

Blockchain: The Driving Force behind the World's Post-COVID-19 Economy

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Abstract: Blockchain was once one of the most talked-about breakthrough technologies because of its association with the famous currency Bitcoin and its potential applications in industrial fields. The COVID-19 pandemic has clearly shown the role of applying new technologies in disease prevention, public service provision, and business production by the state and businesses. However, currently, all technology applications have not met expectations, while many other shortcomings have occurred, such as energy consumption, scattered and unreliable data control, lack of legal basis, and others. The problem is how to maximize the application so that Blockchain becomes an effective tool to help build a fairer, more transparent, and sustainable world. This Blockchain will help bring great benefits through electronic data management, common data sharing, and mining rights, providing reliable information on a large scale, reducing production and business costs, and boosting the economic cycle. The article aims to clarify new insights about Blockchain and its benefits and limitations. The authors used descriptive statistics based on assessing the impact of the pandemic, analyzing opportunities and challenges, discussing the latest studies on the dynamics of Blockchain development after the pandemic. The novelty proposed policy implications to help businesses catch up and acquire success in restructuring the business technology system.

Keywords: blockchain, smart contract, development, post-COVID-19 economy.

區塊鏈：世界後新冠肺炎經濟背後的驅動力

摘要：區塊鏈由於與著名貨幣比特幣的關聯及其在工業領域的潛在應用，一度成為最受關注的突破性技術之一。新冠肺炎大流行清楚地表明了國家和企業的疾病預防、公共服務提供和商業生產中應用新技術的作用。然而，目前所有的技術應用都沒有達到預期，同時還出現了許多其他的缺點，如能源消耗、數據控制分散和不可靠、缺乏法律依據等。問題是如何最大化應用程序，使區塊鏈成為幫助建立一個更公平、更透明和可持續的世界的有效工具。該區塊鏈將通過電子數據管理、公共數據共享和採礦權帶來巨大收益，大規模提供可靠信息，降低生產和經營成本，促進經濟周期。本文旨在闡明有關區塊鏈及其優點和局限性的新見解。作者使用了基於評估大流行影響的描述性統計數據，分析了機遇和挑戰，討論了大流行後區塊鏈發展動態的最新研究。新穎性提出了政策含義，以幫助企業趕上並在重組業務技術系統方面取得成功。

关键词：区块链、智能合约、发展、后新冠肺炎经济。

1. Introduction

The Covid-19 pandemic has caused the sudden closure of core businesses, caused an economic downturn, and led to a global shift in geopolitical and socio-economic norms. Many countries are frantically responding to economic recovery initiatives with risky fiscal stimulus solutions. The financial and health crisis, coupled with social distancing, has put the world in a dilemma with unprecedented pressures, creating a new set of challenges. Modern health systems are exhibiting many limitations in handling public health emergencies. In particular, spreading misinformation and weakness in data validation on existing platforms are confusing the public, manifesting irrational fluctuations in the market. Climate change in conjunction is also causing adverse effects on most supply networks worldwide, leading to alarming transformations in the agricultural food and beverage industry. The closure of many core services, such as airlines, food services, supply chains, and import and export markets, also leads to a massive shortage of information necessary for the decision-making of corporate priorities [4].

However, the pandemic also creates sustainable agricultural and food production opportunities and promotes green innovation. The world demands breakthrough technologies between food and agriculture, information and communication technology (ICT), health, and the environment. Reasonable yet ambitious technical-economic development plans are essential as countries reopen. However, they also require innovation centers able to converge multiple organizations with the potential to speed up the socio-economic recovery process, creating lasting effects on the innovation of business methods and models [2]. Especially for contactless services, customer care also requires personalized, innovative technologies that may use ICT. Hospitals need to apply many advanced technologies to diagnose, manage patients, and manage operational processes to prevent and eventually end the adverse events of the epidemic.

