of using modern technological solutions such as block technology for many electronic services and the digital transformation sought by many countries, particularly the Arab States, to increase their efficiency through the use of this technology.
3. Demonstrating the real problems that this technology seeks to solve and highlighting the areas of block technology.

6- Methodology of the research.

The study relied on analytical descriptive methodology to describe and publicize the reality of the blockchain technology, and to anticipate impacts on business models in different sectors, both public and private, through metadata collected from approved global sources. Began by describing the total quantity and distribution of BC-related articles by discipline. A large number of journal papers were found. Following that, narrowed the topic area to business and economics, and were able to include articles in our research, next looked at the most influential countries, journals, articles, and keywords to discover five study themes on BC using a scientific literature analysis method and anticipate that our data-driven literature evaluation will be able to describe the state of this study in a more objective manner.

7- Structure of the research:

This study has been divided into five topics, the first topic of which deals with the literature study, while the second topic deals with generic Structure of blockchain, The third topic focuses on reality of blockchain technology, the fourth topic deals with problems seek to solving by the blockchain technology, and the last topic was based on most prominent areas of blockchain.

7.1 Literature study .

7.1.1 The Concept of Blockchain Technology

A blockchain naming initially appears in a paper named "Bitcoin: A Peer-to-Peer Electronic Cash System". Posted in 2008 by a person or a group of people named (Satoshi Nakamoto). As stated in the white paper, the name was launched on the main part of the electronic cash system or Bitcoin at the time. Through a decentralized digital payment system that does not require an authorized third party [29]. Currently, BC is applied as the general designation for all apps and systems that are built on the Unified Transaction Log, which enables the creation of transactions in a secure and direct manner without an intermediary party as a specific authority seeking to control the system [2]. BC is a system of records in form peer-to-peer to deal with value and is not limited to money only, i.e. no reliable broker is needed such as banks, brokers or other escrow services as a trusted third party [15].

On a technological level, it is a technique based on a set of encryption algorithms, storage technologies, and peer-to-peer networks, with characteristics such as "inalterability, "consensus process," and "decentralization". It can be considered of as a gigantic ledger for bookkeeping at the database level. At the economic level, it can provide a secure trust basis for both parties who have no prior knowledge of the transaction. In conclusion, it is a creative integration solution that combines cryptography, distributed consistency protocols, network security, and other related technologies [17] [18] [19].

As displayed in Fig 1, BC technology has evolved and improved through time, from Diffie and Hellman's "New Directions in Cryptography" published in 1976 to Forbes has released its third annual BC 50 List in 2021.

Year	Event
1976	Diffie and Hellman published their paper new directions in cryptography.
1977	MIT researchers Ron Rivest, Adi Shamir and Leonard Adleman, invented the world's first cryptographic RSA algorithm.
1980	Markle-Tree was proposed to verify the correctness of data synchronization in distributed networks.
1982	Cryptographer David Chaum proposed a blockchain-like system for the first time in his dissertation "Computer Systems Established, Maintained, and Trusted by Mutually Suspicious Groups".
1997	Adam Back introduced another concept called "HashCash". This lead to the concept of creating money called as "b-money" by Wei Dai based on peer-to-peer network.
1998	The concept of cryptographic currency was proposed. Nick Szabo works on 'bit gold', a decentralized digital currency.
2002	HashCash, the first generation of PoW algorithm appeared.
2008	Satoshi Nakamoto published his famous paper Bitcoin.
2009	The first bitcoin block was discovered, and the Bitcoin Era officially began.
2013	Vitalik Buterin released the first white paper for Ethereum.
2014	The term "blockchain 2.0" is used to refer to uses other than currency.
2019	Libra is a proposal by Facebook for cross-border digital cryptocurrency and financial infrastructure services.
2020	The second annual Blockchain 50 List, which was announced, demonstrates that global organizations are still interested in blockchain technology.
2021	Forbes has released its third annual Blockchain 50 List, which includes the top 50 firms using distributed ledger technology to lead the pack.

Figure (1) Development History of Blockchain

7.1.2 Types of Blockchain Networks:

There have been three forms of blockchains identified, which are listed below:

I. Public Blockchains: Anyone can access them since they are open and transparent. They are available for inspection by everyone at any time. Since no one is in charge, the decentralized consensus system is in charge of making decisions. When making decisions, the proof of work (PoW) and proof of stake (PoS) are considered. There are no limits on who can use them, so everyone can engage in transactions and validations. Ethereum and Bitcoin are two common public blockchains.

