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THE CONCEPT, GOAL, AND SOLUTIONS OF BUSINESS DIGITAL TOKENISATION IN DEVELOPING COUNTRIES, ON THE EXAMPLES OF ARMENIA

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Abstract: The idea of a business model based on tokenized assets is used in the article to describe and build the concept and main approaches, criteria, tools of business digitalization. For competitiveness, high quality, and inclusive growth of the real sector of the economy, the Republic of Armenia must focus on the paradigm of the digital economy with a matrix of information technology plus an exact industry of the real sector (IT + seprate industries sectors). The benefits and advantages of the token-based business model toolset are outlined in detail in aspects of decentralisation, innovative responsiveness, immutability of entered information, cryptographic security, transparency, the ability to carry out peer-to-peer transactions without the need for verification and regulation by a central authority, and ultimately increasing the level of governance and efficiency, liquidity, and attraction of alternative investment vehicles. The systems of business decentralisation at the organisational and managerial level, various channels for the exchange and sale of tokens are interpreted.

A concept has been put forward to solve the problems of digitalization in Armenia simultaneously: a) in the ICT sector, b) in the real sector of the economy, c) in the financial sector; and, of course, in the educational field. The concept of goal setting is built on the axis of convergent development, which, in turn, will bring a synergetic result — a new quality of competitiveness for the beneficiaries of all the mentioned sectors as well as for consumers.

It is emphasised that, in-depth understanding of the legal regulation of business digitalization is more important for the real sector of the economy, since it is aimed at ensuring: promotion of the generation of innovations; business management efficiency; reducing product and service costs and increasing productivity and efficiency of management; and disclosure of alternative investment channels for businesses.

Keywords: *blockchain, distributed ledger technology (DLT), token, classification of token, tokenomics, digitalization on convergence development*

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Introduction.

The global digitalization of the 21st century has brought incredible technological developments and solutions, and most importantly, digital philosophy, forming a visual digital environment and ecosystem. This has caused fundamental innovative and tectonic changes in the global economy and in all its sectors. Numerous technological innovations have given rise to digital mechanisms and various online products and services derived from them, which have become an integral part of the lives of businesses and people. Disruptive digital technologies and innovative products are being introduced into the digital virtual environment, which, in turn, leads to novel business models that create new added value; there is no other standard for a business model. Symbolically speaking, the «business genome» is deployed and operates in a virtual digital environment. Moreover, implemented everywhere, without geographical and spatial restrictions (according to the catchphrase "death to distances and space"), this genome is, by its nature, less expensive, simple and easy to implement, and, moreover, inclusive.

In the financial sector, IT is developing fintech solutions, online banking, digital payments, and effective risk management systems. Fintech innovations facilitate real-time transactions, risk assessment, personalised financial services, and fraud detection. This has led to the emergence of digital banking, peer-to-peer lending platforms, robo-advisors, and many other services. The digitalization of businesses, particularly fintech, is transforming all services by making them inclusive, accessible, transparent, and efficient, as well as expanding access to capital for businesses in the real sector, promoting entrepreneurship, quality development, and growth. To remain outside of these digitalization processes is to undermine competitiveness at all levels and for everyone.

Legal framework for regulation of crypto assets in the Republic of Armenia.

It should be noted that the «Armenian Digitalization Strategy for 2021-2025» program has been adopted in the Republic of Armenia (Digitalization Strategy of Armenia 2021-2025). Meanwhile, specifically in the field of business digitalization, very scattered and, in many cases, imitative and/or meaningless measures are often carried out. Our research shows that as of October 2024, Armenia lags behind the countries of the region in terms of business digitalization: Georgia, Azerbaijan, Turkey, Iran, and the EAEU countries: Russia, Belarus, Kazakhstan, and Kyrgyzstan. This, in particular, concerns the use of digital (virtual) business practices, the use of tokenized financial crypto-assets and cryptocurrency, as well as their legislative regulation.

There is practically no legal regulation of digital crypto-assets and cryptocurrencies in the Republic of Armenia. This concerns: a) the legal classification of digital crypto-financial assets and their equivalent legal regulation; b) widely used in international practice, the approval of technological innovations in the experimental regulation regime - sandbox, promoting fintech innovations; c) legislative norms for the implementation of «Open Banking» services. There is no legal regulation of the mining of cryptocurrencies directly from digital platforms (associated with the energy-intensive process of Bitcoin mining), which directly affects taxation and energy consumption[1]. The lack of legal

[1] In general, in international practice, the classification of crypto assets as property or financial assets is the basis for determining taxation regimes for income from transactions with tokenized assets and cryptocurrencies. In this regard, the experience in Kyrgyzstan is interesting, where a special tax has been established, the rate of which is 15 percent of the fee for the energy consumed for bitcoin mining. This approach is associated with a shortage of energy resources, and in this case, crypto miners use approximately half of the electricity

classification and regulation of digital assets and cryptocurrencies in the Republic of Armenia essentially causes uncertainty regarding their taxation regimes. The above-mentioned gaps in legal regulation indicate that in the Republic of Armenia, there is a need for targeted and systemic legal regulation of the digitalization of the business sector with relevant approaches and mechanisms. It should be noted that there is a widespread opinion among the public that the legal regulation of digital assets will regulate the financial sector, whereas this is more important for the real sector of the economy. In this regard, we emphasise that the focus of the article is the digital tokenisation of a real part of the economy that doesn't exist nowadays, and consequently, it is impossible to illustrate this by data. As for such examples in developing countries, these may be separate experimental products in a regulatory sandboxe regime.