Fortunately, along with Covid-19, the digital technology industry is also going through a significant boom. Many companies have used entirely different combinations of technologies to improve performance. The most common is the use of AI (Artificial Intelligence). From VR (Virtual Reality) applications that require secure data storage to financial services to reduce costs in the fight against the pandemic. The important thing is that most of these emerging technologies have adequate support of Blockchain technology. Recent studies have all confirmed that Blockchain would be a driving force for the world's post-Covid-19 economy, which no industry can ignore. It may even be the start of

the 5.0 technology revolution. Blockchain is also proving itself with successful applications in complex integrations in different verticals. Besides, private companies are also inspecting the application potential of Blockchain to optimize logistics processes and improve user experience [3].

However, the pandemic has also shown that the new technologies system, especially Blockchain, has revealed many weaknesses, such as legal matters, limitations of smart contracts, and energy-intensive operation methods [6, 15]. The problem is how to overcome the current scattered Blockchain application? How should Blockchain development be combined with new technologies to prevent the effect of the pandemic? Will Blockchain be the primary driving force of the world's post-Covid-19 economy? What difficulties, challenges, and opportunities for Blockchain? What solutions are there for enterprises?

2. Literature Review

2.1. Blockchain Technology Development Platform

Twelve years ago, on the Blockchain platform, an anonymous developer implemented the initial reference of Bitcoin, encrypted in the first 50 transactions via a secret message. The Times 03/Jan/2009 Chancellor on the side of the second editor for the bank" (Cityam.com, 2020) provides an alternative to an unjust global financial system controlled by central banks and politicians. However, although the potential is massive, it was not until 2015 that Blockchain caught the industry's attention and found the opportunity to promote its diverse applications [23, 29].

To understand the importance and interplay between theory and application in the development of Blockchain, the issue that needs to be understood is the nature of the theoretical foundation of cryptocurrencies, consensus mechanism, distributed computing, and exploring how the history of mathematics and computer science evolved. Ethereum's co-founder Hoskinson thinks there are three significant problems: Blockchain? How can proof of work be segmented? How to take specific protocols and put them in a system?

Essentially, the operation and research related to Blockchain distributed systems are the oldest field of computer science pioneered [16, 18] or the article "Lamport Clock" on keeping time in a distributed system and "Protocol of the Distributed System" by Paxos. It is because when you step away from your computer or mobile phone and go to the web, your perception will differ from other people's perception of events and reality. The problem with the current timers and consensus algorithms is to generate a logical clock or a

logical, canonical order of events. It is especially important if in a distributed system where no one is in control [11, 15].

Different proof variations had staked through a consensus protocol, much like a poker game. After choosing a shuffler and dealing, the players look at the deck to decide whether to call or fold. If a player gets five aces in a game, they will say something is wrong with the deck because it should only have four aces. A consensus protocol does something similar. To choose a person in charge, Blockchain will create a block, then broadcast the information to everyone in the network and wait for acceptance. The highlight of the first proof of work is choosing the one in charge, and everyone will mine the hash function like a lottery ticket. And so on until one person says that has golden access, which gives them the right to create a block: the higher the property's value, the more competition, and energy they spend [1, 5].

The number of healthy assets is confirmed when someone talks about staking in a bonded system (unlimited time). That critical statement asserts that your assets are locked, and no one can move and spend. Therefore, the tokens had taken out of the supply. Moreover, the Blockchain system also features on-chain and external validation. This factor means that you can authorize your property and use it to vote on funding proposals and changes to the entire chain when you have your property [9, 12].

How to find the balance so that Blockchains remain decentralized, by focusing on the ability to move information, value, and identity between chains, then let the market decide where things occur. Thus, the problem at hand is the inter-chain communication protocols and how to ensure the movement of value or the presentation of valuable information between systems. [7, 10]. Predictably, in the future, when everything converges when Wi-Fi is adequate, then no matter what ecosystem people are in, it will be straightforward to move from one system to the next with the concept of timeout. That means there will be a race to research technology to achieve the lowest operating costs in the future [19, 21].

