

# The Legal Framework of Real Estate Transactions in the Digital Era

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## Abstract

With the rapid development of digital technology, the digital transaction model has gradually permeated various industries, including the real estate market. However, the widespread application of the digital transaction model has also brought about a series of legal issues, especially in terms of real estate legal relationships, such as the diversification of transaction models, the pluralization of transaction subjects, the automation of transaction processes, and the transparency of transaction information. These issues will have an impact on the legal relationships of real estate. Moreover, the digital transaction model has become the main transaction model in the real estate market, including electronic contracts, online payments, information disclosure, and electronic registration. This new type of transaction model brings convenience and efficiency, but there are also some legal issues that need to be improved in legislation and strengthened in supervision.

## Keywords

Digitalization; Online Transaction Model; Real Estate Law.

## 1. Introduction

As digital technology has developed rapidly, the digital transaction model has gradually permeated various industries, including the real estate market. Digitalization is the process of transforming complex and variable information into measurable digital data, and then establishing appropriate digital models with these data, converting them into a series of binary codes, and introducing them into computers for unified processing. The digital transaction model in the real estate market achieves information sharing, transaction transparency, and efficient and convenient transactions through technologies such as the Internet, big data, and blockchain. However, the widespread application of the digital transaction model has also brought about a series of legal issues, especially in terms of real estate legal relationships.

## 2. Connotation and Characteristics of Real Estate Legal Relationships under the Digital Transaction Model

### 2.1. Connotation of Real Estate Legal Relationships under the Digital Transaction Model

The real estate legal relationships under the digital transaction model refer to the legal relationships that arise from real estate transaction activities carried out by real estate transaction subjects through technologies such as the Internet, big data, and blockchain, supported by digital technology.[2] This legal relationship covers a series of legal relationships between multiple subjects, including the buyer and seller, intermediary agencies, and payment platforms, including contractual legal relationships, property rights legal relationships, and payment legal relationships.

Firstly, the contractual legal relationship is the foundation of the real estate legal relationship under the digital transaction model. When conducting real estate transactions, the buyer and seller need to sign an electronic contract through an Internet platform or mobile application, clearly defining the rights, obligations, and responsibilities of both parties. The legal effect of the electronic contract is the same as that of a written contract. Secondly, the property rights legal relationship is also an important component of the real estate legal relationship under the digital transaction model. Under the digital transaction model, the transfer and registration of property rights also need to be carried out electronically. Finally, the payment legal relationship is another important aspect of the real estate legal relationship under the digital transaction model. [3]Under the digital transaction model, the payment of the property price is usually completed through an online payment platform, which involves sensitive information such as bank accounts and requires ensuring the security of the payment platform.

In summary, the real estate legal relationship under the digital transaction model is formed under the support of digital technology, involving contractual legal relationships, property rights legal relationships, and payment legal relationships between multiple subjects such as the buyer and seller, intermediary agencies, and payment platforms. To ensure the fairness, transparency, and security of digital transactions, it is necessary to strengthen the improvement and supervision of relevant laws and regulations to ensure the legality and security of electronic contracts, electronic registration, and online payments.

### 2.1.1. Characteristics of Real Estate Legal Relationships under the Digital Transaction Model

**Table 1.** Representative Models of the Digital Real Estate Transaction Domain

	Beike& Tencent	Alibaba&E-House	MLS	Fangdd
Profit distribution method	Role division and commission sharing	Only 3% Service Charge	Search Service Fee	Solution Service Fee
Value creation model	ACN (Brokerage Cooperation Network) standardizes and modularizes the brokerage service process, accurately dividing the transaction process of a house into nodes, achieving cross city and cross brand cooperation between real estate listings, customers, and brokers	The real estate transaction cooperation mechanism focuses on B-end entities such as developers and channel brokers, empowers the service value of each transaction entity, and constructs a digital service cooperation mechanism with the participation of real estate providers, customers, and transaction service providers through decentralization	Incorporate different real estate brokerage companies into a franchise system, where members of the system have their housing listings and purchase information consolidated in a shared database on a website, providing search services for these shared data	Provide SaaS solutions for real estate brokers, help brokers establish connections with important business resources, and easily conduct online business
The agent takes on the role	Brokers of the same or different brands, based on ACN division of labor; act as property registrars, key holders, property guides, and customer transactions to collaborate and complete property transactions, and receive commissions according to division of labor	By participating in collaborative payment fees according to smart contracts, you can obtain all the performance of the housing source end	A real estate agent is responsible for entrusting, taking photos, pricing, hiring, negotiating, and all other actions, and obtaining all the performance of the real estate market	Payment scheme service fee to obtain performance on all housing sources