Main issues of the real and IT sectors of Armenia.

Disruptive technologies have accelerated the pace of innovation, challenging traditional business models and creating opportunities for new entrants. All this has led to a new option for solving the "Achilles heel" of business, namely, identifying alternative investment resources for the real sector of the economy. The importance of alternative financial and investment channels in the real sector of the economy comes from the fact that the stock market has not fully developed in the Republic of Armenia, and, moreover, investment banks have not been formed, and the business itself in the real sector is not able to generate and provide itself with its own resources and investment grade. The reality is that since independence, the stock market in Armenia, for various objective and subjective reasons, has not met the investment needs of the real sector of the economy. Meanwhile, unexpectedly, the existing regulatory legislation complies with international industry standards. If we subtract government bonds, investments in compulsory pension funds, and bonds issued by banks from the volume of the Armenian stock market, then the stock market doesn't represent any tangible significance for the Armenian economy. The institute of investment banks also failed to take place in Armenia. In the past and now, many are regularly inspired by calculations of possible investment flows from the Armenian diaspora, calculating the imaginary potential in billions of dollars, but do not bother to show the channels and ways of promoting capital, while traditional mechanisms of stock capital in Armenia do not work.

In such circumstances, the implementation of large-scale investment programmes by private businesses in Armenia, as a rule, was associated with government incentive measures, and the presence of institutions and mechanisms directly or indirectly facilitating the influx of FDI. Among the implemented programmes of this practice, one should highlight the long-term lending resources directed to the Armenian economy by the World Bank, the EBRD, the Asian Bank, and other international financial institutions in different years and in different sizes. The addressee of these funds was the government of the Republic of Armenia, and then these funds were addressed to businesses in the real sector of the economy through targeted programmes through the channels of commercial banks (as programme operators).

The mentioned and other examples, typical not only for Armenia but also for other transitional and developing countries, prove the reality of the necessary stimulating patronage of FDI and enterprises' own investment funds from the state, since investment funds are not generated in sufficient quantities within the country, and the stock market

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produced in the country, which causes serious problems.

is not capable of providing these needs. Meanwhile, in the modern digital stage, the digital format of business opens up a new option for attracting investment resources from the real sector.

Information technology indicators in Armenia in 2023 had a growing trend, the turnover of the IT sector in 2023 increased by 252 billion drams, or 43% (≈ $638 million in June 2024), (Report of the consulting company "Medex" 2023). According to expert estimates, this may reach up to 7% of GDP. All this is also increased due to the tax preferences established for the IT sector. However, these positive trends will be realised within the IT sector itself, since innovative technological developments and products produced by the IT sector do not penetrate the texture or business matrix of the real sector of Armenia. In most cases, innovative technological developments in the supply chain involve the outsourcing of individual sought-after technological developments (and not the entire set of solutions) supplied from outside the country to technological entities in the Republic of Armenia, and then the transfer of finished developments to the customer outside the country.

This function of the Armenian IT sector is naturally positive, since, under equal conditions for solving IT delegated orders, Armenian IT business entities are competitive. Another large sector in IT is the “iGaming” business. Meanwhile, developments, solutions, or products of Armenia’s IT sector for the real sector are generally presented as “impersonal and neutral” or “without a homeland” in the innovation supply chain. It is not surprising, and it cannot be otherwise; no one will provide such a “present” of ready-made innovative developments to another country. On the other side, innovative solutions can only be implemented in a business format since they must pass through the “market gateway” and have presented new additional value. The latter as a capital, in addition, is focused only on high profits and is not oriented by the “homeland” category.

In addition, innovative supply chains are subject to government protection for several reasons: a) national security (ensure the sustainability and reliability of these supply chains, including through regulation, subsidies, and/or trade policy); b) economic competitiveness (promote innovation for competitiveness in key industries to support economic growth by providing incentives, funding research and development, or implementing trade policies to protect domestic industries from unfair competition or encourage investment in innovation); c) risk mitigation (innovative supply chains may face unique risks, such as disruptions due to technological change, natural disasters, or geopolitical tensions). Governments intervene to mitigate these risks by providing guarantees, creating contingency plans, or investing in modernization infrastructure and technology; d) regulatory compliance (innovative products or technologies require compliance with complex regulatory frameworks related to safety, environmental protection, or intellectual property rights). Governments set and enforce these rules, ensuring that innovative supply chains operate responsibly and ethically; e) disruptions in the market (in some cases, market failures or external factors prevent the development or adoption of innovative supply chain solutions). In general, governments intervene to address these shortcomings through measures such as subsidies, tax incentives, or public-private partnerships to stimulate innovation and overcome barriers to entry. Overall, government protection of innovative supply chains reflects a balance between promoting economic growth, ensuring national security, managing risk, and addressing

market failures to create an environment conducive to innovation and sustainable development.

