

SMART CONTRACTS FROM LEGAL PERSPECTIVES AND DIRECTIONS FOR VIETNAM

● NGUYEN HOANG GIANG

ABSTRACT:

The Fourth Industrial Revolution is ushering in profound transformations across various sectors, particularly the economic landscape. Smart contracts (SC), underpinned by blockchain technology, represent a burgeoning trend with the potential to enhance efficiency and transparency. However, the implementation and regulation of SC in Vietnam remain fraught with legal and practical challenges. This study undertakes a comprehensive analysis of the legal framework governing SC in Vietnam, drawing valuable insights from the experiences of the European Union (EU) and the United States. By examining international precedents and best practices, the paper offers concrete recommendations to guide Vietnamese law in defining the legal nature of SC and charting a course for their future development.

Keywords: smart contracts, blockchain, EU regulations, US regulations, Vietnamese law.

1. Introduction

The Fourth Industrial Revolution is profoundly impacting all aspects of social life, particularly the economic sector. In this context, smart contracts (SC) - a product of blockchain technology - are gradually becoming an inevitable trend. SC not only helps improve transaction efficiency but also offers many advantages over traditional contracts. However, applying SC in Vietnam still faces both legal and practical challenges. This article focuses on studying, evaluating the benefits, and the legal aspects of SC, thereby providing specific directions for Vietnamese law.

2. Overview of Smart Contracts

Smart contracts are computerized transaction protocols that execute the terms of a contract and

operate on the blockchain platform [1]. Nick Szabo, a computer scientist, lawyer, and cryptographer, defines SC as “a set of promises specified in digital form, including protocols within which the parties perform on these promises” [2]. From a different perspective, Mykyta Sokolov defines Smart Legal Contracts as “a legal agreement executed within a contract” [3].

Despite a lack of complete consensus on the definition, it can be observed that smart contracts essentially are agreements written in computer code and are capable of executing automatically without human intervention. They operate in a markedly different manner from traditional contracts. Once created, these contracts cannot be altered by any party, which confers a highly robust

value to them. They help resolve issues of fraud and ambiguity in contracts and avoid disputes among parties, as once an event is triggered, the smart contract autonomously performs the agreed-upon terms and automatically checks the fulfillment of agreements without human intervention.

Additionally, the key features of blockchain play a vital role in distinguishing SC from other types of contracts. Firstly, the capacity for recording and storing information: when information is added to the blockchain, it is cross-referenced with existing user information to eliminate duplicate transactions. Secondly, distributed consensus means that once information is recorded on the blockchain, it cannot be changed without network consensus. Thirdly, decentralization allows multiple entities to use the blockchain simultaneously, yet no single entity can control or own it [4].

3. Legal Nature of Smart Contracts from the EU Perspective

Blockchain technology and smart contracts are increasingly used and popularized in European countries. Regulations on SC in the EU are largely established at the national level, lacking uniformity. The introduction and adoption of the Markets in Crypto-Assets (MiCA) regulation marks a significant step forward by setting the first comprehensive standards for digital assets in Europe [5].

The Rome I Regulation is the general legal framework in the EU that governs contract-related issues, including smart contracts. This regulation not only helps define the applicable law for contracts but also establishes the fundamental principles for their management and operation. Applying these common principles facilitates the regulation of smart contracts, making it easier and more uniform across the European region [6].

According to the EU Data Act, a smart contract is defined as a “program running on an electronic ledger that can act as an event-based transaction

protocol or trustless automation for conditional statements based on predetermined criteria” [7]. Therefore, Europe recognizes the legal value of smart contracts as electronic programs. Smart contracts are a series of coded commands without a clear format and specific display like traditional contracts. The Rome I Regulation also applies the common contract provisions to smart contracts, with issues related to these contracts being governed by the specific laws of each member state.

