Situations of Smart Contracts and Blockchain Application in Vietnam

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Abstract:
The article analyzes the current status of Smart contracts and Blockchain in Vietnam. Based on an overview of previous studies and experiences of countries around the world, we analyze the current situation of using and managing Smart contracts and Blocktrain in Vietnam. From there, we make recommendations for Vietnam.

Keywords: Smart contracts, Blockchain, Vietnam

1. Introduction

Blockchain application has been popular, adopted and growing rapidly both in academia and industry. This growth is driven by the unique features of Blockchains: providing reliability, integrity, and auditability in a decentralized system. Thanks to advantages of Blockchain technology, such as possible event-driven, self-executing code statements, smart contracts were born. These contracts autonomously execute prespecified tasks, such as settling a contract, by examining changing environmental conditions in conjunction with the contract’s embedded rules. Smart contracts are envisioned to have a range of innovative applications, such as privacy preserving transactive energy systems, asset tracking in the IoT, and various financial applications. Unfortunately, due to the peculiarities of smart contract platforms and languages, the development of smart contracts has proven to be a challenging and error-prone process. These errors often manifest as security vulnerabilities, which have led to multiple notable security incidents, with losses in the range of hundreds of millions of dollars’ worth of crypto currencies.

Specially, framework and policy about smart contracts in countries is uncompleted. Although this is not a priori bad nor cause for concern cause technology has always driven societal change, and the law has a long history and plenty of experience adapting to such change, at the same time, history shows us that technology must also be open to adapt to existing law where the law reflects the values and consensus of society, weakness of them will bring some disadvantages to many people using.

This study investigated Blockchain technology and smart contracts, particularly the legal implications of smart contracts. The paper would like to enhance the understanding of smart contracts by providing an overview of legal issues to smart contracts and some points to recommendations to Vietnam for the 4.0 technology period.

2. Literature review

Blockchain and smart contracts have the potential to disrupt several business domains, ranging from supply chain and healthcare to finance and accounting. Similar to the status of the internet about two to three decades ago, there is currently tremendous excitement over the potential of Blockchain and smart contracts. However, this is a pretty new session, particularly in Vietnam, there is not anything of acts or regulations or researches about them. News or information of them is also limited, there is just a article named "Negotiation with code - uncompleted legal issues" on 6th April, 2018 of Civil and Network by Ms. Dieu Thao Vu Thi.

The fields of application of smart contracts are numerous. They can be used, at least in theory, wherever economic assets show interfaces to the internet and certain events can be verified digitally. Thanks to the increasing IoT, this affects more and more areas. In addition to the financial and insurance sectors, which have been particularly present up to now, smart contracts are suitable for use in areas such as Sharing Economy, Energy, Supply Chain or Identity Control. Naturally, contracts that deal with access to digital content, and are therefore easily translatable into software, are predestined for smart contracts. A noteworthy example is the distribution of music via Blockchain-based smart contracts. Recognizing of importance of Blockchain and smart

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contracts, there are some researches in these fields, special in legislation: With smart contracts the drafting stage of the contract ex ante, leading to an automatic execution, will become more important than subsequent law enforcement ex post. The development of this new contract concept requires a modification of the applicable contract law is a big question. The answer to that depends mainly on how this new way of contracting is accommodated by existing legal provisions.

3. Situation

3.1. Actual situation of Blockchain application in Vietnam

In the world economic development, especially in the era of Industry 4.0, a developing country is in the process of opening and integration to attract foreign investment as Vietnam, starts to concern issues about Blockchain and smart contract also - a phenomenon of technology. Specially, with favourable natural conditions and geographical location to develop logistics services, Vietnam more and more has reasons to support businesses in innovation and technology application in managing and operating this critical economic sector.

As analyzing above, Blockchain with smart contracts brings many advantages to traditional transactions, but there are still many disadvantages. Therefore, analyzing the characteristics of Blockchain and its advantages and existence will be of great help to bring Blockchain into the development of many fields such as banking and finance, accounting, auditing, logistics, ... When understanding the benefits that smart contract brings to work together, these parties will promote the effectiveness of Blockchain. However, in Vietnam, Blockchain and smart contracts still may not seem common or difficult to understand for many people. In addition, there is a lack of knowledge of them also.