What is coming on the Blockchain development roadmap? The researchers are currently preparing to complete a new protocol program, with the following idea being to make it the best possible commercial product. Next time, Blockchain had to meet the governance stack, intelligent contracts, metadata standards, token issuance, and complete decentralization. Many people are already involved, but some have linked to the major networks. After being implemented, the managers carry out the foundation of the commercialization process. Ethereum also attracts

millions of users through the above model while implementing decentralized finance, an irreplaceable token market to promote global participation [27, 13].

2.2. Benefits of Using Blockchain

Research has shown that using Blockchain brings many benefits: Supply chain management from traceability to proof of impact accelerates the delivery of reliable information about products' social and environmental impact. Using Proof Points provides more trustworthy information about brands and products on the web [28, 14].

Building a fairer, more transparent future includes electronic data management, identity verification, data access and sharing rights management, contact tracing support, and software code provision for research.

Bring income to participants through a "Loop" system, financing the issuance of new local currencies, providing universal access to cash, promoting security protection of common property. This positive systemic change will encourage a circular economy and revolutionize the distribution of charitable donations.

Vietnam has a sustainable operation and increased reliability at a large scale. Proof of Stake eliminates the energy-intensive mining process by relying on the trust of network members, along with an economical transaction method that prioritizes only critical points of impact verification, which had expected to cut energy usage by over 99%.

Reduce utility bills, lower costs, and knowledge thresholds for new innovators. Providing office service management applications, granting renewable energy certificates, tracking energy sources, allowing buyers to use green energy can easily register to provide grid operators [13, 20].

Blockchain can help retailers increase supply chain efficiencies and inventory management, such as reducing costs. Besides, it can to achieve increasing transparency, faster transactions, reducing counterfeiting and fraud, providing cross-chain interoperability and interaction, connecting micro-organizations to build sophisticated solutions or decentralized governance, upgrading to increase efficiency and economics [25].

Overall, recent studies suggest that Blockchain technology could be a game-changer for the global economy through its ability to change the way people exchange value, transfer ownership, and verify transactions. However, Blockchain applications only make sense when used by many people. So now, the world invests in protocols that have users or create a trusted ecosystem to gain users [14, 11].

2.3. Restrictions on the Use of Blockchain

Using Blockchain still has some limitations, such as the hype surrounding Blockchain technology's potential and usefulness. Most of the published studies on the use of Blockchain in many fields still present theoretical frameworks, designs, or models with little technical details, and national implementation is sporadic. Blockchain should be deployed where it is most appropriate and combined with other technologies under well-managed information systems to meet the needs of information and policy goals [22, 24].

It kept comprehensive records on the Blockchain, like complete electronic medical or genetic data records. Blockchain is not suitable for storing extensive volume data because of computation and capacity limitations in copying the Blockchain based on the consensus of every network participant (node). In addition, it is also challenging to query the data inside of a Blockchain, limiting the use of data in clinical, statistical, and research [17, 30].

Storing personal health data in chains visible to everyone taking part in the network violates data privacy. The EU's general data tracking rights are currently strictly protected, especially the right to erase, and this is incompatible with the immutability of blocks in a chain. It is to take advantage and avoid pitfalls. The potential applications of Blockchain have within the legal framework. Therefore, it is necessary to focus on four key aspects: depending on the technology to be used for application; must comply with laws and regulations; implement an incremental application to evaluate training courses and communication plans [24, 26].

3. Research Methods

The research paper explores secondary data closely related to Blockchain to identify essential content gaps research as a basis for selecting and accessing secondary and primary data, thereby studying the current situation of Blockchain in Vietnam.

The research paper had a systematic and logical approach based on dialectical materialism and historical materialism, researching blockchain connotations based on Blockchain's characteristics to study specific, influential factors. Enjoy to Blockchain and the Current State of Blockchain in Vietnam; are from forecast results of the movement of Blockchain, propose a complete solution to improve Blockchain in Vietnam.

