

Reflections on the Possibility of Replacing the Registration System with a Blockchain System

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[Abstract]

Currently, information technologies such as blockchain and metaverse are being innovatively developed in Korea and around the world. The government has defined the innovation of these cyber-related technologies as the fourth industrial revolution and presented the Digital New Deal as an important policy of the Korean version of the New Deal, and is implementing various policies and systems related to it. This situation is expected to affect the development of the real estate registration system in Korea. Moreover, as the Supreme Court is currently promoting the transition to a future registration system, it is necessary to examine whether blockchain technology, which allows parties to exchange value without a third party guaranteeing the transaction, can be used in the real estate registration system.

In order to secure the credibility of the real estate registration as electronic information under the registration system that introduces electronic registration and blockchain system, the transparency of transaction identification and real estate registration details should also be recorded using the blockchain system as a way to prevent such crimes and legal disputes. As a solution, it is worth considering how to improve the reliability of transaction identification, recognize the actual examination rights of the registrar in the foundation system of the real estate register, and increase public trust by going through the notarization stage when recording rights such as real rights, and consider how to introduce a blockchain system at this stage to ensure integrity and reliability. In the stage before the current real estate registration and study system is converted to a blockchain system, the clarity, transparency, and consistency of the real estate registration entries with the actual real estate must be established so that the real estate study can finally be recognized as authoritative, thereby ensuring the trust of the transaction parties to the real estate study system that has adopted the blockchain system in the future, and bringing us closer to the goal of real estate transactions in the form of smart contracts between the parties who have trusted it based on transparency and integrity of real estate study in the real estate transaction market.

▶ **Key words:** Blockchain System, Smart Contracts, The Real Estate Study system,
The credibility of real estate registry, The future registration system

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 - Received: 2024. 05. 28, Revised: 2024. 07. 08, Accepted: 2024. 07. 09.

[요 약]

전자등기 및 블록체인시스템을 도입한 등기시스템 하에서 해당 전자정보로서의 부동산등기의 공신력을 확보하려면 이들 범죄 및 법률분쟁을 방지하는 방안으로 거래자의 신분증명 및 부동산 등기 기재내용의 투명성을 마련하는 방법에 또한 블록체인 시스템을 이용하여 기록되는 방법으로 진행되어야 한다. 그 방안으로 거래자의 신분증명에 관한 신뢰성을 높이는 방법과 부동산등기부의 기재단계에서 등기관의 실질적 심사권을 인정하고 물권 등 권리사항의 기재시 공증단계를 거치는 등의 공신력 제고 방안을 검토하고 이 단계에서도 블록체인 시스템을 도입하여 무결성 및 신뢰성을 확보하는 방법을 고려해 봄직하다. 현행 부동산 등기 등 공부시스템이 블록체인 시스템으로 전환되기 전 단계에서 부동산 등기 기재사항의 명확성과 투명성, 실제 부동산과의 정합성이 갖추어져야 최종적으로는 부동산 공부에 관한 공신력이 인정될 수 있고 이로써 향후 블록체인시스템을 도입한 부동산공부시스템에 대하여 거래당사자의 신뢰를 담보하고 부동산 거래시장에서 부동산 공부에 대한 투명성과 무결성바탕으로 이를 신뢰한 당사자 간에 최종적으로는 스마트계약의 형태로 부동산거래가 이루어지는 목표에 가까워질 수 있게 될 것이다.

▶ **주제어:** 블록체인시스템, 스마트계약, 부동산공부시스템, 부동산등기의 공신력, 미래등기시스템

I. Introduction

In 2009, a person using the pseudonym Satoshi Nakamoto developed the Bitcoin blockchain and started mining Bitcoin[1]. Blockchain, which began to be applied, is expected to be applied in a wide range of fields, including public and private services (registration, records, voting), finance, logistics (distribution), security, trade, medical care, energy, real estate, and intellectual property rights in the public and private sectors, including cryptocurrency. There are still limits to its widespread application[2] due to scalability issues, but it is an undeniable fact that blockchain will be used in our daily lives. Areas where blockchain can be applied include transactions and registration through smart contracts[3]. Therefore, registration of real estate transactions is a representative field where blockchain can be utilized and provide benefits.