II. Private Blockchains: Only accessible to an individual or organization. Read-write operations are managed by an authority. An authority is also in charge of granting read-write access to users on a case-by-case basis. A mining rights can also be allocated selectively, creating it equivalent a system that is centralized, despite the fact that it is cryptographically secure and cost-effective. No access or make transactions on this blockchain. Permissions blockchains are what they're called. A common example of a private blockchain is a bankchain. Private blockchain is predicted to have the greatest market size in 2020. A private blockchain is a shared database or ledger that is kept safe using traditional security measures such as restricted user rights. The security of a private blockchain is often supplied by private keys that are only known by the linked organization [28]. Consortium: One or more decision-making authorities are present in these blockchains. It allows for speedier transactions while still providing several points of failures, data preservation. Also, the

members are in charge of building transactions and decisions. They have the ability to read, write, edit, and mine data. R3's enterprise and Energy Web Foundation are two common examples of consortium blockchains [8].

the comprehensive comparison between public and private blockchain [34].

Table (1) The similarities and differences between Public and Private Blockchain

Similarities	Differences
Both are append-only ledgers, meaning that records can be added but not changed or removed. As a result, these are known as immutable records. In both blockchains, each node in a network has a complete copy of the ledger. Both are spread across a peer-to-peer network and are decentralized.	Since it is lighter and offers transactional throughput, a public blockchain has a lower order of magnitude than a private blockchain. Participants' level of accessing, anyone may participate in a public blockchain by verifying and uploading data to it. Only approved entities may participate in and manage the network in private blockchain. Bitcoin and Ethereum are two examples.

Source: (Toshendra, 2019)

7.2 Generic Structure of Blockchain

The components of a generic blockchain are identified as below table 2 [3].

Table (2) Generic Structure of Blockchain

Addresses	These are unique identifiers that are used to identify senders and receivers in a BC-transaction. A public key is frequently used to generate an address. Whereas the same user can reuse addresses, and these addresses are unique. However, a single-user cannot reuse an address and must generate a new per each transaction.
Transaction	It's described as the transfer of value from one location to another.
Block	It consists of numerous transactions as well as other components as the hash of the previous block, and the timestamp.
Peer_to_Peer Network	A decentralized-network in which a set of devices (nodes) store and distribute files collectively, with each node acting as an individual peer.
Programming Language or Scripting	They aid with a number of tasks by performing a variety of actions on a transaction. Script, a language made up of sets of commands that allows nodes to transmit tokens from one address to another, is used to construct transaction scripts in Bitcoin. The script is a constrained language in that it only allows for important transactional processes and does not allow for the building of arbitrary programs.
Virtual Machine	This is a development of the transaction script that was previously implemented. It allows fully complete code to run on a BC (as smart contracts), whereas transaction scripts' capability is restricted. On the other side, virtual machines aren't compatible with all them. On various BC, and virtual machines such as "Ethereum Virtual Machine" (EVM) and "Chain Virtual Machine" (CVM) are utilized to run programs. CVM is a virtual-machine developed for Chain Core, an enterprise-

	grade it. EVM is a virtual machine used in the Ethereum-BC, whereas CVM is a virtual machine designed for and used in Chain Core, an enterprise-grade it.
State Machine	Nodes on the BC-network alter a state from its original form to the next and finally to the final form as a consequence of transaction execution, confirmation, and finalization, which is referred to as a state transfer system.
Node	Depending on the role it performs in a BC network, a node can perform a range of activities. A node can propose and validate transactions as well as mine in order to foster consensus and protect it.

On the mechanism of this technique, it can therefore be summarized:

Miners or Block Signers are the two types of nodes. Block Signers verify and digitally sign transactions, whereas miners introduce new blocks and mint currency (coins). A crucial decision for every blockchain network is deciding which node will contribute the next block via a Consensus Mechanism. This scheme is presented here to provide an overview of how the blocks are created and how both blocks and transactions are related:

- A transaction is started by the node creating it and digitally signing it with its private key. A transaction in a blockchain can be any number of actions. This is a data structure that often reflects a value transfer between blockchain network participants.

- It is propagated using the Gossip Protocol, which uses a flooding protocol to have peers verify the transaction based on predetermined parameters. To verify a transaction, more than one node is usually needed.

- The transaction is placed in a block, which is then sent across the network until it is validated and considered complete.

- The freshly formed block has now been added to the ledger, and it is cryptographically linked to the next block. At this point, the transaction obtains its second confirmation, and the block receives its first. To form a new block, transactions must be confirmed to consider the final transaction, so Bitcoin needs to 6 assertions.

7.3 Reality of Blockchain Technology:

7.3.1 The Reality of Blockchain Technology Globally

Companies can now develop simple, personalized, data-intuitive products and services at a low cost way by emerging technologies. Fintech has also lowered the barriers to entry for businesses ranging from existing financial services companies to start-ups and newcomers to the technology, media, and telecommunications (TMT) sector, resulting in a complex web of cooperative rivalry, or "competition," and collision.