Specific method: From a review of secondary blockchain literature in Vietnam, the study identifies research gaps both in terms of theory and practice as the basis for establishing a research model, as a basis for building a plan to collect secondary and primary data on the current situation of Blockchain in Vietnam. The

research framework of the article is detailed as follows. The authors used a 5-point Likert scale in the survey tool. This method allows more data characteristics to be maintained and greater flexibility in statistical analysis. The study uses the data synthesis method to review the literature on the theory and practice to build the proposed content of blockchain research. The article approaches secondary data about Blockchain with that research content to draw lessons from experienced Vietnamese businesses [8].

The authors are to clarify the current situation of Blockchain in Vietnam. The research paper combines primary and secondary data mining:

- Secondary data: the authors have collected information about blockchain characteristics in Vietnam, Revenue, market share, news, and developments of Blockchain;

- The Government has a macro policy on Blockchain from the Annual Reports of businesses, information technology industry reports, publications, websites. History trends use Blockchain in the world and Vietnam.

Primary data: In-depth interview method, questionnaire interview is used to collect preliminary data:

- In-depth discussion: the author group conducts in-depth interviews with 11 experts in blockchain management to collect primary data on issues such as application trends [8].

- Vietnam had Blockchain development orientation, macro policies on industry development, target market, major customer groups.

- The authors applied the descriptive statistics method to evaluate and systemize the preliminary data level and secondary about the Current State of the Blockchain enterprises in Vietnam.

Statistical division method: the author's team conducts statistical division according to solutions to assess the current state of Blockchain. Methods of synthesis, comparison, and analysis: the author group synthesizes and calculates qualitative and quantitative indicators to clarify the status and causes of variables motion of the phenomenon. Then compare and evaluate the current situation of Blockchain in Vietnam. Based on the results of descriptive statistics, the authors propose policy implications.

Survey data was collected from June 2021 to August 2021. The number of experts surveyed is 60 persons working in research institutes, universities, and other organizations. All these professionals are very knowledgeable in technology, especially blockchain technology. The authors obtained 55 valid votes and had included them in the histological analysis. This result is

the scientific basis, helping the authors propose policy implications [8].

There are current opportunities, challenges, advantages, and difficulties of enterprises. Besides, Vietnam had blockchain strategic orientations and development orientations of Vietnamese blockchain enterprises in the coming time. The question prepared interviews and in-depth interview results [8].

4. Research Results

4.1. Assessing the World's Socio-Economic Situation

This is a research on the impact of the Covid-19 pandemic on the potential of Blockchain development.

All recent studies have confirmed that the impact of the pandemic shock on world GDP growth is tremendous and can be long-lasting. According to a survey, the global recession caused by Covid-19 is considered the worst since World War II. Every country has negative growth, especially in the world's poorest regions. Besides, the pandemic has hit some industries, such as automobiles and cellphones. Consumer behavior has various transformations and recent changes in technology, markets, and the workforce. Company operations move to virtual interaction, creating many opportunities to approach, absorb and better understand this tool.

The pandemic has triggered an unprecedented fiscal response in speed and magnitude. According to IMF statistics (April 2021), in 2020 alone, fiscal support has reached nearly 16 trillion USD, about 15% of global GDP on a worldwide scale. The IMF in 2021 has also predicted that in 2024, world GDP will be 3% (6% for low-income countries (LICs) with a no-Covid-19 scenario, Africa's GDP will be between 1% and 4% compared to the pre-Covid-19 outlook. However, the development capacity of each country depends on three conditions: (1) Financial space: the capacity to support households and businesses depends largely on access to international financial markets; (2) State capacity: rapid and effective implementation of support policies requires the role of the state, transfer infrastructure and reasonable taxes; (3) Labor market structure: the number of informal workers is facing many problems when adopting telework, along with high levels of poverty and inequality, is also deepening the negative impact of the crisis. In addition, the speed and strength of the recovery process are also highly dependent on the Government's capacity to procure and deploy vaccines.