Setting goals for business tokenization.

For competitiveness, radical, high-quality, and inclusive growth of the real sector of the economy, Armenia must focus on the paradigm of the digital economy with the matrix: «IT + military-industrial complex» , «IT + chip engineering», «IT + precision engineering», «IT + small chemistry», «IT + processing industry», «IT + pharmaceuticals», «IT + construction industry», «IT + biotechnology», «IT + agro-industrial complex», and other strategic or key industries. In this regard, Armenia is already significantly behind. On this basis, not only will GDP growth occur, but inclusive, high-quality development of the RA economy will also be ensured.

Digital business, with its decentralised matrix and financial inclusion, is already transforming the existing centralised business model matrix. In essence, in the history of mankind, a centralised business matrix ushered in the era of industrialization. However, in the millennia-long history of mankind, about 300 years of industrialization are just a minute, but at the same time, it is the period of the most intensive and effective development and flourishing of the business model and practice of business relations, with all its known achievements. Meanwhile, the «post-industrial» or «meta-era» shows that it can transform even this most efficient, centrally controlled pyramid business matrix. By the way, in Latin, the prefixes «post» and «meta» usually mean «after» or «for». Accordingly, both prefixes have the same meaning, indicating the next stage of time. Accordingly, during the incredible development of digitalization, along with artificial intelligence (AI), machine learning (ML), and other achievements, humanity is still in the post-industrial stage and is actively searching for signs of the title of a new digital era, which follows the post-industrial era. Let us only note, in our opinion, that the most important feature among others is the decentralisation of the organisation and management of business, which does not fit into the format of an effective centralised model, including the corporate management system of business. S. Golubev believes that another distinctive feature of the digital era is «a decrease in the overall required level of management and control; tokenomics will reach the level of replacing more than half of the existing management and control functions (in the field of information) (Sergey Golubev, 2019).

In 2024, in the difficult situation of external challenges in the Republic of Armenia[2], it is necessary to ensure the disruptive development of the real sector of the Armenian economy, including the military-industrial complex, by using the potential of digital transformation. Solving the problem requires conceptual justification. Firstly, the goals of such development should be outlined, among which the priorities are promoting innovation, increasing management efficiency, and the ability to attract financial, especially alternative investment resources for business. These goals are consistent with the broader priority goal of promoting economic development and economic competitiveness. The formulation of the problem is aimed at building bridges between decentralised and centralised economic institutions and creating a new arrangement of economic relations. On the other hand, the concept must respond to the issues of identifying opportunities for a technological solution to the problem and, respectively,

[2] The existing unresolved peace process with Azerbaijan and the ongoing blockade of Armenia by Turkey and Azerbaijan.

the implementation of those approaches and standards that will open the way to the implementation of the declared goals. It should be noted that business digitalization is associated with factors such as decentralisation, immutability, security, industry requirements, and others, which pose many obstacles and risks. The benefits of business digitalization are obvious, which dictates the need to develop a digital matrix at the institutional and technological level for all sectors of the economy. By and large, the problem is that until now, throughout the entire transition period and to the present day, the real sector of the economy, the financial and IT sectors of Armenia, have acted quite autonomously and neutrally, each within the framework of its own priorities and problems, without particularly caring about each other about the goals and objectives of other spheres (like the swan, crayfish, and pike in the famous fable).

In this regard, the above-mentioned concept should be aimed at solving the problems of digitalization in Armenia simultaneously: a) in the information and telecommunication technologies (ICT) sector, b) the real sector of the economy, c) the financial sector and, of course, d) the educational sector. The concept of goal setting should be built on the axis of convergent development, that is, solve the problem of convergence of the real, financial and ICT sectors of the economy through digitalization. The emphasis here is on the keyword convergence, which, in turn, will bring the expected synergy result—a new quality of competitiveness for the beneficiaries of all the sectors mentioned as well as for consumers.

The convergent development of the mentioned sectors of the economy implies not only economic growth, but also quality development based on the promotion of innovation, where each sector can contribute to and at the same time benefit from such convergence. In particular, innovations in information technology such as artificial intelligence (AI), machine learning (ML), cloud computing (CC), big data analytics (BD), the Internet of Things (IoT), etc., are transforming the economies of the real and financial sectors and, most importantly, creating essentially new decentralised business models.