Financial services (FS) firms and technology, media, and telecommunications (TMT) firms used to drive side by side, sometimes on the same roads but rarely in each other's lane. However, the distinctions

between financial services and transportation and logistics companies have blurred to the point that the paths are a free-for-all and previously distinct industries are colliding. Many TMT firms are applying for FS licenses, and FS firms have started to refer to themselves as technology firms.

Financial Institutions' current technical orientation needs to meet the developmental set by FinTech firms. Financial firms are currently concentrating on updating their legacy systems, with data analytics and mobile technologies playing a large role. (See Figure 2). They are focused on not only improving client support, but also improving performance, lowering costs, rising security, and making processes more agile as they implement these solutions. Their top priorities include blockchain, artificial intelligence, and biometrics and identity management (See Figure 3).
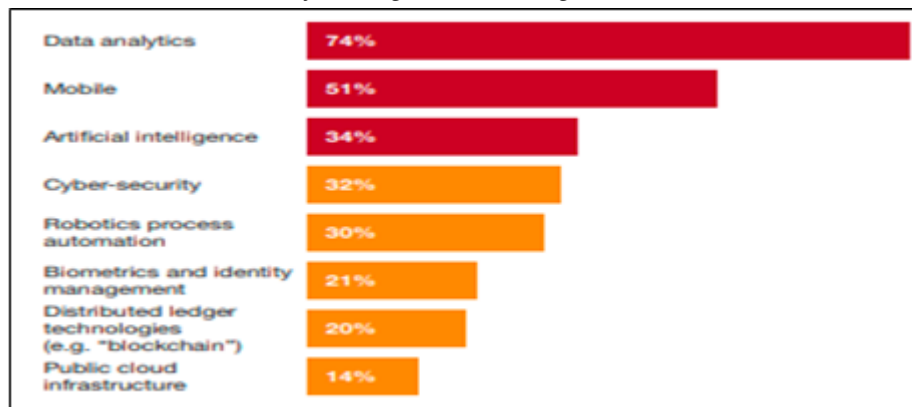

Figure (2) Technological areas of investment, Source: (PwC, 2017)

Figure (3) Focus on emerging technologies, Source: (PwC, 2017)

According to the same previous study, [30], over the next three to five years, 77 percent of respondents plan to increase internal innovation activities globally (see Figure 4). This can be achieved in a variety of ways, which include the adoption of newer technology like Artificial Intelligence (AI) or blockchain, as well as a change in the cultural environment to one that encourages creativity. Although the financial services sector was the first to investigate blockchain, the technology's potential is now being released across all industries, including energy, telecoms, and pharmaceuticals. The technology is moving to reality, and business use cases are likely to become more popular. This process is still in progress, but as more businesses recognize the value of a blockchain, the technology's financing is increasing. Indeed,

depending on statistics from PwC's DeNovo network, financing for blockchains firms grew by 79 percent to US$450 million in 2016.
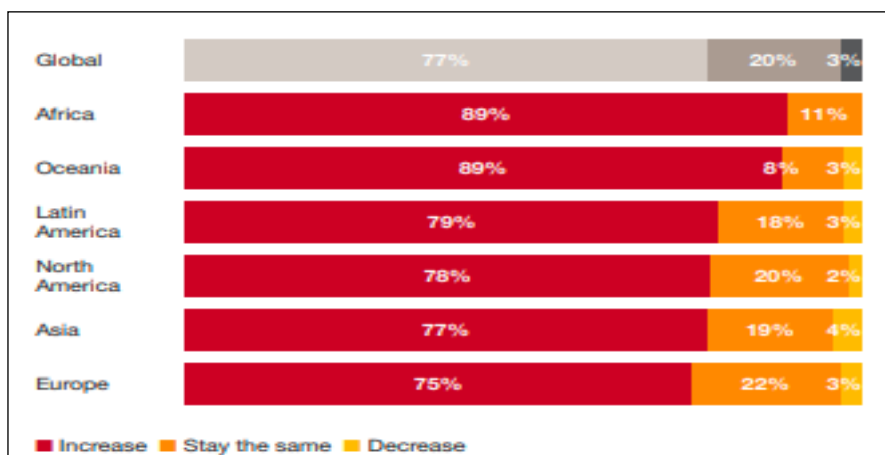

Figure (4) Changes in internal innovation efforts, Source: (PwC Global FinTech Survey, 2017)