### 2.1.2. Diversification of Trading Entities

The digital transaction model breaks the geographical limitations of traditional real estate transaction models, allowing real estate transactions to break the geographical limitations of transaction entities. [Cui Ji, Li Xiaoling. A New Stage of Digital Development in Real Estate: Paths

and Choices for Real Estate Enterprises [J]. *China Real Estate*, 2020 (36).] The digital transaction model breaks the geographical limitations of traditional real estate transaction models, making real estate transaction entities more diversified. [Xu Shasha. *Research on the Transformation of Real Estate Marketing Models under the Digital Background* [J]. *China Collective Economy*, 2023 (13): 54-57.] Traditional real estate transaction models mainly focus on offline transactions, with real estate developers, real estate brokerage firms, and individual homebuyers as the main transaction subjects. In the digital transaction mode, the application of Internet, big data, blockchain and other technologies makes real estate transactions more convenient and efficient, and also makes real estate transaction subjects more diversified. Firstly, the digital transaction model breaks geographical restrictions, allowing real estate transaction entities to no longer be limited to specific regions. Under the traditional real estate transaction model, real estate transactions mainly occur in the local market. Due to information asymmetry and other reasons, homebuyers from other regions often face difficulties in obtaining information and high transaction costs. The digital transaction mode makes the real estate transaction information open and transparent through Internet and other technologies, so that buyers from other places can also easily obtain real estate transaction information and participate in real estate transactions. Secondly, the digital transaction model reduces transaction costs, making the real estate transaction subject more extensive. In the traditional real estate transaction model, real estate transactions require a large amount of paper contract signing, property evaluation, loan approval, and other work, which brings high transaction costs to the transaction subjects. The digital transaction model automates the transaction process through technologies such as electronic contracts and smart contracts, reducing the participation of trading entities and lowering transaction costs. This enables more small and medium-sized real estate developers, real estate brokerage firms, and individual investors to participate in real estate transactions. In addition, digital transaction models have also given rise to new real estate transaction entities. For example, new entities such as real estate intermediary platforms and real estate transaction data analysis institutions are also involved in real estate transactions. These new entities provide information, technology, services and other support for real estate transactions, and also provide new impetus for the diversification of real estate transaction entities. More diversified entities include real estate developers, real estate brokerage firms, real estate intermediary platforms, and individual homebuyers.

### **2.1.3. Diversified Trading Methods**

The digital transaction model makes real estate transactions more diversified, including online transactions, offline transactions, and integrated online and offline transactions. [Xu Shasha. *Research on the Transformation of Real Estate Marketing Models under the Digital Background* [J]. *China Collective Economy*, 2023 (13): 54-57.] The real estate transaction mode under the digital transaction mode is no longer the traditional single line offline transaction mode, but presents more diverse characteristics. With the rapid development of Internet technology and mobile payment, online transaction, offline transaction, online offline integrated transaction and other transaction methods have gradually become popular. Online transaction refers to the completion of real estate transactions through the Internet platform, including online information query, online booking house viewing, online contract signing, online payment and other links. Online transactions have the advantages of convenience, speed, time and cost savings, as well as providing more comprehensive housing information and transaction processes, allowing buyers and sellers to have a more transparent understanding of all aspects of the transaction. Offline transactions refer to completing transactions under the guidance of traditional real estate agents or brokers, including viewing properties, negotiating, and signing contracts. Although offline transactions are relatively cumbersome, they also have a certain degree of security and credibility. Both buyers and sellers can establish a more trusting relationship through face-to-face communication and negotiation. The integration of online and