In the real sector of innovation, IT promotes process optimisation, cost reduction, improved management quality, and overall efficiency. Real, financial, and IT sector convergence will improve operational efficiency; reduce costs, improve productivity, and drive innovation by enabling the development of new technologies, products, and services to meet changing market needs. In this regard, the Government of Armenia, business, the education sector and other stakeholders should promote the creation of an environment conducive to closer cooperation and innovation between sectors in order to maximize the benefits of convergent development. This means: a) investments in digital infrastructure, b) policies to support innovative research and development, c) the adoption of legal regulations for the digitalization of business that will promote innovation, increase accessibility and inclusiveness of services, while ensuring stability and security.

According to the goals of the proposed concept, it is necessary to highlight the main axes of its implementation. These are: a) development of the necessary structures, standards, and comprehensive projects to ensure legal regulation of the digitalization of the economy and prevent risks for investors and beneficiaries; b) conducting research to identify digitalization problems and their solutions; c) consulting on practical problems of the digitalization of individual units of the real and financial sectors of the economy; d) training and continuous education related to new components, mechanisms, forms, and models of digitalization.

The concept and approach of the proposed solutions require pointing out the importance of adopting a law on digital or virtual assets in Armenia. But this is a separate

subject, and it's not reasonable to include it in this study.

The essence of the proposed concept

The digitalization of business ultimately implies the creation of a digital model for creating added value in business, which is called "Tokenomics". The approach in this paper doesn't have the possibility of giving a full review of tokenomics, which has been explored by many authors (Shermin Voshmgir, 2019 , Alex and Don Tapscott, 2018, Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller, and Steven Goldfeder, 2016, Oana Marin, Tudor Cioara , Liana Toderean, Dan Mitrea and Ionut Anghel, 2023, Robert Stevens, 2022, David Tomu, 2018). The conventional birth of Tokenomiks can be considered in 2015, when Ethereum was launched, introducing the concept of smart contracts and allowing developers to create decentralised applications (DApps) and tokens on its blockchain. This event greatly expanded the capabilities of tokenization and laid the foundation for the development of tokenomics as a separate field. Since that time, various ideas and projects have emerged around the potential uses of tokens other than cryptocurrencies, including encouraging online participation, governance mechanisms, and the creation of a decentralised economy. An important milestone can be considered the founding of the World Tokenomics Forum[3] in 2018.

It is worth noting that, in general, tokens build on different tangible or non-tangible assets. Underlying assets may include real estate, precious metals such as gold, silver, or fiat currencies, and/or even other cryptocurrencies. The most important feature of a token built on underlying assets is that a token can typically represent ownership or a claim to an underlying physical or digital asset (Security Token). As a rule, each token is backed by a corresponding reserve of assets held by a custodian or issuer, which provides stability and ensures that the value of the token is linked to the value of the underlying asset. Among the advantages of asset-backed tokens is blockchain technology, which means record immutability, transparency, and security. At the same time, it provides users with public access to a traditional underlying asset in a digital format.

By definition, "Tokenomics" is directly related to a financially workable business model. One should agree with the opinion that "Tokenomics" (at this stage of blockchain development) are the rules for the functioning of a token within an ecosystem (a system of economic relations between project users, token holders, and project tokens) as a means of accessing or receiving certain bonuses, prescribed in the matrix of such an ecosystem created by a crypto project." (Sergey Golubev, 2019). In our amendment, the word bonus in this case should be mainly understood as a benefit since the business model is about receiving benefits in the form of added value.

Construction a business matrix of digital assets is based on building a business platform of tokens—digital assets based on real assets or intangible assets. The platform itself is based on blockchain, or distributed ledger technology (DLT), usually with technological solutions overlaying or embodying "smart contracts" on them. The most universal definition of blockchain boils down to the following: a digital, decentralised, distributed ledger technology in which transactions are recorded across multiple blocks, computers (or nodes) in a manner that ensures immutability, security, and transparency. Each block in the chain contains a cryptographic or encrypted "image"—the hash of the previous block—creating a chain of interconnected blocks. This technology allows for

[3] World Tokenomic Forum, founder Chris Snook, available at: https://www.worldtokenomicforum.com/

the secure and transparent exchange of digital assets and/or information without intermediaries (David Tomu, 2018, Robert Stevens, 2022). This definition highlights the key features of blockchain, including its decentralised nature, immutability of information, cryptographic security, transparency, and the ability to conduct peer-to-peer transactions without the need for review or regulation by a central authority.

In connection with the above, it is necessary to state that historically, the formalisation of business relations implies maintaining an accounting register, for example, debit and credit records, and accounting for assets and liabilities. According to the hypothesis of archaeologists, in ancient times, even money was recorded in the form of entries in registers—in the form of stones or records on them. Accordingly, blockchain and distributed ledger technologies (which are very similar concepts) are essentially electronic digital online registries. Over the millennia, the ability of the human mind (Homo sapiens) has reached the point that in our time, the recording medium of economic relations is no longer a register on stone, clay, or paper, but digital electronic registers - Blockchain, DLT and their varieties.