As a blockchain becomes more integrated into the strategy, more people are familiar with it—24 percent are very or highly familiar, compared to 17% previous year as shown in (Figure 5). North American participants have been the most familiar with the technologies, and it will most possibly be embraced in different time through countries, frames and forms. Because of a significant cost reductions in the back office, regulatory, and the benefits of audit transparency that a blockchain can provide.
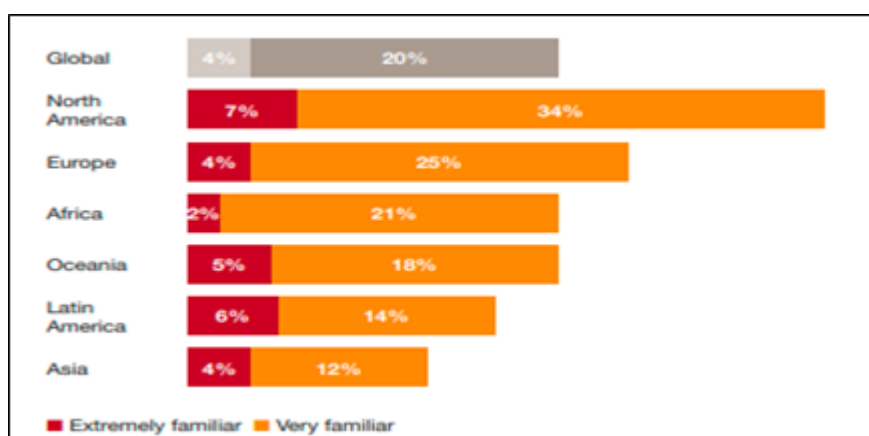

Figure (5) Familiarity with blockchain, Source: (PwC Global FinTech Survey, 2017)

Blockchain adoption in the corporate world will not happen immediately. However, with 55 percent of respondents planned to include it into a production system or process by 2018, and by 2020, 77 percent, it will quickly become a popular component of business processes. Some businesses are already using the technology. A major European bank used blockchain technology to complete instantaneous cross-border transfers between two of its clients at the end of 2016. This emphasizes the advantages of using technology to avoid unintended costs, delays, and processing errors. According to

PwC economists, by 2030, blockchain would have increased global GDP by $1.76 trillion, or 1.4 percent of global GDP [31].

7.3.2 The Attitudes of States and International Institutions towards this Technology

With a compound annual growth rate of 67.3 percent, the global BC market is expected to increase from USD 3.0 billion in 2020 to USD 39.7 billion by 2025. The overall blockchain market will be driven by the growing need to automate business processes and the demand for supply chain management applications that integrate with blockchain technology. In 2020, the private BC type is expected to have the largest market size. Businesses have more options to use the BC technology for business-to-business applications with a private BC. The banking and financial services application sector is predicted to have the greatest market size in the BC industry. Both services industries have realized the advantages of blockchain technology, which helps customers secure transactions. BC technology in both services is expected to grow rapidly due to a variety of factors, including high compatibility with the financial services industry ecosystem, increased cryptocurrencies and Initial Coin Offerings (ICOs), rapid transactions, and lower total cost of ownership [28]. A similar issue was proposed by [32], from North America was an early adopter of blockchain technology, the market size in this sector is predicted to be the largest and dominate a global market of BC in 2020. In terms of technology adoption and infrastructure, North America is regarded as the most advanced country. The regional presence of significant industry players offering blockchain technology solution is the significant factor pushing the North American BC-market.

7.3.3 Realistic Example – Countries & Cities.

- **Singapore:**

It has the third biggest initial coin offering market in the world. The Singapore's Monetary Authority (MAS) promotes using of a blockchain technology in the technical and financial areas. It uses digital ledger technology to facilitate cross-border payments. Smart contracts are used by insurance firms. It's also trying to build a safe healthcare data infrastructure. Singapore wants to use blockchain technology to achieve interconnectivity [34]. A similar issue was proposed by [23], In the Asia Pacific region, it is a leading example in the field of blockchain technology. The Singapore government's approach has been influenced by the dominance of blockchain technology. Based on a BC, both of the Monetary Authority of Singapore (MAS) and a consortium of financial institutions introduced a new interbank system in October 13th, 2017, according to Global Market Insights' analysis. The government has also devised a number of strategies for using the ethereum network to tokenize the state's currency and has revealed a $225-million-dollar investment in a BC research and development.

- **China:**

The Chinese government is currently competing for the title of global leader with the United States. Thousands of blockchain-driven startups are based in China. Banking consortiums in China have also begun to mobilize around blockchain. The Chinese government is interested in integrating blockchain and artificial intelligence (AI) technology. Qtum, TRON, NEO, VeChain, and other prominent cryptocurrency and smart contract networks are all largely supported [34]. A similar issue was proposed, the Chinese government opposes bitcoin and cryptocurrency mining. Despite the fact that cryptocurrency and its mining have been banned in China, the country is increasingly adopting blockchain technology [23].

- **Japan:**

Japan is thought to be the origin of a person or group of persons that invented a cryptocurrency technology. This crew is also said to have built the first software version, which included the BC code. Japan is the first and only country in the world to have a mechanism in place to regulate cryptocurrency transactions. It is located in the world's largest bitcoin market. According to some reports, during the peak of bitcoin's popularity at the end of 2017, Japan accounted for the biggest share of global bitcoin transactions [22].