Despite the lack of a legal framework, Vietnam is fast emerging as a major player in blockchain based technologies. In March 2018, Ho Chi Minh City hosted the Blockchain Week Conference, which focused on building a blockchain community working on new technologies and applications related to blockchain.

Vietnam is under-serviced when it comes to banking, with only about one-third of the adult population having a bank account. By 2021, around 40 percent of the people will have smartphones which open up new possibilities of bringing banking services to a larger section of the population.

Being highly secure, efficient, cost-effective, and transparent, blockchain technologies are been adopted in fintech, agritech, medical industry, and real estate. Blockchain technologies have numerous applications such as:

- Supply chain management – Blockchain can be used by logistics service providers to track their products, as the technology is cost-effective, traceable, and highly secure.

- Smart contracts – Through blockchain, smart contracts can digitally sign, validate, and enforce agreements allowing the exchange of anything of value, content, property, and shares and removes the need for an intermediary.

- Accounting/Banking/Fintech – At the core, blockchain is basically a technology that retains and validates transactions and removes the risk of tampering, hence it can be used in the financial industry. In fact, a number of financial institutions have already started to test them, as they are more cost-effective, secure, and efficient.

- Stock exchange – Blockchain-enabled systems would provide more transparency and accountability in monitoring trading activities.

- Peer-to-peer transactions – In addition to using blockchain tech for digital currencies, it can also be used for fiat currencies, leading to a cheap and secure way to transfer funds globally.
Recently, some Vietnam's technology startups such as TomoChain5, Kambaria, Kyber Network ... have built Blockchain platforms, and create a brand and high reputation and attract the great attention and investment of the Blockchain community worldwide. This is an excellent opportunity for Vietnam to take the lead in technology and develop ahead in the application of Blockchain for supply chain and logistics, in order to reduce costs and improve operational efficiency, helping Vietnamese logistics businesses compete with foreign businesses but it has not been respected and invested effectively.

Vietnam attracts research and development in Blockchain technology. High-tech companies can enjoy long-term tax breaks and other investment incentives. With Intel, Samsung and Microsoft all having major hubs in Vietnam, the country boasts legions of qualified software and hardware engineers. Interest in Blockchain technologies is growing rapidly in the country, and startups in the space help provide education to future engineers.

Vietnam has a high penetration rate of mobile devices and has leapfrogged older communication technology. Its high level of technological engagement and increasingly dynamic startup ecosystem provide fertile ground for the development of Blockchain applications.

With growing abundance of robust tech talents and young tech-savvy population, explorations of Blockchain applications in Vietnam is expected to go beyond cryptocurrencies to include fintech, regtech, agritech, insurtech, medical fields and Internet of Things (IoT) products and services. Such Blockchain innovations will significantly simplify numerous administrative processes and reduce transaction costs in the country, creating a more digitally integrated economy. Responding to such opportunities, the Vietnamese government has implemented various programs and platforms to support science and technology research as well as provide training, business incubation and acceleration, and financial support to new startups in the IT sector.

The Vietnamese economy is growing very fast, prompting different industries to look into Blockchain to increase the efficiency of their business. The entrepreneur added that lots of young Vietnamese are skilled in mathematics and computer science, making the country an important source of talent for Blockchain. Unlike cryptocurrencies, Blockchain is being embraced by governments around the world, including Vietnam. For example, the National Payment Corporation of Vietnam has already been testing out Blockchain in some transactions between Singapore and Vietnam. Mr. Ta Viet Dung, head of the Technology Application and Development Department at the Ministry of Science and Technology, said that Vietnam welcomes new technologies like Blockchain to help boost the economy. Vietnam has a young population that is well-connected to the Internet, making it an ideal market for Blockchain. Companies in Vietnam can improve their business by using technology, which is accessible and transparent, yet at the same time safe and impossible to be manipulated.

However, he stressed that Blockchain is not a — magic wand — to solve all business problems. Businesses should test out what areas of their management need Blockchain before deciding to integrate their system with this new technology.