First, blockchain technology can be used for contracts for transfer and acquisition of real estate, establishment of mortgage based on real estate collateral, and lease of real estate. In particular, smart contracts enable transactions by establishing trust even between parties who do not

have trust, thus enabling the conclusion and implementation of real estate contracts between parties who do not know each other.

Second, an area where blockchain can play an important role in real estate is through asset-based tokens, which can greatly increase the liquidity of real estate. Real estate is the least liquid asset, so trading real estate takes a considerable amount of time and requires the involvement of intermediaries.

Third, blockchain technology can fulfill the role of the current real estate registry. The real estate register functions to publicize the ownership of the property, and blockchain, which ensures transparency, performs an important function that can replace the real estate register.

Considering that smart contracts that can be used for real estate are difficult to utilize immediately due to scalability issues, and that asset-based securities that can be issued for non-movable assets require a long period of time for legal and institutional problems to be resolved, real estate registration can be said to be the field where blockchain can be most easily utilized.

The introduction of blockchain technology in the field of real estate transactions is being tried in various countries, and real estate accounts for the largest proportion of personal and national assets in most countries, and it is especially necessary to secure the reliability of transactions with safety measures. The introduction of a blockchain system for real estate requires a cautious and careful approach, and first of all, it is necessary to introduce the Korea Real Estate Administration Intelligence System to record real estate assets in a distributed ledger, and then secure enough reliability to be protected if the transaction party trusts the content and makes a transaction based on it. The next step will be the creation of a smart contract-based real estate trading platform, which will enable asset trading on a global scale.

Regarding what is a blockchain, the law defines the term blockchain but does not define the concept. However, some of the legislative bills currently pending in the National Assembly may define blockchain. In addition, some local government ordinances define blockchain technology as a technology for implementing a distributed trust infrastructure designed to make it difficult for anyone to manipulate information and values by verifying, storing, and executing them through a decentralized network. Taken together, blockchain is a decentralized way of recording information. On the other hand, there are two types of blockchains: a free-participation blockchain, which is a distributed virtual currency blockchain based on the Bitcoin system and allows anyone to become a subject of mining without permission, and a permissioned blockchain, which is a case where nodes, which are the basic unit of information with the authority to confirm transactions and create blocks, are established by mixing nodes that have been authorized by an authorizing body with ordinary nodes that are simply recognized as real. If we look at the applicability of blockchain, a decentralized way of recording information, in the socio-economic field,

according to the development stages of blockchain, Blockchain 1.0 decentralizes financial transactions including virtual currencies, and Blockchain 2.0 enables asset transactions such as real estate, agricultural products, and minerals to be conducted by smart contracts. Blockchain 3.0 refers to the blockchainization of social infrastructure and daily life, which means the digitalization of the Internet of Things, healthcare, and government public services through blockchain.

Korea has entered the Blockchain 3.0 era. Decentralization and smart contracts are being implemented in the financial transaction sector, and social infrastructure and daily life are gradually entering the blockchainization stage. At this point, the Supreme Court recently pushed for the transition to the future registration system, and it is necessary to examine whether blockchain can be utilized in this transition[5].

Previous studies have focused on smart contract system, principle and application research, real estate transaction system, and application technology to improve reliability, but this study is differentiated from existing papers by proposing a plan to secure the public trust of the real estate register by using the blockchain system for real estate transactions and emphasizing the need to secure the authenticity of the real estate register.[6]

II. Benefits of a Blockchain-based Registry

Table 1. Blockchain definitions in pending legislation in the National Assembly

Pending Bills	Article 2 (Definitions) content
(2114037) An Act to Establish the Blockchain Promotion Agency	'Blockchain' refers to an algorithm that bundles a large number of transaction records to form a block, connects multiple blocks like a chain, and copies and distributedly stores them among a large number of people, and is defined by presidential decree.