- **The United Kingdom (UK):**

In the fields of business, trade, and law, the United Kingdom has a strong international reputation. It has unparalleled potential to become a global leader in this field if it can marshal its resources toward the unification of the Blockchain industry's growth. Investments in the UK-based blockchain companies increased by nearly 300 percent from just over 50 million USD in Q3 2016 to 150 million USD in Q2 2018 (with ICO-related investments topping 100 million in Q4 2017 and fiat investments rising to over 100 million in Q2 2018) [21].

- **United States (US):**

The United States of America has most startups and it controls more than 40 percent of the global blockchain startup-market. US is leading the way in the smart economy, just as it did with the internet boom. In the blockchain and cryptocurrency ecosystem, the United States is a major participant. The United States alone acquires 16 percent of global ICO. The ability of blockchain for public-sector advantages has been recognized by state governments in the United States, and it is being implemented in phases. Some states has already paved the way for the introduction of BC technology [23].

- **The United Arab Emirates (UAE):**

The UAE government has adopted blockchain technology in the implementation of government transactions. To achieve the desired results, the country launched the UAE Strategy for Digital Transactions 2021 and the Dubai Strategy for Digital Transactions and the UAE Digital Transactions Strategy aimed to shift 50% of federal government transactions to the blockchain through the use of

innovative technology by 2021. The Dubai Blockchain Strategy will also contribute to transforming Dubai into the first city to be fully managed by the blockchain platform by 2020 and become the happiest city on earth. A strategy of blockchain is based on three principles as global leadership, government efficiency, and industry formation [35].

The "Dubai strategy for paperless transactions" has been implemented so far in 42 entities across the emirate of Dubai, which have saved more than 725 million Dirhams and 7.7 million hours of work, in addition to saving 20,350 trees that were used to make [25]. Dubai is heading to be the first "blockchain" city in the world, as confirmed by a recent report published by the technical journal "Port Technology", which is issued quarterly in London, as the UAE's strategy aims to "digitize" government agencies by 2021.

- **Australia:**

In Australia, ministers admitted that they cannot prohibit people from choosing which currency to use, in order to maintain a favorable crypto climate. It is, however, influenced by Australian environment, which may be aided by the country's position from the entire globe. Bitcoin.com.au, an Australian currency exchange, has introduced a new service that allows citizens of the country to buy Bitcoins and Ether in exchange for fiat currency. This service has been available in over 1200 newsstands since March 1, 2018. This made it possible for a large number of people to purchase bitcoin without having to waste time reading a blockchain creation tutorial (Anastasia, 2018). Following a two-year trial cycle, the Australian Securities Exchange (ASX) mentioned that BC technology will be completely implemented over 2-years [34].

7.3.4 Realistic Example – Institutions:

Arab Monetary Fund (AMF)

It is a global Arab organization that was founded in 1976 and began operations in 1977. It consists of 22 members arranged in ascending order as follows Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, United Arab Emirates, and Yemen. Its aims to achieve the following three main objectives

   i. Redressing imbalances in member states' balance of payments.

   ii. Working to eliminate prohibitions on current payments between members.

   iii. Creating policies and mechanisms for Arab monetary cooperation.

AMF published the study entitled "Using Blockchain in Financial Services" in June 2019. It looks at how blockchain technology has evolved over the last ten years, as well as the expected economic benefits of using it to provide financial services, global supervisory and regulatory advancements in this field. Many initiatives are being launched in this area to take an advantage of BC technology's progress in financial services. The Abu Dhabi Global Market (ADGM) in the United Arab Emirates has established a

FinTech strategy to encourage serious blockchain applications. ADGM was the first one in MENA region to establish a FinTech regulatory framework that was both specialized and open. ADGM together with the United Arab Arabs' leading financial institutions, announced early in 2018 the launch and development of a BC leveraging utility [20].

The Central Bank of the United Arab Emirates (UAECB) and The Saudi Arabian Monetary Authority (SAMA) are both involved in digital currencies and have established a joint project for a single digital currency called "Aber" based on blockchain technology. This project is aimed at facilitating financial transfers between Saudi Arabia and United Emirates, taking advantage of the characteristics of BC [33].

World Trade Organization (WTO):

It is global organization that regulates international trade law. It was established in 1995. It replaced the General Agreement on Tariffs and Trade (GATT), which was established in 1947 in the aftermath of World War II and focused on agreements signed by the majority of the world's trading countries. The organization's main aim is to assist manufacturers of products and services, as well as exporters and importers, in protecting and managing their enterprises. WTO has 164 member-countries as of 2021, with Liberia and Afghanistan are joining in July 2016 according to the most recent members, and there are 23 countries that are observers.