4.2. Opportunities for Enterprise Blockchain Development

However, these adverse effects also provide new opportunities to build better businesses and a more sustainable world. Reality has also proven that enterprises well-prepared to embrace digital technology are successful in the pandemic.

First, the pandemic enables a diverse workforce to function optimally. Building trust and confidence among employees will be necessary. How they had treated now will significantly impact future perceptions and values. To survive, develop and win the race for competitive advantage. Enterprises need to focus their actions in three critical areas: (1) Apply Blockchain to lead, attract and facilitate the workforce in new ways with inspiring leadership. Providing support for more flexible workflow options; emphasize employees' mental health and well-being and skill development. (2) Apply AI, automation, and other exponential technologies to make the workflow smarter; focus on supply chain resilience, cybersecurity, and adoption of automation and intelligence. (3) Improve operational scalability and flexibility, prioritize usage, and move more business functions to the Cloud.

Executives should understand the need to prepare enterprises since uncertainty and disruption are inevitable and constant change. The research suggested that companies can respond in many ways, such as applying technology tools to analyze reviews and using consumer feedback to redesign products; Banks need to focus on upskilling and retraining on a large scale. The following Fig. shows the achievements obtained by businesses when leaders and the entire organization commit to switching to technology before and during Covid-19.

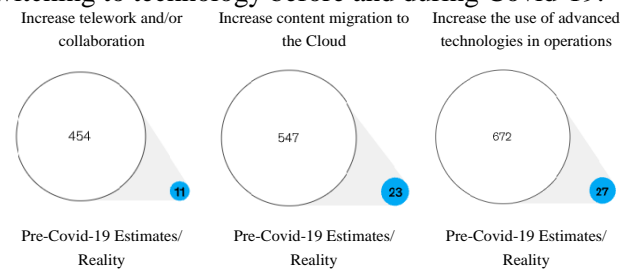


Fig. 1 Time required to respond or make changes, estimated before Covid-19 compared to reality days

4.3. Difficulties and Challenges for Blockchain Development

Along with the rapid growth of Internet technology, Blockchain had applied in finance, medicine, public welfare, and other fields, evidenced by many scientific results making significant contributions to the research. This result is an opportunity and a set of difficulties and challenges that need to be solved.

In international cooperation, although Blockchain has disrupted the social, business, and technical spheres and

will continue to do so in the coming years, Blockchain is still in its early stages. The problem is how to study the use and combination of Blockchain with each country's existing system and framework capabilities. In addition, the Blockchain community currently realizes several significant limitations, such as the lack of regulatory frameworks, collaborative leadership, the challenge of cross-border collaboration, and the limited availability of a skilled and educated workforce. At present, the need to realize and increase adoption in both developed and developing countries is paramount. Thus, the challenge for Blockchain application development in many areas such as agriculture, drones can carry many sensors, connect to a mobile network, and move freely through the air, allowing for many miraculous applications. However, such applications require powerful computing resources, reliable connections, and high data transfer rates to complete various tasks. However, solving some of the above problems requires the development of 5G communication networks and mobile edge computing to benefit the drone-enabled environment.

In the medical field, to solve many social problems in rural areas, including telemedicine with the help of high-speed mobile networks, AI, storage, and processing technologies for large amounts of information. Using Blockchain through integrated model development can solve the existing compatibility problems of heterogeneous information solutions, but how to unify information orientation?

Blockchain's versatility, mainly because of its immutable and nearly indestructible nature, has drawn attention to applications needing identity integrity and content for distribution and secure transaction recording. However, for sovereign digital identities to be adopted by nations, in the belief that education and lifelong learning are a public good, time remains to be seen.