It should be pointed out here that a very important feature for business is that, depending on the nature of inclusiveness or exclusivity, blockchain technologies are classified as permissionless vs. permissioned blockchains (José M. Garrido, 2023, pages 9-10). Permissionless blockchains are open to anyone to join and participate without any permission, such as Bitcoin (BTC) and Ethereum (ETH). They tend to be inclusive in that anyone can access and use them. This issue is very significant from the point of view of legislative regulation. Permissioned blockchains require clear permission to join and participate. They are often used within groups of individuals or entities where privacy and control are extremely important. Permissioned blockchains are exclusive because access to them is controlled by a central authority (or entity).

In general, blockchain technology design factors such as permission, consensus mechanisms, cryptographic functions, scalability solutions, interoperability, and accessibility can have a significant impact on its inclusiveness or exclusivity. This proves that the blockchain digital asset framework can be inclusive and accessible to a wide range of users, with limitations and/or interim solutions. All this leads to different regulatory approaches, which should also be taken into account when legislatively regulating digital assets and cryptocurrencies in the Republic of Armenia.

Now let's focus on the essential issues. An underlying asset-based token essentially acts as a currency to measure and exchange the value of assets within its native ecosystem, and also serves the function of promoting value growth, while at the same time being an investable asset outside of its ecosystem. for buying and selling. Meanwhile, it is important to emphasise that even in its native ecosystem, a token does not have a fixed value; otherwise, what is the idea of introducing a unit with a fixed value, the role of which could be played by ordinary money? For practical purposes, the last statement should be interpreted in more detail.

1) An asset-backed token, in its native ecosystem (or platform), is typically developed in software to function as a currency or medium of exchange for transactions in the ecosystem or markets operating on blockchain technology.

2) Tokens backed by underlying assets are typically traded on various cryptocurrency exchanges and peer-to-peer (P2P) platforms. This liquidity increases the utility of the token and attracts investors.

3) Tokens may not have a fixed value even in their native ecosystem. The value of

tokens may fluctuate depending on various factors, such as market demand, the value of the underlying asset, and general market conditions. Therefore, it is not a traditional currency. At the same time, fluctuations in the value of a token in its native ecosystem provide an incentive to improve the efficiency of operations.

4) The main issue is the possible fixed value of tokens. If a token had a fixed value, it would essentially function like a traditional currency. Flexibility and the ability to appreciate or depreciate make the token more dynamic and potentially attractive to investors.

Accordingly, the above statements accurately describe the role and characteristics of tokens backed by underlying assets, firstly, in their native ecosystems, emphasising their function as currency, and secondly, as a commercially variable value, especially outside their native ecosystems.

Once again, as a «mantra», let's point out the most important thing: DLT and blockchain allow users to conduct digital transactions without the need for a centralised authority or coordinator. This fundamentally changes the way business is organised and managed (Puja Ohlhaver, E. Glen Weyl, Vitalik Buterin, 2022). Based on the above conceptual framework, a key question to consider is: how will decentralised governance impact or stimulate the investment flows and management efficiencies that businesses seek? In relation to the disclosure of alternative non-traditional investment flows (channels) for business, a real alternative is a digital tokenized business model. Accordingly, it is necessary to identify the functional differences and advantages of traditional and digital business tools—shares and asset-backed tokens.

Essentially, these are different financial instruments that are used in different contexts: tokens in cryptocurrencies, and shares in traditional stock markets. The functional differences between these tools are primarily due to their nature and context. For comparison, it is known that a share is a security that certifies a person’s ownership of a part of the company, with the right to receive part of the company’s profit (as a dividend) and participate in management with voting rights based on the number of shares.

As for tokens, first of all, it should be noted that they are associated with the technological matrix of blockchain, or DLT (in this context, they can be conditionally equated), which is capable of forming an ecosystem. A digital token is a unit of value issued by a programme or organisation. The token provides an exchange of value between stakeholders within the ecosystem as a measure of value and exchange, and can also implement an incentive function to achieve programme objectives (this is not inherent in shares). Tokens are not limited to specific economic functions. In addition, a digital token can act as an investment object outside its native ecosystem. This means that investors can purchase tokens with the intention of making a profit or participating in the potential growth in the value of the token.

Tokens show huge potential in the new digital economy. With the help of smart contracts, a complex package of rights that, for example, a shareholder has can be included in a token. In this way, the entire contractual relationship or the entire shareholder status can be included in the token (José M. Garrido, page 20).