Depending on the WTO, the ability of Blockchain to transform business processes has yet to be completely evaluated. They used Bitcoin's low scalability and seven transactions per second as an example. However, the report points out that permissions blockchains, which are more commonly used in commerce, are more flexible, though they still have a long way to go.

In a variety of areas related to WTO work, blockchain may open up new opportunities to improve process performance. Blockchain is being hailed as a game-changer in terms of digitalizing and automating trade finance processes, especially letters of credit, as well as facilitating supply chain finance. Blockchain's potential applications range of banking, containing trade financing, certification processes and customs, logistics and shipping, to name a few. Although technology offers intriguing possibilities for improving the efficiency of a variety of processes and lowering costs in these regions, it is not a panacea. A number of banks are exploring the technology's potential in collaboration with fintech startups and information technology (IT) firms. While pilot projects are promising, a number of technological and regulatory issues must be resolved before the technology can be used on a larger scale.

International Monetary Fund (IMF):

IMF supports international monetary cooperation and financial stability. It also helps to eliminate global poverty by facilitating international trade, promoting employment and long-term economic progress. The 190 member countries govern and hold the IMF accountable. Washington, D.C. is the headquarters. 24 directors make up the Executive Board, each representing a single country or a group of

countries. Approximately 2,700 people from 150 nationalities make up the staff. SDR 477 billion (US$687 billion) in total quotas. SDR 492 billion (US$708 billion) in borrowed resources SDR 200 billion (US$288 billion) has been committed under lending agreements, of which SDR 94 billion (US$136 billion) has not been drawn. Argentina, Egypt, Ukraine, and Pakistan are the largest borrowers. Mexico, Chile, and Colombia have the greatest precautionary loans. In fiscal 2020, capacity development investment totaled $303 million, accounting for one-third of the IMF's overall budget [27]. Primary objectives:

i. Assist in the development of a multilateral payment system;

ii. Make resources available to members who are facing balance-of-payments problems (with proper protections).

iii. Ensure exchange stability;

iv. Facilitate the expansion of international trade in a balanced manner;

v. Encourage monetary cooperation on a global scale;

According to IMF's Fifth Statistical forum on measuring the Digital Economy (2017) by, Peter Smith (CEO), since there's no global financial protocol in place, while infrastructure is cheap, it means that blockchain technology can be used to digitize and digitize so many new assets that we have digitization of new forms of equity, new forms of debt [26].

7.4 Problems seek to solve:

Blockchain is a digital technology created to solve the problem of lack of trust when conducting transactions between two unknown parties without the necessity for a third party to act as an intermediary, the current mediation model acts as a mediator of trust between the contracting parties through (documentation, preservation of rights, and testimony thereof) authorized by an official system in a society from which these institutions derive their regulatory powers [1]. An electronic-payment system depending on cryptographic proof is required, allowing any two parties to communicate with one another without the need for a trustworthy third party, as the operations are carried out through accurate calculations that protect both parties from fraud by using a peer-to-peer distributed server in a timeline for transactions, in line with the nature of globalization and recent and accelerating developments at this time [29].

8. Most prominent areas of blockchain:

BC has a wide range of applications, including not only financial applications but also in other industries.

Digital Currency: Bitcoins:

BC technologies were used to create bitcoin's structure and transaction mechanism, enabling it to function as a digital-currency and an online applications for payment and the funds transfer can be

achieved through the use of an encrypted technique that does not require the use of a central bank. In bitcoin all sent and received operation is using public keys, registered a transaction, and kept the identity of the senders and receivers anonymous. To reach consensus, the transactions confirm all process requires the processing power of other users, then the transactions are recorded to the network [9].

There are many applications being developed that use BC as a back-end database behind the web server, as well as application that is fully-decentralized and don't use a centralized server at all. For example, the Bitcoin blockchain is a blockchain application in which there is no server to submit any request to. Each transaction is transmitted across a network. It is likely, however, that a web-application is hosted on a centralized web-server that performs bitcoin updates as needed [15].

Smart Contract: Ethereum:

Smart contract systems based on distributed cryptocurrencies enable mutually distrustful parties to conduct secure transactions without the use of trusted third parties. The decentralized system guarantees that only honest parties participate are compensated fairly in the event of contractual violations or aborts. Existing schemes, on the other hand, do not have transactional privacy. On the blockchain, all transactions are visible, involving the flow of money among pseudonyms and the amount transacted [7].

Internet of Things (IoT):

Both IoT and Blockchain are two main technologies that will have a significant effects on industrial business over the next ten years. Data from sensors can be captured in real time. Firms in the automotive sectors will be able to resolve cost barriers in implementing it platforms as the price of sensors and actuators continue to decline. Blockchain would enable the sharing of key relevant data collected from the IoT by using a distributed, accessible, shared ledger that is accessible to participants in the corporate network.