In education, Blockchain had identified as an opportunity to drive changes, much needed in core processes. Still, use cases have so far limited in scope and enforceability, connectivity in the basics, such as governance, autonomy, interoperability, platform choice, and overall trust in standards, infrastructure integrity had disconnected.

Although considered the most important emerging technology in industries and society that can transform many aspects, Blockchain still has significant technical, social, legal, environmental, and ethical complications, creating substantial challenges for mainstream use in the public sector. The Covid-19 pandemic has forced many employees in the public sector to work remotely, highlighting challenges for Blockchain adoption in specific circumstances, especially in the post-pandemic period. However, the biggest obstacle is promptly

reflecting the organization's complexity to the progress and burnout of employees due to fatigue and overload?

In addition, Blockchain development is still facing a series of new challenges arising from the Covid-19 pandemic. Specifically: Identify the skills that citizens may need in the future world of employment; Resolve the paradox of long-term adaptability; Explosive shipping costs; Huge health challenges and other side effects created by the Covid-19 pandemic, such as the trend of consumers becoming more interested in online products and services, increasing reshaping of the workforce, significant changes in purchasing behavior and the likelihood of cash depletion in everyday life. It is difficult for the world to achieve herd immunity, so how can we stop Covid-19? How can we reopen schools safely? The pace of change because of the pandemic is creating new forms of financial and operational risk, as companies are struggling with inflation, capacity constraints, and supply chain disruptions. Competing for global influence is likely to peak at stake for companies. Businesses and governments will face the need to simultaneously address competing priorities and the negative impacts of climate change, particularly for urban and coastal areas. Ultimately, the most difficult is how to keep an economy going or keep it closed to protect citizens from infection.

Table 1 Descriptive statistics for policy implications

	N	Min	Max	Mean	Std. De
The motivation for Blockchain development after Covid-19	55	1.00	5.00	3.4545	0.89893
Thing's stakeholders need to prepare Strategies to address immediate technological challenges	55	1.00	5.00	3.4364	0.89781
Blockchain is an effective technology solution for businesses	55	1.00	5.00	3.4545	0.89893
Risk management solutions in implementing blockchain technology in Vietnam	55	1.00	5.00	2.7455	1.14209

Table 1 showed that the test results were very good with a sample of 60 experts, but 55 samples were processed. These results indicated the mean and standard deviation is essential.

5. Conclusions and Policy Implications

5.1. Conclusions

Blockchain is a nascent technology with enormous potential to enhance trust in record-keeping and transactions. After the hype related to Bitcoin has died down, the Covid-19 pandemic is also a good time for the global focus to return to the underlying technology. Organizations should seize the opportunity to embrace centralized and balanced implementation approaches to unlock the potential of this powerful technology. Recommended articles:

First, to safely reopen schools, educators will use outreach programs that explore ways to benefit from the technology, combined models, distance learning, homeschooling, and long-term learning centers.

Second, the world can contain Covid-19 with a combination of vaccines, improved testing, and smarter isolation, based on experience from outbreaks rather than large-scale and rigorous lockdowns. It also uses scale-up nano biophysics to create precise molecular testing and improve data sharing systems.

Third, the world will have to rethink how people work across generations and potentially reshape society in many other ways, and working remotely and from home will become more common.

Fourth, organizations or companies will pay attention to building clear goals and strategies, empowering small teams and multiple silos to make decisions, and spending more time on training and recognition and applying new collaborative technologies.

Fifth, organizations or companies will have to improve their knowledge of security activities and vulnerabilities; and establish high-fidelity baselines for devices on the network so subtle anomalies can be detected. Finally, owners and operators must shift to a distrust mindset and improve responsiveness and control.

5.2. Policy Implications

(1) The motivation for Blockchain development after Covid-19. The analysis of the relationship between Covid-19 and Blockchain technology had summarized by taking into account two relevant aspects: the impact of the Covid-19 emergency on Blockchain implementation and the support provided by Blockchain to help overcome the crisis. Furthermore, as IBM (2021) summarized, at the Conference of Top Executives, five fundamental driving forces had identified to help organizations respond to crisis and change.