3.2. **Contracts and Smart contracts regulation in Vietnam**

Need to stress that Vietnam has not published any laws defining Smart Contracts, or no current legislation on smart-contract-related dispute resolution also though it has legal framework related to blockchain and cryptocurrencies currently pending and some regulation about e-contracts. Following an alleged fraud of VND 15 trillion (US$ 658 million) related to cryptocurrency that scammed 32,000 investors, the Prime Minister signed a directive asking the Ministry of Finance and the State Bank of Vietnam (SBV) to strengthen the management of cryptocurrency activities. In addition, the government has also asked the Ministry of Justice to study and develop a legal framework for regulating digital currencies and assets.
As a starting point, are smart contracts legal binding contracts? The answer to this question depends upon three main factors: (1) the specific use case; (2) the form of smart contract being used (i.e. entirely coded in software or a hybrid smart contract with both an encrypted coded version and a text-based version); (3) the law applicable to the contract. This means that the answer might vary significantly depending on the concerned jurisdiction. In first place, we need to know, how contracts were defined in law. Particularly, Vietnamese contract law is predominantly sourced from the following legislation:

- The Civil Code, which applies to all types of contracts; and
- The Law on Commerce, which applies to commercial and profitmaking contracts (though the law may also apply to a contract between a commercial party and a noncommercial party, if the noncommercial party so chooses);

The Civil Code and the Law on Commerce provide a basic framework for commercial contract law, including provisions on:

- Freedom of contract: parties to a contract are generally free to agree on the contents of their contract, insofar as they do not contradict prohibitive provisions of law. Contractual freedom was first recognized in the laws of Vietnam from the Constitution 1992, and continued being recorded in the Constitution 2013, which was developed into the detailed provisions of the Civil Code 1995, 2005, and the latest is Civil Code 2015; the Law on Enterprises 1999, 2005, and 2014; The Law on Commerce 1998 and 2005; the Law on Investment 2000, 2005, and 2014. Accordingly, the scope of freedom of contract includes the following contents: (i) the right to be equal and voluntary in contracting, (ii) the right to select partners entering into contracts, (iii) the right to freely make the agreement, change or modify the content of the contracts, (iv) the right to agree on conditions to guarantee contractual performance, and (vi) the right to agree on choosing tribunals and methods of resolving on contractual disputes.

Since Vietnamese government determines to switch the Centrally Planned Economy to the Market Economy with Socialist Orientation (1986), the government changed many economic policies to ensure the development of business activities and the implementation of Vietnam’s commitments to international treaties. The State has amended the law on contract in accordance with the general rules, which has made fundamental changes in terms of objects and adjusting methods. On that basis, freedom of contract gradually was recognized and guaranteed in practice. The degree of freedom in contract law of Vietnam is currently relatively high, even though the implementation still has restrictions, which leads to contractual freedom has not promoted its positive role in reducing transaction costs for parties.

- Formation of a contract: the law provides rules of offer acceptance. Similarly to other civil law legal systems, consideration is not required for the formation of a contract.

- Contract terms: there are no specific rules to determine whether a statement does or does not constitute a contractual term. There is also no recognized doctrine of implied terms. As to the interpretation of contracts, the following factors will be taken into account: (i) the intention of the parties, (ii) customary practices at the place of signing of the contract, (iii) the nature, purpose and overall content of the contract and (iv) the interpretation that benefits the non-drafting party may be favored (though this is often sought to be excluded by an express term of the contract).

Besides, we shall consider to the important thing to a contract, it is regulation about Null and void contract: a contract may be deemed null and void for reason of illegality (ie in breach of a prohibitive provision of law), contradicting social morals, forgery, lack of capacity, misunderstanding (eg mistake), deception, duress, if the subject of the contract is not performable, or non-compliance with the required formality, unless either party has performed at least two-thirds of its obligations under the contract.
Following law on contracts in Vietnam, the recognition by law is what distinguishes contracts in legal terms from ordinary promises. Indeed this line is not very clear considering that almost all legal systems recognise verbal contracts as well. So that, if a smart contract satisfies the rules of contracts and no does not break anything about Null and void contracts, it will be effective naturally. However, as analyzing above, the question here is how to get a smart contract breaks a or some regulations to become non-effective, like simply, establishing capacity? Given that the parties to a smart contract may, and indeed often will, be unknown to one another, there is a very real risk that a party who has attained the age of majority may inadvertently contract with a minor cloaked by the anonymity of the internet. This threatens the enforceability of the agreement. Elaborate screening procedures to determine age prior to entry of a transaction onto a blockchain may be required though these are likely to be difficult to police. Moreover, whether or not such a contract would be binding would depend upon the jurisdiction(s) in which it was formed and, in the case of common law countries, whether the contract was one falling into one of the excepted classes of contract (such as one for necessaries).