To manage transaction volumes and uptime requirements, high availability and scalability will be required for IoT sensing devices and the IoT platform. Autonomous vehicle insurers will be concerned about liability, and insurance rates will be high at first before the technological structure, and record of protection for autonomous vehicle has matured [12].

Government and corporate services:

The initial goal of e-Government was to provide and sustain a technical environment in government, but it has since grown to include the transformation of government, business models and organizations, as well as the transformation of government relationships with people, corporations, and other non-state actors [5].

Supply chains and logistics:

The integration of digital supply chain operations is becoming increasingly difficult. Access to consumer needs should be easily communicated, also product and service deliveries must be monitored to ensure supply chain visibility. Business process integration focuses on standard and reference design to provide final product data integration.

Specified intermediary firms, whose function is to build interoperability by mapping and integrating firm specific data for various systems and organizations, help supply chain companies integrate their processes and data. This has traditionally resulted in high integration costs and slow diffusion [6].

Financial transactions:

The modern economy is evolving into a process-oriented manner, with the aim of eventually transforming into a virtual economy. The digital economy is a new economic development paradigm that restructures business relationships around the use of data.

New information and network are becoming important components of globalizing economy activity, assisting in the rapid transfer of economic agents of the actual to the network sectors, a creation of creative business processes, and ensuring the growth of a digital economy. A blockchain application for financial transactions enables high-quality contract implementation between the economic agents of the digital economy [16].

Healthcare:

Due to stringent legal requirements, as example a Health Insurance Portability and Accountability Act (1996), in the healthcare industry, BC deployments typically require more stringent verification, interconnectivity, and record sharing specifications. Based on existing blockchain technologies, researchers in industry and academia have started to examine applications geared toward healthcare usages. These applications include smart contracts, fraud protection, and identity verification.

Even with all these developments, there are issues because BC technology has security problems and issues of its own, such as mining rewards, mining attacks, and key management that must be addressed and handled. Furthermore, many healthcare-applications have specific criteria that aren't covered by many of the current BC experiments [11].

Nanotechnology:

The business must examine and adjust its product and service plans in order to meet long-term commercial and economic goals. An examination of the economic, political, and technological environment relevant to the nanotechnology product or service should be used to develop a plan. It will only be achievable if the business additionally develops a global marketing strategy that includes a correct

marketing mix. BC is currently powering a variety of economic, trade, and investment implications. Because the operations are decentralized, the potential that emerge with the appropriate mix of technology are notable and might be a game changer for financial institutions. Load shifting from various times of the day or week is one of the most common uses for nano energy storage devices. Because of their size, these storage devices may easily be relocated. The gadget owners might take advantage of the price difference by purchasing power at a reduced rate during off-peak hours. Since nanotechnology is enhancing food production throughout the world, the majority of traditional farms will need to embrace smart farming practices. If these farms choose to self-produce utilizing small-scale solar or wind power facilities, they may still sell the extra electricity using a mix of nanotechnology-based storage devices and BC [13]. Traditional responsibilities can be flipped or even overlapped if the world shifts its attention from traditional trade systems to safe BC-based procedures. The users of electric automobiles, as well as the owners or operators of electric charging stations, might be among the key beneficiaries of this combination. In such market conditions, the usage of BC-based trade will become much more prevalent, perhaps even the standard [4].

9. Findings.

The researcher came up with a set of findings that can be summarized as follows:

The use of block technology generally helps the digital transformation of the economy and promotes transparency, something that many countries, such as Saudi Arabia, the United Arab Emirates, and Palestine, are seeking to achieve Vision 2030.

Block technology is one of the most significant modern technologies in our society today, and the financial, technological, and service sectors should embrace it, working to solve the obstacles and dangers that come with it in collaboration with local and international specialists.

The outputs of this technology are compatible with the rules and regulations of many nations in the sphere of banking and business as a tool for improving transparency, decentralization, and security while reducing cost and time.

10. Discuss the results:

A number of countries in the area have benefited from the adoption of emerging and frontier technology and use of BC technology is still limited to some countries in the world, due to the dependence of this technology on an advanced technical structure in the field of computing, software, and the Internet. In the Arab countries, there are many attempts to take advantage of the advantages of BC, especially in countries that have advanced levels in the field of the digital economy, and the experience of the United Arab Emirates (UAE) is the best example of this in terms of its announced strategy to upgrade government services and move towards the application of BC.