(2111938) An Act to Promote the Development and Industry of Blockchain Technology	'Blockchain technology' refers to a technology that allows network participants to record, verify, manage, and share information generated by using decentralized cryptographic technology in an information and communication network (an information and communication network (pursuant to Article 2, Paragraph 1, Item 1 of the Act on Promotion of Information and Communication Utilization and Information Protection).
(2111866) An Act to Promote the Blockchain Industry	'Blockchain technology' is a distributed ledger technology that records and manages transaction information through a distributed computer network rather than a centralized server of a specific organization.
(2104109) An Act to Promote and Foster Blockchain Technology	'Blockchain technology' refers to a technology that implements a ledger in which participants jointly record and manage information on a distributed network rather than a centralized server, so that no one can arbitrarily modify information and anyone can view the results of changes to the information.

It is thought that the biggest benefit of applying blockchain technology to real estate registration is that it can save time and costs for registration by registering along with the real estate contract, and restore the credibility of the real estate registry by strengthening traceability of real estate transaction history and preventing data falsification by distributed ledger technology. Unlike Germany, Korea's real estate registry does not recognize the authenticity of the registration, so third parties who transacted with the registered owner are not protected, but according to the real estate registration system based on blockchain, the authenticity of the registration can be guaranteed by eliminating the risk of data forgery, double-dealing in advance due to the approval of network participants (nodes) and the distribution of blocks (transaction information). In addition, the application of blockchain technology also contributes to administrative convenience. First, citizens will be able to apply for registration from anywhere in the country or the world, regardless of location, which will improve the convenience of the

registration process[7] second, as the registration process is recorded by distributed ledger technology using blockchain technology, it will be possible to prevent inconsistencies in the ledger due to the dual system of registration and ledger:[8] third, various real estate information that cannot be analyzed by the current real estate registration system can be utilized in real time by applying blockchain technology, which will meet various demands for real estate transactions requested by public administration, private finance, and market transactions. Finally, blockchain technology is expected to be effective in newly registering land ownership in North Korea after reunification. This is because the introduction of a blockchain real estate registration system can be established without social friction with the existing system in developing countries that are experiencing economic and social difficulties due to the lack of an asset specification system, and can be seen in the case of Garner and Honduras, where there is no real estate registry.

In short, having a blockchain-based real estate registration system will increase the efficiency of the real estate registration system and provide a land registration system with integrity, transparency, and reliability of registration contents through the distributed ledger recording method, which in turn will contribute to the protection of individual property rights and the safety and smoothness of real estate transactions. On the other hand, there are still challenges to overcome when introducing a blockchain-based real estate registration system, such as technical support for processing huge amounts of information and cost issues.

Recently, several countries are promoting projects to implement real estate registration on the blockchain network. The reasons for promoting blockchain-based real estate registration systems in various countries are mainly to secure the procedural and content authenticity of real estate registration and to reduce the cost of registration

applications. Currently, the real estate registration process in Korea is divided into the real estate registration application process, the real estate registration application process using electronic standard forms, and the real estate electronic registration application process. Looking at the relationship between these procedures and blockchain, it is unlikely that blockchain will be directly linked to the real estate registration application process, but it is possible that blockchain will be linked to the electronic standard form, and it is likely that blockchain will be linked to the electronic real estate registration application process. In particular, since the real estate registration process is carried out by a computerized information processing organization, it is most likely to be linked to blockchain, which is a ledger implementation method that records and manages information on a distributed network. In light of this, if a blockchain-based real estate registration application is implemented, information on the physical and right relationships of real estate will be registered, published, and managed on the blockchain, securing the authenticity of real estate transactions and maintaining the stability of the ecosystem without the need for a central administrator for the real estate registration system.