offline transactions is a combination of online and offline transactions, where buyers and sellers can make online inquiries and reservations, and then conduct actual offline transactions.[4] This method can not only enjoy the convenience and speed of online transactions, but also ensure the authenticity and credibility of offline transactions. In short, the diversification of real estate transaction methods under the digital transaction model provides more choices for both buyers and sellers. However, different trading methods also have different risks and problems, and it is necessary to strengthen supervision and improve relevant laws and regulations to ensure fairness, transparency, and transparency in transactions.

#### **2.1.4. Automation of Transaction Process**

The digital transaction model makes the real estate transaction process more automated, reduces the participation of transaction subjects, and improves transaction efficiency. The real estate transaction process under the digital transaction mode can be processed more efficiently and conveniently through automation technology. The automation of transaction processes includes multiple aspects such as information automation, process automation, and payment automation.

Information automation refers to the automatic query and display of housing information through information technology. Buyers can quickly query the house information through the Internet platform or mobile applications, including the size, price, house type, geographical location, etc. of the house. In addition, automatic updating and maintenance of housing information can be achieved through information automation technology, reducing the possibility of manual intervention and errors. Process automation refers to the automation of transaction processes through automation technology and process management software. For example, process automation technologies such as contract signing, payment, and transfer can reduce the likelihood of manual intervention and errors, and improve transaction efficiency. Payment automation refers to the automatic payment and settlement of house payments through electronic payment technology. Buyers and sellers can achieve automated payment of house payments through electronic banking or third-party payment platforms, avoiding the inconvenience and risks of traditional cash payments.

#### **2.1.5. Transparency of Transaction Information**

The digital transaction model makes real estate transaction information more transparent, which is beneficial for transaction entities to make more rational decisions. In the traditional real estate transaction model, the information of real estate transactions is often not transparent enough, which brings certain risks to the transaction subjects. For example, the trading entity may not be able to accurately understand the actual situation of the house, or may not be able to timely understand the real estate market situation. Digital transaction mode makes real estate transaction information open and transparent through Internet, big data, blockchain and other technologies. For example, real estate developers can publish housing information through online platforms, including the area, price, location, and surrounding supporting facilities of the house. Real estate trading platforms can use big data technology to analyze the real estate market situation and provide reference for trading entities. Blockchain technology can ensure the security and reliability of real estate transaction information. The transparency of real estate transaction information is beneficial for transaction entities to make more rational decisions. For example, the trading entity can understand the actual situation of the house by querying the house information; By analyzing the real estate market situation, determine the value of the house; By comparing the prices of different housing options, find the most suitable one.

### 3. The Impact of Real Estate Legal Relations under Digital Transaction Models

The legal relationships in real estate under the digital transaction model have had a significant impact on traditional legal relationships in real estate. Traditional real estate legal relationships mainly rely on paper contracts, with relatively complex transaction processes and low transparency of transaction information. Under the digital transaction model, the legal relationship of real estate is mainly based on electronic contracts, with more automated transaction processes and more transparent transaction information.

With the continuous development and application of digital technology, the real estate transaction mode has also undergone profound changes. The digital trading model has gradually become one of the main trading methods in the real estate market. This new transaction model not only brings advantages of efficiency, convenience, and safety, but also has a profound impact on traditional real estate legal relationships. This includes electronic contracts, online disclosure, digital ownership certificates, digital trading platforms, new dispute resolution mechanisms, and their impact on market order and government regulation.

#### 3.1. Electronic Contracts

The digital transaction model has also brought about changes in the way real estate contracts are signed. Electronic contracts have become the main form of contract in real estate transactions. Electronic contracts are contracts signed electronically, including email contracts, network contracts, electronic signature contracts, etc. This contract signing method is different from traditional paper contracts, which also brings some new legal issues.