A token can be much more than just a self-referencing virtual asset like Bitcoin. Tokens can provide access to digital services and assets and, ultimately, can also be linked to offline assets and services. In this regard, tokens can perform functions similar to those of commercial instruments, but tokens are more capable because they are not limited by some of the fundamental principles of commercial instruments.Depending on

its purpose and specifications, a token may have various functional properties, including, but not limited to, utility functions, means of payment, value representation, investment opportunities, and managerial functions. As such, tokens can have a variety of functions and properties that go beyond simply representing a virtual asset, and their purpose and meaning can vary significantly depending on the specific project or ecosystem in which they are used. In essence, digital tokens, by their nature and functions, are divided into several types(Euler. T., 2018, Token Taxonomy Framework (TTF) 2022): security tokens (ST), which can certify ownership of an asset, but for this, in addition to the existing unique technological capability, it is also necessary to legislate this. Accordingly, a security token can simply perform the function of a security (stock). Meanwhile, unlike a stock, the token is multifunctional and flexible in terms of functions. On a specific platform, a token can have varieties with different functions, such as: a) tokens that certify the consensus of operations or states—validators (validator token); b) utility tokens that provide access to the platform or services; c) "voting rights tokens" for decision-making ("voting token"); and, as well, d) security tokens with a function of ownership (security token - ST). The cool thing is that different tokens can combine the functions of others, providing a wide range of functions in one token.

This flexibility is one of the key benefits of blockchain-based tokens. For example, there may be security tokens with voting rights. That kind of hybrid tokens allow token holders to participate in corporate governance decisions, such as voting on company policies, elections to the board of directors, or important business decisions. There are also hybrid tokens that combine the characteristics of security tokens and utility tokens. Hybrid tokens often strive to meet regulatory requirements while maintaining utility for token holders. Thus, the functionality of blockchain-based tokens is highly customisable, allowing a wide range of combinations to be created to meet the specific needs of projects, platforms, and token holders. This flexibility allows for innovative use cases and business models in the blockchain and cryptocurrency spaces.

From the point of view of legal compliance with relations, the system of legislative regulation is important in tokenization. The regulatory environment for tokens varies greatly depending on the current legal framework in each jurisdiction.

It is also relevant to present the advantage of asset-backed tokens compared to shares in the plan in their higher liquidity, since tokens can be sold through multiple channels and methods of commercialization. Tokens on blockchain platforms are often easily transferred through cryptocurrency exchanges, where investors can buy and sell them at any time without waiting until the trading session closes. This is because, unlike traditional stock exchanges, cryptocurrency exchanges operate 24/7 and have specific trading hours and trading sessions. As a result, traders can buy and sell tokens whenever they want, regardless of their location or time zone. This continuous access to trading is one of the attractive features of cryptocurrency markets, providing liquidity and allowing traders to quickly respond to market changes and news. Obviously, the fundamental advantage of a trader in any market is to be half a step ahead. Shares are traded on traditional stock markets, where the process is usually more regulated and follows the traditional strict procedures established for buying and selling on stock exchanges.

Tokens have global trading coverage, they are traded around the world 24/7, opening up investment opportunities for a wide range of investors and beneficiaries. Tokens have many exchange tools for buying and selling them on the decentralised exchange market:

over-technological token exchange means, including DEX, peer-to-peer (P2P) platforms, etc. Such exchange platforms operate on the blockchain and allow users to trade tokens without intermediaries, ensuring a high level of confidentiality and security. Their important feature is that they can be integrated into existing websites or applications. Essentially, for the sale or disposal of tokens, it is also applicable for offline transactions. Therefore, the trading of tokens is broader; this is not identical to cryptocurrency exchanges.

Another format is organised sales (IEO, STO). Some programmes allow investors to purchase tokens through organised sales, such as Initial Exchange Offerings (IEO) or Security Token Offerings (STO), which are conducted on specialised platforms in compliance with legal requirements. Thus, tokens, unlike shares, can be actively exchanged or traded in at least several different formats that do not have strict rules.

It should be added that the token is more easily exchanged in its native environment. The modes here are also different, but simpler, depending on the context and features of the platform used. For example, the exchange of tokens in the Ethereum environment can occur through smart contracts or special exchange platforms where tokens can be bought and sold for other cryptocurrencies or tokens.

In the context of an enterprise environment, tokens can be used to represent digital assets, internal resources, or ownership of company shares, and exchanges can be carried out using the token according to the rules defined by the company's or platform's internal system protocol. In terms of liquidity, it can also be stated that asset-based tokens actually offer the greatest opportunities for portfolio diversification due to the fact that their underlying assets can be represented by several assets such as real estate, precious metals, etc., allowing investors to balance the impact of risk fluctuations in their portfolios and level them out.

It should also be emphasised that blockchain or DLT transactions are usually less expensive than traditional stock transactions, largely due to the elimination of various intermediaries and the transfer of their functions, usually to a smart contract. This is the secret to significantly reducing overall costs and increasing the efficiency of digital investments.

From the point of view of comparing shares and tokens, let us once again note the most key concept: decentralisation versus centralization. Tokens are fundamentally linked to decentralised systems; transactions and ownership are recorded on the blockchain and/or DLT, providing transparency and immutability without intermediaries. It’s maximally protected from unauthorised access and transparent for all market participants. Shares are usually part of centralised financial systems, where ownership records are maintained by central authorities and transactions are recorded through centralised stock exchange systems (depositories).