4. Legal Nature of Smart Contracts from the U.S. perspective

In the US, there are no specific federal regulations governing smart contracts. However, several laws can apply to determine the legal status of smart contracts. The Uniform Electronic Transactions Act (UETA) and the Electronic Signatures in Global and National Commerce Act (E-SIGN) provide the legal foundation for recognizing the validity and legality of electronic signatures and electronic contracts, which can also apply to smart contracts.

E-SIGN is effective at the federal level and explicitly states that an electronic signature, contract, or record cannot be denied legal effect solely because it is in electronic form [8]. The UETA, which has been adopted by most states, stipulates that electronic signatures and electronic contracts have the same legal validity as traditional signatures and contracts [9].

Several states have enacted specific laws to govern smart contracts. For instance, Arizona passed HB 2417, recognizing the legal and enforceable nature of smart contracts. This law defines a smart contract as “an event-driven program, stored on a distributed, decentralized shared ledger, that can record and execute the terms of a contract when triggered” [10]. Nevada's legislation extends the legal recognition of electronic signatures and records in blockchain, considering them as legally valid and admissible evidence [11].

Applying smart contracts in the US faces some challenges regarding enforceability and legal regulation. Specific issues such as automation, security, and anti-fraud measures need to be clarified further within the current legal framework. However, smart contracts are welcomed in states like Arizona, Nevada, and Vermont and have local legislative support to foster technology development and protect the participants' rights.

5. Current legal status of Smart Contracts in Vietnam

Currently, Vietnamese law does not specifically regulate smart contracts. Issues of legal validity for contracts need to consider factors such as the legal capacity of the parties, voluntariness, purpose and content, as well as the form of civil transactions. According to Vietnamese law, for a contract to be valid, the parties must have civil legal capacity and civil act capacity appropriate to the transaction; the agreement must be voluntary; the purpose and content of the transaction must not violate legal prohibitions or go against social ethics; and the form of the civil transaction must be in writing, verbal, or via specific actions.

Smart contracts have several distinct differences from traditional contracts. In traditional contracts, transactions can be made in writing, verbally, or through specific actions [9]. However, in smart contracts, they are manifested through one or more terms or conditions of the agreement but are not recorded or stored in writing or in any form similar to writing. Instead, they are designed to be processed by a computerized system. Smart contracts do not use natural language but rather computer language to present data for the computer to analyze, automate, transmit, and store contractual obligations. While traditional contracts involve human parties, smart contracts engage computerized systems as a vital party. The contents of a smart contract are coded in computer

language, and the contract terms cannot be altered once coded, ensuring maximum enforceability in practice. However, it also poses challenges for the parties as unexpected events may affect the contract performance. Therefore, the drafter must anticipate possible changes and list those contingencies using coded commands [9].

Smart contracts are not seen as conventional legal contracts but rather as mechanisms for executing obligations or parts of a contract. The operating mechanism of smart contracts resembles an automated vending machine, executing commands in the "if-then" syntax. They automatically perform the predefined terms once the necessary conditions are met. Given these differences, existing contract regulations in Vietnam cannot be applied to regulate smart contracts.

6. Challenges in recognizing the legal validity of Smart Contracts in Vietnam

In Vietnam, smart contracts have not been legally recognized as valid contracts. This means they have not been acknowledged and do not serve as legal evidence in the process of entering into and performing rights and obligations in a contract. If a dispute arises, a smart contract does not have evidentiary value.

One of the most significant legal challenges is determining the intent of the parties involved in the contract formation and performance. In contract law, the principle of free will is fundamental, meaning the parties are free to enter into agreements to establish civil rights and obligations according to their will, provided it does not contravene public order. This intent is reflected through the contracting parties' capacity. Not everyone can enter into contracts; if the parties fall into categories such as minors, persons with impaired capacity for civil acts, or those restricted in legal capacity, the transactions can be invalidated. However, determining these invalidating factors is not feasible if the transaction is conducted through smart contracts.