The authenticity and validity of electronic contracts are the core issues in the legal framework of electronic contracts. Due to the lack of physical traces of paper contracts during the signing process of electronic contracts, it is difficult to prove the signing process and content of the contract. [5]To solve this problem, some technical measures need to be taken to ensure the authenticity and effectiveness of electronic contracts. For example, techniques such as digital signatures and timestamps can be used to verify the authenticity and validity of electronic contracts. In addition, the authenticity and validity of an electronic contract can also be proven through the testimony of both parties to the contract, chat records, and other means.

The place and time of signing an electronic contract are also important issues in the legal framework of electronic contracts. Due to the fact that electronic contracts are signed online, it is difficult to determine the specific signing location and time. To solve this problem, it is necessary to refer to relevant legal provisions and judicial interpretations, and make judgments based on the actual situation of electronic contracts. For example, the location and time of signing an electronic contract can be inferred based on information such as network IP address and electronic signature authentication.

The resolution of disputes in electronic contracts is also an important issue in the legal framework of electronic contracts. Due to the difficulty in proving the signing process and content of electronic contracts, dispute resolution is also challenging. To solve this problem, it is necessary to establish and improve corresponding electronic contract dispute resolution mechanisms, including arbitration, litigation, etc. In addition, electronic contract disputes can also be resolved through negotiation, mediation, and other means between the two parties to the contract.

#### 3.2. Online Publicity

The digital transaction model has also made it possible for real estate to be publicly displayed online. Online publicity can include the disclosure of real estate rights certificates such as land use rights certificates, construction planning permits, and property ownership certificates, as

well as the disclosure of real estate transaction information. Online publicity can not only improve the efficiency and transparency of publicity, but also facilitate the supervision of real estate transactions by the public.

However, there are also some legal issues with online publicity. The authenticity and completeness of online public information are the core issues in legal issues related to online public disclosure. Due to the electronic nature of online information, it may be tampered with or forged. To solve this problem, some technical measures need to be taken to ensure the authenticity and integrity of online public information, such as using digital certificates, timestamps and other technical means to verify the authenticity and integrity of information. In addition, the authenticity and completeness of online public information can also be ensured through verification and review by authoritative departments such as government agencies and third-party organizations.

The security of online information disclosure is also an important issue in legal issues related to online disclosure. Due to the public nature of online information, it may be obtained and used by unauthorized third parties. To solve this problem, it is necessary to take some security measures to protect the security of online public information, such as using encryption, firewalls and other technical means to protect the security of information. In addition, the security of online public information can also be protected through confidentiality agreements, privacy policies, and other means between the contracting parties.

The handling of objections to online disclosure of information is also an important issue in legal issues related to online disclosure. Due to the public nature of online information, there may be objections. To solve this problem, it is necessary to establish and improve corresponding objection handling mechanisms, including hearings, rulings, etc.[6] In addition, objections to online public information can also be handled through mediation, arbitration, and other means by authoritative departments such as government agencies and third-party organizations.

### 3.3. Digital Ownership Certificate

With the development and application of digital technology, the issuance method of real estate ownership certificates has also changed. Digital ownership certificates have become the main form of ownership certificates in real estate transactions, including electronic property certificates, electronic land certificates, etc. This new form of ownership certificate has had a profound impact on traditional paper ownership certificates and has also raised some new legal issues.

The authenticity and validity of digital ownership certificates are the core issues in the legal framework of digital ownership certificates. As digital ownership certificates are electronic, they may be tampered with or forged. To solve this problem, some technical measures need to be taken to ensure the authenticity and validity of digital ownership certificates. For example, digital certificates, timestamps, and other technical means can be used to verify the authenticity and validity of certificates. At the same time, the authenticity and validity of digital ownership certificates can also be ensured through verification and review by authoritative departments such as government agencies and third-party organizations.

The prevention of tampering and forgery of digital ownership certificates is also an important issue in the legal issues of digital ownership certificates. Due to the electronic nature of digital ownership certificates, they may be tampered with or forged by unauthorized third parties. To solve this problem, some security measures need to be taken to prevent certificate tampering and forgery. For example, encryption, firewalls, and other technical means can be used to protect the security of certificates and prevent unauthorized access and modification. At the same time, digital signatures and other technical means can also be used to ensure the source and authenticity of certificates.