The pandemic is an opportunity for a new era, and the competitiveness and resilience of the workforce are the benefits they most desire from the ongoing digital transformation. However, focusing more on the

transformation can detract from customer relationships and partnership opportunities. A new perspective on digital transformation and the future of employment enhanced transparency and sustainability.

The pandemic has been accelerating the process of digital transformation. Traditional labor models and methods will never return. All will change under the evolution of digital transformation. The world will not return to normal; the risks and opportunities are too significant while the stakes for the option are too high;

The pandemic has changed the minds of leaders and managers, who are more confident in emerging technologies and the realization possibility of digital transformation, despite previous resistance. This cultural shift is partly defensive, with cost reductions the top benefit of transformation initiatives.

The pandemic has forever changed operation methods, even tweaking an enterprise's approach to change management and accelerating process automation, acknowledging the shift to cloud-based business operations. Points to be drawn: (a) Digital transformation is never just about technology; (b) Human factor is the key to success; (c) Psychological trauma has robbed the company's strategy. Executives will be more inward, prioritizing operational capabilities over external growth. Cash flow liquidity management and cost control will be necessary. The authors had to ensure the reliability of the supply chain. It is essential to have the backup capacity, prioritizing network security. Promoting agility to increase competitive advantage requires increased use of AI, data and analytics, and other emerging technologies that have evolved, prioritizing investments in IoT, Cloud, and mobile. All for improving customer experience, helping to drive performance and growth while the opponent is still in the fog. (d) Some things will win at the top of the loser list: tourism, transportation, and intensive manufacturing industries. Telecommunications, media, and entertainment had expected to be driven by purchase orders and stay-at-home habits. Expanding reach will help determine the winners, engaging more in platform-based business models and partner networks. (e) Health is the key to sustainability, associated with a new, expanded, and more complex definition that requires companies to do well in existing sustainability goals, reducing the carbon footprint, more efficient waste management while meeting new health and safety requirements. The pandemic is a wake-up call that the unexpected and the unlikely are more tangible and justifiable than any prediction. Either way, businesses must accept that the pandemic-induced changes in strategy, management, operations, and budget priorities

are here to stay. Accelerated investment is coming in digital adoption, transformation, and Cloud.

(2) Thing's stakeholders need to prepare. Research suggests that businesses need to prepare and position themselves by the following. There have been many breakthrough technologies in recent years, but how do you determine which is truly transformative?

For individuals, due to the model with no required intermediaries, Blockchain will manage the process so that all actors have an identical copy of the transaction data. Every individual who owns the information independently determines when and how. Thereby, the authors continue providing the opportunity to make content available in the marketplace and, in some cases, to monetize it. In this way, everyone can manage the financial value of the data without the involvement of intermediaries.

For education and training, professionals had needed to serve a decentralized society. In the face of new demands, education needs to prepare graduates and those already in the workforce. The first thing is to raise awareness in the education and training environment about the importance of the new technology – Blockchain, so that learners have a positive attitude to learn, improve their knowledge and apply blockchain technology in their life.

For companies, valuable workgroups should be formed from leadership functions such as finance, supply chain, product development, and regulatory affairs to explore how technology had utilized in the organization.

Trade and business associations can also play an essential role by providing resources to share use cases and support sector innovation.

For governments, the mass adoption of Blockchain technology applications will also require solid legal systems at the national level and international regulations. Therefore, legal and technical experts have expected to be at the forefront of the rapid implementation of global Blockchain-related laws and regulations.

By preparing for the transformative changes that may emerge from Blockchain technology, business managers can better position their organizations to benefit. Deloitte's 2020 "Global Blockchain" survey found that 55% of respondents consider Blockchain an organization's top priority. Blockchain is emerging as a significant and democratizing force for business in the years to come.