It should be noted that the decentralisation of digital business can be interpreted at two levels: a) organisational decentralization. In 2023, DAOs (Token Taxonomy Framework (TTF), 2022) of the Marshall Islands, USA (Wyoming), Switzerland, Cayman Islands, Liechtenstein, Singapore, Panama, the British Virgin Islands, Gibraltar, and the Bahamas recognised the status of decentralised autonomous organizations. Different jurisdictions have different rules that are worth considering (Aaron Wright. 2021, Nestor Dubnevych, 2024), and b) decentralisation of management decisions.

Organisational decentralisation refers to the distribution of decision-making authority

and operational responsibilities among different nodes or network participants. In the context of Bitcoin (BTC) and similar two-in-one digital currencies, there is no central authority or organisation that can control the entire system. Instead, the network operates in a PtoP format, where each participant (or node) has equal rights and responsibilities (classic blockchain structure). This decentralisation ensures that no single entity can control a given token (currency), making it resistant to censorship, counterfeiting, and/or manipulation. This is the conceptual approach of Satoshi Nakamoto, the godfather of Bitcoin (Wyoming Secretary of State Business Division, 2022).

The second axis is the decentralisation aspect of management decisions, which focuses on the question of how management authority is determined in a decentralised organization. Decentralisation of management decisions means that decisions about protocols, software updates, and network management are made by network participants in a collective decision format, rather than by a centralised body. This decentralised governance model typically includes mechanisms such as consensus mechanisms, in which network participants must agree on proposed changes before they can be implemented.

In terms of comparing shares and tokens, it should be noted that in the event of insolvency or liquidation of a company, the shareholder is the last plaintiff after the claims of all creditors or plaintiffs have been satisfied. In the context of blockchain projects, users of tokens often have different statuses, and their position may vary depending on the nature of the token. Users of tokens may have certain rights to sue or may not be a formal plaintiff at all. The hierarchy of token users is different, the types of tokens are presented above, for example, holders of Utility tokens and Security tokens will have different rights of action in the event of insolvency of a project or business enterprise.

If legally established, users of security tokens can be the owners of a company or project and, therefore, can be equated in hierarchy with traditional shareholders of companies. Thus, among the advantages of asset-backed tokens are the possibility of business decentralisation; the versatility of tokens, liquidity and wide exchange opportunities, global access; 24/7; transparency and immutability of the status of assets and transactions; and low cost.

In the proposed model, disclosure of information about the underlying assets of tokens is very important. However, digital technologies have not yet been comprehensively applied to quantify the components of the underlying assets converted into tokens. Instead of the traditional “Proof-of-Stake” (POS) validation model, an innovative «Proof-of-Stake + Smart Contract + DApps» or «Proof-of-Authority (PoA) + Smart Contract + DApps» transaction validation or verification function is offered, which will confirm that the product was created as it was designed. This mechanism is combined with Internet of Things (IoT) tools, resulting in a continuous technological audit in the online verification mode. This is extremely important in the digitalization of the supply chain. Enterprises are not only classified based on the degree to which supply chain processes have been digitalized (including inventory management, purchasing, logistics, and supply chain analytics), but also on the disclosure of information regarding the identification of the underlying assets underlying the tokens.

Conclusion

Globally, tokenization is being embraced as a forward-looking approach in developing countries such as Kenya and India, where digital assets are unlocking new opportunities for growth. Armenia can position itself at the forefront of this trend by proactively adopting tokenization to boost innovation and economic sustainability. Armenia's economic sustainability is threatened by its geopolitical environment, including regional conflicts and infrastructure blockades. In this context, tokenization isn't just an innovation but a crucial strategy for strengthening resilience. By integrating the financial, real, and ICT sectors through digitalization, Armenia can offset external pressures with stronger internal economic structures and access to alternative investments.

The main problem of the Armenian economy is that its main sectors have been developing separately throughout the years of independence and to this day: the real and financial sectors and the ICT sphere function independently, based on their goals and objective realities. This is an objective statement of facts, and their reasons are different and too multi-layered. This state of affairs can be rebuilt through convergent development, which means digitalisation of business, namely the real sector, based on tokenisation through the convergent fusion of ICT technologies, an alternative system of financial support, and, very importantly, ensuring legal regulation, since the technological solutions themselves without legislative support can sometimes remain just a fiction.

The above justifies the setting of the goal, namely, that an effective basis for the development and growth of the real sector of the economy (including all sectors) should be built on the axis of convergent development of: a) the real sector of the economy, b) the financial sector, c) the ICT sector, or convergence of three sectors through digitalization. Such convergence, in turn, will lead to a favourable multiplier or synergistic effect, a qualitative increase in the competitiveness of economic units and beneficiaries of all three sectors. The core of the mentioned strategy for digital convergence of the real sector of the economy should be the concept of adopting business tokenization, that is, building a business model of digital assets based on tokens of tangible and intangible assets, which should generate new added value; it was indicated above that there cannot be another standard for building a business model.