There are also some legal issues regarding the issuance and management of digital ownership certificates. Due to the digitization of ownership certificates, their issuance and management rely on electronic systems and networks. To address this issue, it is necessary to establish and improve a corresponding electronic ownership certificate management system to ensure the security and reliability of the certificate issuance and management process. At the same time, government regulatory authorities should also strengthen the supervision of digital ownership certificates, formulate relevant policies and regulations, and standardize the issuance and management of digital ownership certificates.

The protection of the rights and interests of digital ownership certificates is also an important issue in the legal issues of digital ownership certificates. Due to the digitization of ownership certificates, their rights protection relies on electronic systems and networks. To address this issue, some measures need to be taken to safeguard the rights and interests of holders of digital ownership certificates. For example, technical means such as backup and recovery can be used to ensure the data security and integrity of certificates. At the same time, relevant rights protection policies and privacy policies can also be formulated to clarify the rights and responsibilities of holders and ensure the security of their personal information and rights.

### **3.4. Digital Trading Platform**

The digital trading model has also brought about changes in the way real estate trading platforms operate. The digital trading platform has become the main trading platform in the real estate market. The digital trading platform can achieve transaction processes such as publishing housing information, signing transaction contracts, and issuing ownership certificates. Digital trading platforms have advantages such as convenience, efficiency, and security, but there are also some legal issues.

The authenticity and legality of digital trading platforms are the core issues in the legal framework of digital trading platforms. Due to the virtual nature of digital trading platforms, there may be some false or illegal situations. To address this issue, some measures need to be taken to ensure the authenticity and legality of digital trading platforms. For example, digital trading platforms can be required to provide relevant certificates and qualifications to ensure their legal qualifications to engage in real estate transactions. At the same time, the transaction rules and processes of digital trading platforms can also be reviewed to ensure compliance with relevant laws, regulations, and policy requirements. In addition, government regulatory agencies should also strengthen the supervision of digital trading platforms, crack down on false transactions and illegal activities, maintain market order and fair competition.

The information security issue of digital trading platforms is another important legal issue. Due to the large amount of personal and transaction information involved in digital trading platforms, there may be risks of information leakage, tampering, or illegal acquisition. To solve this problem, digital trading platforms need to take some security measures to protect the security of personal information and transaction information. For example, encryption technology, data backup and recovery techniques can be used to ensure information security. At the same time, relevant information protection policies and privacy policies can also be formulated, clarifying the methods of information collection, use, and protection, and informing users of their rights and responsibilities.

The transaction efficiency and dispute resolution mechanism of digital trading platforms are also important legal issues. Due to the fact that transactions on digital trading platforms are completed online, it is necessary to ensure the efficiency and reliability of transactions. At the same time, when transaction disputes arise, corresponding dispute resolution mechanisms are also needed to safeguard the rights and interests of both parties. To solve this problem, digital trading platforms can adopt some technical means to improve transaction efficiency and reliability, such as using smart contracts, electronic seals and other technical means to ensure

the effectiveness and enforceability of transactions. At the same time, relevant dispute resolution mechanisms can also be established, such as establishing arbitration or mediation institutions to handle transaction disputes and protect the rights and interests of both parties.

#### **4. Key Legal Issues in Real Estate Legal Relations under Digital Transaction Mode**

The digital transaction mode has become the main transaction mode in the real estate market, including electronic contracts, online payments, information disclosure, and electronic registration. This new trading model brings convenience and efficiency, but there are also some legal issues.

##### **4.1. Electronic Contracts**

In the digital transaction mode, the signing, storage, and transmission of real estate contracts are all conducted in electronic form. According to the Electronic Signature Law of the People's Republic of China, electronic documents signed using electronic signature methods that comply with legal provisions have the same legal effect as handwritten paper documents. Therefore, as long as the electronic signature in the electronic contract complies with legal provisions, its legal effect is the same as that of a paper contract.