A blockchain-based real estate registry system can offer a number of benefits, including efficiency, reliability, and transparency, but it requires work to address technical, legal, and economic challenges. This should be enhanced to improve the real estate registration system, protect personal property rights, and ensure security for smooth real estate transactions. First, from a technology development and investment perspective, we need to continue to research and invest in technology that can efficiently handle the vast amount of information. This will play an important role in improving the scalability and performance of blockchain technology. Secondly, in terms of cost reduction measures, it is necessary to explore various ways to reduce the cost of

introducing and operating blockchain systems. For example, public-private partnership models can be used to share the cost of initial adoption. Third, in terms of legal and institutional arrangements, a legal and institutional framework should be put in place to support a blockchain-based real estate registration system. This will require amendments to relevant laws and the introduction of new regulatory frameworks. Fourth, from an education and awareness perspective, relevant stakeholders should be educated on the benefits of blockchain technology and how it can be used, thereby raising awareness of the technology. This will help reduce resistance to new system adoption and increase user acceptance.

III. Securing the Credibility of Real Estate Registry using Blockchain System

The introduction of the real estate study system by the blockchain system is the first step in the introduction of the blockchain system. After the verification of the Korea Real Estate Administration Intelligence System through

the distributed ledger system, if the physical rights to the Korea Real Estate Administration Intelligence System have been verified,

transactions through smart contracts will be carried out based on this. Eventually, the blockchain system for real estate registration should be prepared so that smart contracts based on blockchain can be executed in the future.

1. The Credibility of Real Estate Registry

In Korea, real estate registration applications are now computerized and can be made online. With the introduction of online registration processing, the scope and method of registration examination, which is the authority of the registrar, has been significantly simplified, but its importance has increased. The authority of the registrar to

examine the registration is an important prerequisite for recognizing the credibility of the registration, and the authority of the registrar is divided into formal and substantive examination depending on the scope of the examination. The current Real Estate Registration Act takes a formalistic approach to the registration review rights of the registrar, which is the intermediary between the legal relationship under substantive law and the registration procedure, so only the formal review right is recognized by the registrar[9]. Therefore, it is virtually impossible for the registrar to confirm whether an application for registration is made with false registration certificate authentication information or whether an application for registration is made by falsifying the contents of documents such as the seal certificate of the person liable for registration or registration information as the registrar only reviews the legality of the registration procedure. The reason why the Korean Civil Code is formalistic and does not recognize the public authority of a registration is that the Civil Code was not prepared to recognize the public authority of a registration at the time of its enactment. It is necessary to match the registration and actual management relationship in advance and protect the true right holder who loses the right after the recognition of public confidence. In order to recognize the public trust, it is necessary to match the actual management relationship with the registration in advance and to protect the true right holder who loses his rights due to the recognition of the credibility afterwards, but these measures were not in place, so in order to recognize the credibility of the register in the future, there should be a system of compensation for the losses incurred at the expense of the true right holder, the granting of substantive examination rights to the registering official as a preventive measure, the unification of the register and the ledger, and a procedure for challenging or contesting the register when the true right holder recognizes that the register and

the true right relationship are inconsistent[10].

In this way, granting only a formal inspection right to the registrar will not only make it difficult to prevent fraudulent registrations, but if the current real estate register is recognized as authoritative, the person who engaged in a transaction in reliance on the contents of the real estate register, such as the disclosed rights relationship, will be protected, and the state will exercise its right of redress through a lawsuit for damages against the person who was not the true owner[11].

The government also pointed out that the existing paper certificates are easily used for falsification, causing confusion in the order of real estate transactions and reducing the credibility of the country's public registers. There are 18 types of real estate-related certificates, including land registers, real estate registration entry certificates, and building registers[12].