In additional, a part related to smart contracts law is e-signatures and digital signature. Electronic and certificate-based digital signatures are common in Vietnam with the majority of Vietnamese enterprises using digital signatures within their organizations. Vietnamese law recognizes both electronic signatures and digital signatures as having the same level of enforceability and admissibility as a - wet signature, provided they meet certain requirements. Generally, the level of enforceability/admissibility of digital signatures is higher than other types of electronic signatures.

The main legislation covering electronic signatures is the Law on E- transactions 2005. At a lower level, the use of electronic signatures is governed by some specialized Decrees and Circulars, referring to the Law on E-Transactions. The requirements for a valid electronic signature vary depending on whether the electronic signature is being used to replace a traditional —wet signature or the seal of an organization. The Law on E-Transactions defines a person using e-signature (e-signatory) to mean a person who controls the electronic signing program and uses such equipment to certify his/her will regarding the signed data message. Electronic signing program is defined to mean —a computer program established to operate independently or through equipment, information system, other computer programs in order to create an e-signature typical for the person who signs data messages. The website system designated for its users to log on and approve the content of the Register may be regarded as electronic signing program. As such, the individual user, by using the website system via his/her user ID and password to create or verify the content of an online order, appears to qualify as e-signatory under the Law on E-Transactions.

On the other hand, under Decree 130/2018, a digital signature is defined as - a type of e-signature created by transformation of a data message using an asymmetric cryptosystem whereby the person having the initial data message and public key of the signatory may accurately determine: (1) whether such transformation is created with a private key corresponding to the public key in the same key pair, and (2) whether the data message has been altered since the transformation. The e-signature created by an individual user using an website system is not a digital signature because it does not involve any key pairs. Under Vietnamese law, a written signature is not necessarily required for a valid contract - contracts are generally valid if legally competent parties reach an agreement, whether they agree verbally, electronically or in a physical paper document (Civil Code, Article 119). The Law on E-Transactions specifically confirms that contracts cannot be denied enforceability merely because they are concluded electronically (Law on E-Transactions, Article 14.1). To prove a valid contract, parties sometimes have to present evidence in court. Leading digital transaction management solutions can provide electronic records that may be admissible in evidence to support the existence, authenticity and valid acceptance of a contract (Law on E-Transactions, Article 14.2).

We clearly see that, with basic and limitation on quantity and contents, so far does not cover the full set of key issues posed by smart contracts based on blockchain platforms in Vietnam. In addition to what has been said, as the global programming market of Smart contracts and blockchain platforms grow, new issues will arise that the
Law will have to solve. One of them will be Data Protection. It will be also necessary to resolve the possible difficulty of identifying the person in charge of processing the personal and sensitive data that is included in the SC, as well as to solve the potential risks of inadvertently making international data transfers through nodes of the blockchain platform without complying with the legal requirements.

### 3.3. Lessons from framework and policy of Smart contracts for Vietnam

Smart contracts are in their infancy and it is not unreasonable to expect significant level of development along with innovation over time. However, at this stage, our daily transaction habits and Vietnam current legislations in many countries and ours are not suitable for smart contracts. Indeed there will be applications that would attract huge crowds. However, one must be cautious before going all-in for such applications as the legal regime and potential compensation methods for smart contracts are not clear yet. In addition, due to the novelty that blockchain still represents, it is not possible to offer a definitive or conclusive opinion about the many of its revolutionary innovations for the commercial transactions. For this reason, it will be necessary that the blockchain phenomenon reaches a greater maturity and consolidates its use and applications so that the Smart contract can be deployed on blockchain and operate massively in the market. Only in this way, it will be possible to identify good practices and that regulators and courts reach the level of understanding necessary for a legislative policy that is truly adapted to the real legal problems that this phenomenon currently presents.

Only as the regulators, courts and users of these applications accumulate practical experience can we have a reasonable degree of legal certainty regarding their use and how to resolve the various legal issues such as those that this work has analyzed here. Meanwhile, the use of Smart contract for commercial practices moves in legal uncertainty. In any case, it does seem highly advisable that both in the design and configuration of blockchain platforms and in the programming of applications, such as Smart contract, professionals from the legal sector participate in order to ensure the validity and legal effectiveness of transactions.