(3) Vietnam has strategies to address immediate technological challenges. (i) The authors suggest six essential requirements had before organizations can derive sustainable value from the technology: (ii) Integrate with existing technology to overcome the time-

consuming and costly situation in many industries. (iii) Recent surveys show that several technology implementation challenges currently exist. Growing supplier and partner ecosystems, a plan to fact check had required for potential use cases that cannot be implemented or supported.

Scaling Blockchain, significant investment is required compared to other technology options for Blockchain infrastructure to be ready for mass adoption.

More attention is needed in training and cooperation to fill the widespread shortage of experts trained in Blockchain technologies.

While these challenges are essential, they are worth addressing for the many benefits that Blockchain can bring to the table. For proper implementation, proposes a two-speed strategy: One: It is necessary to understand the new technology to identify problems had solved for Blockchain use cases. It is essential to anchor Blockchain programs in specifically defined use cases where the business and performance needs are precise. Although use cases are the right way to start a Blockchain program, two: block building is not enough. Organizations need to develop the underlying technology infrastructure and build other blocks, such as digitization of records and others, to deploy Blockchain for sustainable and scalable impact.

Vietnam has digitized physical records used in a Blockchain system to overcome the situation where forms are technically still on paper in many organizations.

(4) Blockchain is an effective technology solution for businesses. With the application of Blockchain technology, enterprises reduce the load and save many costs in management. They are minimizing missed transactions or errors in transaction execution. The improved management process helps to increase productivity and improve business efficiency.

Many people believe that Blockchain mainly serves the financial industry with transactions related to currencies and cryptocurrencies. However, Blockchain applications had used in finance, healthcare, real estate, entertainment, insurance, and others.

Thus, applying Blockchain to business activities is an efficient solution - safety, security, assurance, increased performance, reduced costs, and much more. Significantly, the application of new technology also helps businesses be more dynamic and up-to-date.

(5) Risk management solutions in implementing blockchain technology in Vietnam. Firstly, Vietnam focuses on effectively implementing the Party's guidelines, directives, and resolutions on information technology application and development in parallel with ensuring information safety and network security and

secondly, perfecting policies and laws and improving the effectiveness and efficiency of state management of information, communication, and network security. To strictly implement the Law on Cyber Information Security, the Law on Cybersecurity, the Law on Protection of State Secrets, and guiding documents. Exactly manage all types of telecommunications services. Third, continue to strengthen the implementation of solutions to ensure network security and fight against cybercrime. Synchronously deploying solutions to ensure network security for information systems critical to national security; detect, fight, and prevent early cyber attacks, cyber espionage, conspiracy, and counter-destructive activities of hostile and reactionary forces online. Fourth, promote research and development of information technology to be self-sufficient in technology and equipment, not dependent on foreign countries. There is a roadmap for developing information technology and network security businesses, selecting areas where Vietnam has strengths to prioritize development. Finalize policies to encourage and mobilize all social resources in scientific research, development, and application of information technology and network security. Fifth, improve the quality of training in information technology and network security at domestic training institutions, and at the same time promote cooperation with other countries, universities, and advanced technology corporations around the world, to absorb new technologies and experience in ensuring network security to meet the requirements of the unique situation.

6. Limitations and Further Study

The limitations of the paper: This paper sample is suitable to test the research objectives of the authors about the factors on Blockchain. Vietnam joined the context of blockchain enterprises may limit the generalizability of the study's findings. The study measures Blockchain according to the service industry, not yet measuring Blockchain according to market value.

Future research: It can expand the study of blockchain service enterprises in Vietnam. Future studies may revise additional measures of blockchain performance based on both application values to derive better aggregate results. Alternatively, duplicate studies can be conducted in other developed economies and countries to test the generality of the authors' findings. Vietnam is considered a country with great potential in developing applications using blockchain technology. However, many strategic solutions are needed to effectively exploit this market, from both management levels to all stakeholders.

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