Korea does not yet have an active way to verify the actual truth about the real estate transaction process and its contents. In other words, Korean law does not recognize the public authority of registration and only recognizes the presumptive authority of registration, which means that it only recognizes the formal presumptive authority of the contents of the registration as the registrar has no real power to examine the application documents for registration and no notarization system has been established to verify the reliability of the information proving the cause of registration[13]. Therefore, currently our law does not recognize the public authority of the register, but only the presumptive authority of the register, which only recognizes the formal presumption of the contents of the register. Once the information is installed into the blockchain, it cannot be changed, and transparency is recognized accordingly, but the lack of reliability of rights and information on the contents recorded by denying the official status in the current register seems to be the biggest obstacle to applying blockchain technology to real

estate transactions and registration.

2. The Necessity to Ensure the Authenticity of Real Estate Registries

The problem with identity verification in current e-registry transactions is that it is difficult to prevent the use of fake IDs or identification documents. In addition, the current legal system for identification in the electronic registration system includes ① the method of identification in the Real Estate Registration Act when there is no registration certificate (Article 51)[14], ② the method of identification of lawyers and attorneys in accordance with Supreme Court precedents (Article 25), ③ the method of identification of a lawyer's authorized representative in accordance with the Lawyers Act (Article 25), and ④ the method of verifying the identity of the person in charge (registrar) when registering a user in accordance with the Real Estate Registration Rules based on the identification card presented by the applicant (Article 68, Regulation No. 1601-3, Business Handling Guidelines for User Registration Procedures). However, these systems have the limitation of not being able to verify the fact of ID forgery in real time because the ID presented by the applicant is verified by the verifier (registrar, etc.) visually without checking the authenticity of the ID by the relevant organization[15].

These problems with the registration process can lead to a number of crimes related to registration. Among the real estate crimes in which the registered owner suffers losses, there are crimes such as forging and using the seller's identity card, identity laundering and misappropriation of the identity of the same name in the register, and proxy fraud that abuses the identity cards of the registered owner's family members. In addition to the use of identification and qualification, crimes are also committed using forgery and alteration of the recorded registration certificate, as the electronic registration contents are printed on paper and handed to the counterparty. Other

crimes include loan and rental deposit fraud, which takes advantage of the time it takes for entries in real estate registries to be reflected in the registry, and these crimes account for a significant portion of real estate crimes. The application of blockchain technology to real estate registries will naturally have these problems as well.

A registered cause of action is a cause of action in law that justifies a party to hold a registered right, also known as an interest in real property. Therefore, if there is a defect in the cause of registration, such as a defect or non-existence, the registration is subject to expungement as a registration with no cause. The authenticity of a registration refers to the disclosure of rights in substantive law in the register. In order to ensure the authenticity of the registration, the examination of the registrar is important during the registration process, and it is necessary to consider how the content and process of real estate transactions can be truthfully applied and disclosed. The ideal way to do this would be to have the information recorded on the blockchain system for real estate after the actual examination of the registrant. The information on the blockchain is permanent and recorded on all nodes, so even if it is changed or corrected at a later stage, it can be recorded. To this end, it is necessary to recognize the authenticity of real estate registrations by introducing a notarization system in which a notary public, who is a legal professional, is involved in the real estate transaction stage to certify the cause of registration so that the valid transaction can be registered as it is. The benefits of blockchain for clarity and transparency of real estate registrations will be meaningless if the blockchain does not contain accurate information about real estate.

In Sweden and Georgia, where land registries are well developed and digitized, private blockchains are being used as a complementary technology to support existing registration systems while maintaining public involvement. In addition to land

surveying and cadastral status services, Ukraine has introduced a decentralized electronic real estate auction system. In Estonia, it has been introduced into the e-government building system since 2008, completing the overall blockchain public service system for government digital assets [16].

IV. Possibility of Substitution with Blockchain-based Registration System

The computerization of corporate registration affairs has been continuously developed since 1993 with the aim of improving the efficiency of corporate registration affairs, improving the quality of public services, and creating a foundation for linking with the national institutional computer network. Meanwhile, the future registration system, which began in 2020, consists of three pillars: building a registration system for intelligent business processing, building according to the advancement of registration record management, and building an open registration service. The computerization of registration affairs used to be the centerpiece of the registration system, but now it aims to reorganize and reconstruct the entire registration system by introducing the latest information technology such as artificial intelligence and big data. In this situation, it is necessary to consider whether blockchain can be connected to the real estate registration system.