However, in practice, there are still some disputes and issues regarding the legal effectiveness of electronic contracts. Firstly, during the signing and transmission process of electronic contracts, data loss or damage may occur due to network failures, equipment damage, and other reasons, which can affect the legal validity of electronic contracts. Secondly, during the signing process of electronic contracts, there may also be some technical means used to tamper with or forge the content of electronic contracts, which can also affect the authenticity and effectiveness of electronic contracts.

To address these issues, it is necessary to adopt some technical measures to ensure the authenticity and effectiveness of electronic contracts. For example, digital certificates, timestamps, and other technical means can be used to verify the authenticity and validity of electronic contracts. At the same time, technical means such as backup and recovery can also be used to ensure the data security and integrity of electronic contracts.

In addition, it is necessary to strengthen the management and supervision of electronic contracts. For example, an electronic contract registration and management system can be established to standardize the signing and transmission process of electronic contracts, ensuring the authenticity and effectiveness of electronic contracts. At the same time, it is also possible to strengthen the review and supervision of electronic contracts to prevent the occurrence of false or illegal electronic contracts.

##### **4.2. Online Payment**

In the digital transaction mode, the payment of the house price is usually completed through online payment platforms. This payment method involves sensitive information such as bank accounts, so it is necessary to ensure the security of the payment platform. In addition, it is necessary to regulate payment platforms to prevent issues such as fund abuse.

Firstly, it is necessary to ensure the security of online payment platforms. Payment platforms should take some security measures, such as encryption, firewalls, etc., to protect the security of users' personal information and funds. At the same time, payment platforms should also establish sound account management and risk control mechanisms to prevent problems such as account theft and fund abuse.

Secondly, it is necessary to regulate online payment platforms. The government regulatory authorities should strengthen the supervision of online payment platforms, establish a sound

payment management system and regulatory mechanism, and ensure the compliance and security of payment platforms. At the same time, payment platforms should also consciously comply with relevant laws, regulations, and regulatory requirements to ensure the legality and security of payments.

### 4.3. Information Disclosure

In the digital transaction mode, the release and management of housing information are achieved through information technology. To ensure transparency and fairness in transactions, it is necessary to have legal requirements for the disclosure of all relevant housing information to prevent it from being tampered with or concealed.

We need to establish a sound system for disclosing housing information. The government regulatory authorities should require real estate companies to disclose all relevant housing information, including the ownership, quality, area, price, and other information of the houses. At the same time, real estate companies should also be required to update housing information in a timely manner to ensure the authenticity and accuracy of the information.

We need to strengthen the supervision and management of housing information. The government regulatory authorities should strengthen the supervision and management of housing information to prevent it from being tampered with or concealed. At the same time, it is also necessary to strengthen the supervision of real estate enterprises to prevent them from intentionally concealing or tampering with housing information.

### 4.4. Electronic Registration

In the digital transaction mode, housing registration has been fully digitized. According to the Provisional Regulations on Real Estate Registration, electronic registration has the same legal effect as traditional paper registration. However, in order to ensure the security and reliability of electronic registration, a series of strict supervision and maintenance are required.

Establishing a comprehensive electronic registration system is the foundation. This system needs to have high security and reliability, and be able to prevent various network attacks and data leaks and other security issues. At the same time, the stability and reliability of the system are also crucial, ensuring the authenticity and completeness of registration information. To achieve this goal, technologies such as data encryption, firewalls, backup and recovery can be used to ensure system security.

It is necessary to strengthen the supervision and maintenance of electronic registration systems. The government regulatory authorities should strictly supervise and maintain the electronic registration system to ensure its security and reliability. For example, a dedicated technical team can be established to conduct regular security assessments and vulnerability scans of the system, promptly identifying and resolving potential security issues. At the same time, the supervision of real estate enterprises also needs to be strengthened to prevent intentional tampering or concealment of registration information.

## 5. Conclusion

Establishing a sound electronic registration system is also crucial. This system should clarify the process and standards of electronic registration, including registration application, review, and registration. At the same time, it is also necessary to regulate the legal effectiveness and ownership confirmation of electronic registration, providing a clear legal basis for electronic registration.

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