The nature of smart contracts as digital contracts based on blockchain technology using algorithms makes it difficult to ascertain the parties' intent.

Another significant challenge is the immutability of smart contracts. While traditional contracts allow the parties to amend terms by mutual agreement, this key aspect is significantly constrained in smart contracts. This necessitates that standard provisions in smart contracts be programmed in a "if-then" structure to foresee possible changes. However, even such foresight may not address all practical issues as contingencies might exceed the anticipated scope, leaving parties to deal with the predefined terms.

Regarding practical challenges, although many experts predict that smart contracts will become a necessary trend, the general understanding of the nature, operation, and legal aspects of smart contracts is still limited. The complex programming language of smart contracts adds to this difficulty, making it hard to comprehend and convey in everyday language. Additionally, how disputes related to smart contracts will be handled remains a significant question, given that these contracts operate on the blockchain platform.

7. Recommendations for Vietnam in defining the legal nature of Smart Contracts

Currently, there are two conflicting perspectives on the nature of smart contracts. One perspective considers smart contracts as a type of legal contract, implying that contract law should apply to regulate them. The second view regards smart contracts solely as transaction mechanisms, aiding in the fulfillment of primary contractual obligations.

If the first perspective is adopted, several legal issues will arise, such as how the rights and obligations of contracting parties translate into computer code and the legal determination of parties' capacity in an anonymous blockchain environment. Determining parties' intent to engage under the smart contract can be complex, as these contracts do not specify contents traditionally but instead operate through programmed codes. The

immutable nature of smart contracts presents additional significant challenges when unforeseen events or fundamental changes in circumstances necessitate contractual adjustments.

Viewing smart contracts as a transaction mechanism (software agent) places them under intellectual property law, lacking direct legal effect as contracts. In case of errors, the rights and interests of parties under the smart contract are not protected by contract law.

Given these challenges, the view of smart contracts as transactional mechanisms supporting the performance of conventional contracts may offer a plausible path forward for Vietnamese legislation. This approach would align with the current Vietnamese legal framework and avoid substantial alterations during the integration of smart contracts. Practically, if parties enter into traditional contracts and utilize smart contracts to execute them, the smart contract serves only to facilitate performance, without standing as an independent contract.

8. Conclusion

The Fourth Industrial Revolution has resulted in transformative changes across all systems of governance, production, and management. Among these transformations, blockchain technology and smart contracts have profoundly impacted and improved the quality of life and societal management. Presently, applications of blockchain and smart contracts are found across various political, economic, cultural, social, and educational domains. However, there is yet to be clear recognition or regulation regarding the "status" of smart contracts or their operational mechanisms.

Investigating the legal nature of smart contracts, drawing on the experiences of the EU and the US, is crucial for developing appropriate solutions and recommendations to formally integrate smart contracts into Vietnamese law. Such integration will enhance transparency, safeguard participant rights, and drive the development of the digital economy ■

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TÓM TẮT:

Cuộc cách mạng công nghiệp 4.0 đang tạo ra nhiều biến đổi trong mọi lĩnh vực, đặc biệt là kinh tế. Hợp đồng thông minh, dựa trên công nghệ blockchain, đang nổi lên như một xu hướng mới, mang lại nhiều lợi ích về hiệu quả và minh bạch. Tuy nhiên, việc áp dụng và điều chỉnh hợp đồng thông minh tại Việt Nam còn gặp nhiều thách thức pháp lý và thực tiễn. Bài viết này phân tích khung pháp lý của hợp đồng thông minh, từ kinh nghiệm của Liên minh châu Âu và Mỹ, đồng thời đưa ra các gợi mở cho pháp luật Việt Nam để xác định bản chất pháp lý của hợp đồng thông minh và định hướng phát triển.

Từ khóa: hợp đồng thông minh, Blockchain, quy định của EU, quy định của Mỹ, Luật pháp Việt Nam.