In terms of such a statement, the main problem comes down to choosing an appropriate arrangement in terms of practical implementation, which has several important axes. First of all, it is necessary to take into account the limitations according to which business units of the real sector of Armenia, in almost all respects, will not be able, individually, to implement such a large-scale digitalization programme due to limited potential and resources, including professional, technological, financial, etc.. Accordingly, building a business model based on the tokenization of digital assets requires a conceptual approach. This is, first of all, *overcoming limitations through the formation of a consortium (or pool) of individual organisations in the real sector of the economy, united by common interests, aimed at building a digital business model.*

From the point of view of the programme for implementing tokenization in the format of a business consortium, the military-industrial complex is relevant; consortia in agribusiness, renewable energy, precision engineering, pharmaceuticals, the construction complex, and especially in the field of intellectual property may be of

interest. *The goal setting of the project is threefold: a) ensuring the promotion of innovation; b) a sharp increase in the efficiency and productivity of management; and c) ensuring the influx of alternative financial, in particular, investment resources.*

Important criteria for solving the problem are: 1) disclosure of factors related to the coincidence of interests of business units included in the consortium; 2) building the technological basis of the tokenized ecosystem of the consortium. In this sense, the solution to the problem faces the very sensitive and delicate issue of the public openness or inclusiveness of the tokenization matrix. In particular, a fully inclusive public digital format is desirable for manufacturing and other sectors, but unacceptable for the military-industrial complex. From the point of view of this issue, it should be taken into account that the technological matrix of the proposed model is extremely wide; it covers everything from an absolutely inclusive or open format to highly exclusive or closed centralised formats based on DLT with smart contracts embedded in them. Accordingly, technologically equivalent solutions are available for the nature of the military-industrial complex too.

A token based on real and intangible assets, in its native ecosystem of the consortium, will perform the function of a currency for measuring and exchanging value, as well as a function that contributes to an increase in value, and at the same time, as an investment asset, will be an object of purchase and sale outside of its ecosystem. In this sense, even in its native ecosystem, a token does not have a fixed value; otherwise, what is the point of introducing a unit with a fixed value, the role of which could be played by usual fiat money. The idea is the potential of a tokenized digital asset system in a consortium ecosystem to act as a catalyst for innovation, governance, and productivity and to attract future investors.

Let us emphasise once again that a business matrix based on digital financial assets—tokens—in a consortium format should become a stable business model that will solve many limiting problems and ensure a synergistic result. It is important to note that the regulatory framework for tokens is still evolving, and the rights and requirements associated with tokens can vary greatly from country to country, depending on the specific design of the token and the legal framework that governs it. In the Republic of Armenia, tokenization issues that are not legally regulated can be resolved using the Sandbox (Satoshi Nakamoto, 2008, Douglas W. Arner, Janos Nathan Barberis, Ross Buckley, 2017, ASIC, Enhanced regulatory sandbox, 2024, Bank of Jamaica, 2020) regims adopted in international practice, i.e., an experimental matrix of legal regulation.

It should also be pointed out that business tokenization is associated with certain risks, such as regulatory risk, market volatility, technological risk, and other risks. However, digitalization and tokenization of business, in Armenian realities—a shortage of investment resources and the unsatisfactory state of the stock market—can open up new opportunities for alternative investment flows, as well as increasing management efficiency, reducing costs, and founding innovation chains within the country's economy.

To summarise, it should be emphasised once again that the concept of business digitalization should be built on the axis of convergent development of the real, financial, and ICT sectors of the economy through digitalization. In general, legal regulation of business digitalization is more important for the real sector of the economy, since it is aimed at ensuring: a) promotion and generation of innovations; b) reducing production

costs, increasing productivity, and improving business management efficiency; c) disclosure of alternative investment channels and flows for business. The emerging convergent development is a prerequisite for a competitive real sector of the country's economy, including the military-industrial complex, manufacturing industry, precision engineering, winemaking, pharmaceuticals, and all other vital sectors of the RA economy.

Armenia, as a small landlocked country in the midst of intense regional competition following the 2020 war with Azerbaijan and an ongoing infrastructure blockade, does not have a sufficiently high degree of economic sustainability. Alongside this, the country is under the potential pressure of economic expansion from aggressive neighbors. We look at this as not a political issue but as having profound resilience as well as economic sustainability levels. From this angle, new concepts and approaches will be necessary for Armenia's economy to embrace in order to achieve much-needed economic sustainability and competitiveness. First of all, business tokenization forms the basis of this concept. At the same time, this approach is not a specific treatment for Armenia; in our view, it's the main future streamline in economic for all developing countries.

Given Armenia's limited resources, a phased approach could be the key to success. Initial pilot programs in sectors like agriculture or renewable energy, supported by Sandbox regulatory environments, can demonstrate the value of tokenization and encourage further investment. These pilots can serve as a template for scaling up the digitalization of other key sectors.

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