The regulation of SC should focus on effectively incentivizing a set of good practices for operators related to this type of software (users and investors, managers of blockchain platforms, etc.). A guide of good practices that is first formulated as —soft law‖ (for example, comply or explain rule) and later be implemented as —hard law‖ would be a suitable procedure to encourage non-opportunistic behavior and reward at a reputational level those that generate confidence in the blockchain platforms and with the applications of Smart contract. To generate positive incentives that result in collective welfare, regulators should allow operators, when programming a Smart contract, to design clauses that can be parameterized in the contracts that take place between the parties for execution on a blockchain platform. This situation would allow for a balance between the principles of contractual freedom and legal certainty. In this sense, regulators should allow Smart contract to be created in accordance with the best practices of free software development, so as not to harm the development of this industry, so that the control, review and audit systems are self-regulated and accessible by the community of blockchain users. This moment is crucial to theorize and identify potential problems in the relationship of this digital technology with the current legal framework. This work has precisely intended to be a brief contribution to this goal, which is essential to make way for future and broader reflections.

These are accompanied recommendations and should serve as a useful roadmap for Vietnam lawmakers in their attempt to navigate this nascent field and create an environment that facilitates the use of smart contracts.

### 4. Conclusion

A smart contract, as for what has been argued, complies with the essential elements

- consent, object and cause- and form Vietnam Law requires and, therefore, fits under the principals of Contract Law. Nevertheless, it is still a new technology and we have a lot to learn. That is why it is worth encouraging public authorities and jurists to embrace and adapt to the changes and needs of the blockchain technology and
smart contracts, taking into account its particularities, which are not few, in the stages of formation and perfection, performance and breach.

Most solutions come in comparison to traditional contracts, but it is not always possible due to the nature of smart contracts. Yet any type of contract is an agreement that can be enforced, there are differences regarding the type of contract. In a conventional contract, when breached, the aggrieved party takes legal action going to court to demand restitution, a specific performance or pay for caused damages; But when it comes to smart contracts, due to its conditional and self-enforceability nature, the contract would have already been executed or in the process of execution, so the aggrieved party will have to go to court after an improper compliance or unjust enrichment. Nevertheless, the breach is a possibility when a code cannot correctly execute due to a missing input, yet smart contracts pretend to avoid these problems. For legal security, it is important that legislators and jurists intervene clarifying the consequences ex-ante.

In the fact that a large part of the population uses these technologies in this type of transactions, such as the use of smart contracts, many legislations do not yet stipulate a legal framework that regulates commercial matters carried out in this means that allow legal certainty by assuming that those with whom it is treated will respect their commitments as in conventional agreements. Although no doubt that this type of instruments have multiple advantages such as cost reduction, the elimination of intermediaries and the protection of data by being in an encrypted code, we cannot ignore that being a legitimate tool, necessarily in its creation, as throughout its validity and at the end of it must have legal supervision that allows users to have full certainty that the agreed agreement will have compliance and otherwise must trust that there will be mechanisms to restore arbitrariness.

As one of the products of Industry 4.0, Blockchain in general and smart contracts in particular is one big step of digital technology in transactions. With many advantages, smart contracts can make the world become a better place without profit commissions. It is true that blockchain and smart contracts pretend to change the way we use contracts. Now, many companies and governments are working on these technologies due to all the benefits it provides, like lowering costs, being more secure, faster and, of course, with certainty. However, the main downsides to consider is related to the early stage of development and, in particular, if they can work with the existing laws or need an additional regulation. For now, the applications will not grab the attention of individuals and be focused on specific business areas, such as banking and insurance. We do not believe smart contracts will replace conventional contracts. It is an alternative in specific areas that provides considerable advantages. It can contribute to reducing fraud, delays and overall cost of things. So, many experts predict smart contracts will become an important role in the future for most of the business and management sectors. However, nothing is perfect. Smart contracts still have limitations, especially when the current laws do not have enough time and data to control its limitations. On the other hand, with Vietnam’s abundant human resources, Smart Contracts also makes a lot of people lose their jobs.

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