Recently, the Supreme Court discussed the introduction of blockchain to prevent tampering with real estate registers. If adopted, it will help prevent fraud as traders will be able to verify real-time registration records. The Administrative Office of the Courts recently received a report from blockchain company 'G-Crypto' on the introduction of new systems such as blockchain to strengthen the protection of registration information. The report includes a plan to introduce a 'public blockchain' to overcome the limitations of the existing document tampering prevention system

and prevent various real estate frauds. Public blockchains contrast with 'private blockchains' by making data and transactions publicly available to the public. With blockchain, information can be changed by anyone in real time through a decentralized network rather than a central server, and cannot be tampered with. In particular, it can improve the problem of difficulty in verifying modifications after issuance, caused as the tampering program can only verify the authenticity of a document at the time of issuance. In other words, the introduction of blockchain to prevent lease fraud, caused by time lag, has been discussed in earnest. Starting in 2025, the government presents a three-year roadmap, with Phase 1 (2025), being the development of a plan to improve the legal system, Phase 2 (2026), being the construction of the system, and Phase 3 (2027), being the application and diffusion of the system[17].

Since Korea's real estate registration system has been operating a long-term technical and institutional device based on information technology, and the Supreme Court is currently promoting a project to build a future registration system, a lot of social costs will be incurred, if a blockchain-based real estate registration system is rapidly promoted while not considered in the construction of the future registration system. In addition, it will be difficult to completely abolish real estate registries when building a blockchain-based real estate registration system. However, if a blockchain-based real estate registry is established to a certain extent, it will be possible to abolish the jurisdiction of real estate registries and establish an integrated real estate registry system.

On the other hand, when building a blockchain-based real estate registration system, it is necessary to build a blockchain-based real estate transaction system. In June 2020, the government (Ministry of Land, Infrastructure, and Transport) announced that it will complete the construction of a blockchain-based real estate transaction platform

by 2024[14]. In it, the Ministry of Land, Infrastructure, and Transport said it has launched an information strategic planning project to build a 'blockchain-based real estate transaction platform' by 2024. The blockchain platform can also be utilized as a device for non-face-to-face real estate transactions in the post-corona era. Since the real estate research of the property to be transacted is automatically checked by each organization in real time, it reduces the need to visit banks to submit documents. Real estate research refers to the full certificate of registration, land register, building information, land use plan, comprehensive real estate certificate, etc. Real estate transactions are conducted in the order of property inspection, contract signing, loan application, and registration change. In the process, real estate studies that required real estate agents, banks, and lawyers had to be issued and confirmed in paper form. It was exposed to the risk of criminal tampering during the transaction process as it was distributed as a paper document. By utilizing blockchain, data can be shared securely in real time without the risk of forgery. However, even if the blockchain-based real estate transaction platform is completed, the existing transaction system will not be completely converted at once, and it is necessary to enable automatic creation of simple documents through computerization and unification of document types for documents related to real estate registration applications for linking and linking the blockchain-based real estate transaction system and the blockchain-based real estate registration system.

In addition, it is necessary to secure the authenticity of the entity of the blockchain-based real estate registration system and the authenticity of the registration contents. In addition, it is necessary to consider the problems of the registration system depending on the type of blockchain. In other words, when applying free participatory blockchain to implement land registration, it is advantageous to track changes in

land rights relationships, but it is difficult to prove the authenticity of the subject of legal actions. On the other hand, in the case of a permissioned blockchain, the scope of legal effect is likely to be determined by the trust in the entity that established the certificate authority, and since it is the type of blockchain that can be used in the short term to establish governance related to real estate registration, a permissioned blockchain is appropriate in that it can utilize the current real estate registration system and it is easy to correct false registrations. Finally, it is necessary to consider the various stakeholders that are formed based on the current real estate registration system, i.e., how to organize the governance structure of stakeholders under a blockchain-based real estate registration system.