Since 2016, a number of Gulf Cooperation Council member countries have investigated in technological advancements as BC and artificial intelligence (AI) to give services to the government, financial institutions, and businesses. The UAE just released the artificial intelligence (AI) and UAE's BC-strategy for 2021. It aims to move 50% of government-transactions to BC by 2021, although the AI-strategy focuses on improving government operations in particular sectors such as environment, transportation, education, health, renewable energy, water, and the technology, the AI strategy focuses on improving government activities in general. Dubai's BC-strategy aims to make Dubai the happiest city on the planet by 2020 by making it the first city to be totally powered by BC. Three major pillars will guide the strategy: government efficiency, industry development, and global leadership [30]. In 2018, Bahrain established legislative decree No (54) for the Issuance of letters and electronic transactions, which creates a legal framework for the use of new technologies such as BC in government operations. Saudi Arabia and IBM have agreed to use BC-technology in both government and commercial activities.

The majority of regional activity around the adoption of cutting-edge technical applications is centred on higher-income countries. Little has been done on this front in conflict-affected countries like Yemen, the Syrian Arab Republic, and Lebanon. Moreover, a number of UN entities are employing emerging technologies to address some of the region's most pressing issues; for example, BC is being used to distribute humanitarian aid, and new online education technologies are assisting in the development of necessary skills in Jordanian refugee camps [24]. The use of nanotechnology in industries such as clean water, air quality, medicine, electronics, solar cells, energy storage devices, space flight, sporting goods, and others will open up numerous commercial prospects. Nano energy storage technologies have the potential to change the way energy, particularly electricity, is generated and delivered to end consumers. These devices can also be used as a backup in the event of a power outage caused by man-made or natural disasters. When it came to the trading mechanism for these, it recommended utilizing BC to encrypt them [13].

These results are summarized in the following points

1. As the application of BC technology requires a complete infrastructure as previously explained, which requires intensifying efforts and exploiting the capabilities to achieve this, whether at the global or Arab level, especially to adopt this technology.

2. Focusing more on studying the necessary legal systems and legislation, in addition to discovering the current and future applications of this technology in preparation for its use in financial and government services.

3. The E-Government Development Index (EGDI) showed positive results for the efforts made by Gulf governments to upgrade the information and communications technology infrastructure at the level of ministries and authorities during the past years. Between 2018 and 2020, the number of UN Member States in the extremely high EGDI category (with values ranging from 0.75 to 1.00)

increased from 40 to 57, a 43 percent increase. 14 of the 57 nations are in the VH rating category, 15 are in the V3 rating category, and the remaining 28 are evenly spread between the V2 and V1 rating categories. Four are from the Americas (Argentina, Chile, Brazil, and Costa Rica), seven are from Asia (Saudi Arabia, China, Kuwait, Malaysia, Oman, Turkey, and Thailand), and seven are from Europe (Czech Republic, Bulgaria, Slovakia, Latvia, Croatia, Hungary, and Romania) [24].

11. Conclusion.

As this study concluded, the primary challenges to blockchain deployment are still operational and regulatory issues, rather than technical issues. Concerns about getting blockchain applications off the ground are shared by government agencies, enterprises, and service providers. Identifying the correct blockchain applications, ensuring proper education and awareness for stakeholders engaged, and onboarding stakeholders with the right model and structure in place have all been challenged. It is clear from the above that, as the global trend towards benefiting from the benefits of blockchain systems across the economy and development sectors and improving the lives of communities and the high readiness of the communications and information technology sector has increased, some governments and institutions in various countries have moved to keep up with this tendency and begin planning and preparing for a BC transition. A number of them are currently implementing, in collaboration with specialized global companies, a number of blockchain projects.

12. Recommendations.

Stay current on the standards, benefits, and requirements of BC systems, based on the currently applied experiences of some public institutions, government agencies, and leading companies in the use of BC systems, and to add a university specialty in BC technology, to introduce specialized courses in confidence chain technology and other promising techniques, as well as to demonstrate their role in the Arab-Economy.

Make additional efforts to lay the foundations for the transformation of BC, particularly in states that have not yet established a national committee or strategy for the use of BC technology, through collaboration between governmental and private actors in all areas to examine how to use the possibilities and regulations of BC in development projects, and to engage in dialogue on practical and regulatory actions and additional legal rules to be taken, especially in states that have not yet established a national committee or strategy for the use of BC technology.

Encourage the private sector to invest in projects for the development and application of BC systems in areas such as interbank reconciliation, institutional voting, and ownership transfer, tracking supply chains, document registration, and other secure financial and recording applications; and

encourage leading global BC companies to enter Arab markets and offer their services and demonstrations to public and private sectors such as Smart-Dubai experience and shift towards BC technology.

To obtain legal and ethical standards from governmental authorities in order to regulate the operation of these technologies and their developers, to use the handling of these techniques in order to present them in clear legislation within the State, particularly in the Arab States, such as the use of technology in the field of smart contracts and the settlement of obligations in the financial sector.

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