The adoption of a blockchain-based real estate registry system has many advantages, but technical, legal, and institutional obstacles must be addressed to make it real. Phased adoption, legal frameworks, and technological improvements can increase the reliability and efficiency of blockchain-based systems, which will require a transformation of the real estate registration system. For example, it is important to facilitate integration with blockchain systems in terms of standardizing the documents and procedures used in real estate transactions and registration processes. In addition, a blockchain-based real estate registration system will be piloted in certain regions. It is very important that technical and institutional issues are identified in advance and suggested for improvement, and important transactions are recorded on a public blockchain so that all participants can see them. In addition, scalability issues in blockchain networks can cause difficulties in processing large amounts of data, so it is important to introduce scalability technologies such as sharding to address this.

The main technical approaches to addressing scalability issues include sharding and sidechains, the Lightning Network, and optimization of forks and consensus algorithms. These technical

solutions include partitioning the blockchain network or processing transactions off-chain to improve performance.

Non-technical solutions emphasize regulation and standardization, community cooperation, and industry collaboration. They contribute to maintaining the stability and reliability of the blockchain ecosystem and foster cooperation among various stakeholders to address scalability challenges.

V. Conclusions

Currently, information technologies such as blockchain and metaverse are being innovatively developed in Korea and around the world. The government has defined the innovation of these cyber-related technologies as the fourth industrial revolution and presented the Digital New Deal as an important policy of the Korean version of the New Deal, and is implementing various policies and systems related to it. This situation is expected to affect the development of the Korea Real Estate Administration Intelligence System in Korea. Moreover, as the Supreme Court is currently promoting the transition to a future registration system, it is necessary to examine whether blockchain technology, which allows parties to exchange value without a third party guaranteeing the transaction, can be used in the Korea Real Estate Administration Intelligence System

In order to secure the credibility of the Korea Real Estate Administration Intelligence System as electronic information under the registration system that introduces electronic registration and blockchain system, the transparency of transaction identification and real estate registration details should also be recorded using the blockchain system as a way to prevent such crimes and legal disputes. As a solution, it is worth considering how to improve the reliability of transaction identification, recognize the actual examination

rights of the registrar in the foundation system of the real estate register, and increase public trust by going through the notarization stage when recording rights such as real rights, and consider how to introduce a blockchain system at this stage to ensure integrity and reliability. In the stage before the current real estate registration and study system is converted to a blockchain system, the clarity, transparency, and consistency of the real estate registration entries with the actual real estate must be established so that the real estate study can finally be recognized as authoritative, thereby ensuring the trust of the transaction parties to the real estate study system that has adopted the blockchain system in the future, and bringing us closer to the goal of real estate transactions in the form of smart contracts between the parties who have trusted it based on transparency and integrity of real estate study in the real estate transaction market.

While smart contracts are 'entirely electronic in nature,' not every step of a legal contract is electronic, so not all smart contracts will eventually leave no default issues. It is important to distinguish that automated fulfillment means that the program conditioned by the code is executed according to the conditions already set, which is different from fulfillment of the obligation. In the case of incomplete or defective performance in a smart contract, the question is how to deal with the issue of default liability or defective collateral liability. From the perspective of traditional contract law, it is an issue that does not need to be performed or the other party cannot claim performance. Under civil law, the transfer of real estate ownership requires a purchase and sale contract between the two parties and registration. The question is how much of the real-law relationships related to land transactions can be represented on the blockchain, and mandating transactions on the blockchain as catering contracts will be a way to match real-life relationships with blockchain records as much as possible. However, the problem with using a real

estate sales contract as a catering contract is that it does not comply with the general principle of Korean civil law, which is based on the principle of a successful contract. As a way to realize real estate transactions through smart contracts, we can consider the smart assetization of real estate, blockchainization of real estate registration, and simplification of real estate transactions through civil law revision.

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