





# A Jurisprudential and Legal Analysis of the Challenges of Consent and Performance of Obligations in AI-Based Electronic Contracts under Crisis Conditions

1. Seyedeh Leila Nabavi : Department of Law, To.C., Islamic Azad University, Tonekabon, Iran
2. Hajar Abedi Gasgari : Department of Law, To.C., Islamic Azad University, Tonekabon, Iran
3. Mahdi Sheikhmahmoodi \*: Department of Law, To.C., Islamic Azad University, Tonekabon, Iran
4. Sepideh Niksefat : Department of Law, To.C., Islamic Azad University, Tonekabon, Iran

\*Correspondence: mahdi.sheikhmahmoodi@iau.ac.ir

## Abstract

Artificial intelligence-based electronic contracts in crisis conditions, due to their speed, automation, and the complexity of decision-making processes, create novel challenges concerning contractual consent and the performance of obligations. This study aims to provide a jurisprudential and legal analysis of these challenges by examining the validity of the parties' consent, the possibility of attributing algorithmic decisions, and the scope of liability in the performance of contractual obligations within AI-based environments. The research adopts a descriptive–analytical approach based on the examination of library resources and the study of the principles of Imami jurisprudence and the substantive law of Iran. The findings indicate that, under crisis conditions, concepts such as informed consent, intention to create legal effects, good faith, hardship and distress, and the rule of no harm (La Darar) play a decisive role in assessing the validity and performance of contractual obligations. Furthermore, the lack of transparency in the operation of intelligent systems may undermine the authenticity of consent and create difficulties in the fair execution of contracts. Accordingly, the study concludes that appropriate legal regulation, algorithmic transparency, and the establishment of protective mechanisms can contribute to ensuring contractual justice and reducing disputes arising from the use of artificial intelligence in electronic contracts.

**Keywords:** Electronic Contract, Artificial Intelligence, Contractual Consent, Performance of Obligations, Crisis Conditions

Received: 03 March 2026

Revised: 08 June 2026

Accepted: 16 June 2026

Initial Publication 19 June 2026

Final Publication 01 May 2027



**Copyright:** © 2027 by the authors. Published under the terms and conditions of Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0) License.

**Citation:** Nabavi, S. L., Abedi Gasgari, H., Sheikhmahmoodi, M., & Niksefat, S. (2027). A Jurisprudential and Legal Analysis of the Challenges of Consent and Performance of Obligations in AI-Based Electronic Contracts under Crisis Conditions. *Legal Studies in Digital Age*, 6(3), 1-19.

## 1. Introduction

The rapid transformations of digital technologies in recent decades have significantly altered the structure of economic relations and the manner in which contracts are concluded. In this context, the expansion of electronic commerce and the use of artificial intelligence systems in decision-making processes have led to the emergence of a new form of contractual

relationship known as “AI-based electronic contracts.” By employing intelligent algorithms, large-scale data analysis, and automated decision-making, these contracts make it possible to conclude and perform contracts with greater speed and precision. Despite the considerable advantages of these technologies in increasing efficiency and reducing transaction costs, the use of artificial intelligence in contractual processes has created new issues and challenges in the field of contract law and its jurisprudential foundations (Naderi Anari & Dorostkar, 2025).

One of the most important issues in contract law is “contractual will” and its role in the formation of obligations. In different legal systems, as well as in Imami jurisprudence, the formation of a contract depends on the existence of the intention to create legal effects, the consent of the parties, and awareness of the content of the contract. These elements are recognized as fundamental pillars of contractual validity, and the absence or impairment of any of them may call the legitimacy and validity of the contract into question. However, the entry of artificial intelligence systems into the process of contract formation and performance raises the fundamental question of how the genuine will of the parties can be ascertained in contracts in which part of the decision-making or performance of obligations is carried out by intelligent algorithms, and to whom the responsibility for the outcomes of algorithmic decisions should be attributed (Nejat-Zadegan & Soltani, 2022).

The aforementioned challenges become even more significant under crisis conditions. Crisis conditions such as economic crises, widespread technological disruptions, cyberattacks, pandemics, or sudden regulatory changes can have a considerable impact on the manner in which contracts are concluded and on the possibility of performing obligations. Under such conditions, AI-based contracts may operate on the basis of data and algorithms that lack the capacity to predict or adapt to exceptional circumstances. Consequently, the automatic performance of obligations without regard to fundamental changes in circumstances may lead to injustice or legal conflicts. Therefore, examining the status of contractual will and the performance of obligations in such contracts, particularly under crisis conditions, acquires special importance from jurisprudential and legal perspectives. From the perspective of Imami jurisprudence, principles and rules such as intention and consent, the principle of the binding force of contracts, the rule of no harm, the rule of hardship and distress, and the principle of good faith in transactional relations play an important role in assessing the validity and justice of contracts (Nasser & Sadeghi, 2019). These rules have been considered jurisprudential instruments for preserving balance in contractual relations and may also be invoked in confronting new legal phenomena. Nevertheless, the application of these principles in the context of AI-based electronic contracts requires renewed interpretation and explanation, because in this type of contract, the role of the human agent is reduced in some stages and decisions are partly delegated to automated systems (Feyzi Chekab, 2007). On the other hand, contemporary legal literature has increasingly examined the relationship between law and emerging technologies, especially artificial intelligence. Issues such as liability arising from algorithmic decisions, transparency and accountability of intelligent systems, the validity of automated contracts, and the regulation of digital technologies are among the topics that have attracted scholarly attention in recent years. Nevertheless, many of these studies have been conducted mainly within the framework of Western legal systems and have paid less attention to the jurisprudential and legal foundations of legal systems influenced by Islamic jurisprudence. Therefore, examining this issue within the framework of Imami jurisprudence and Iranian law can contribute to enriching the scientific literature in this field.

Accordingly, the present study was conducted with the aim of providing a jurisprudential and legal analysis of the challenges related to contractual will and the performance of obligations in AI-based electronic contracts under crisis conditions. Using a descriptive–analytical method and relying on library resources, this study seeks to examine the relevant jurisprudential and legal foundations, clarify the various dimensions of these challenges, and propose solutions for adapting the traditional principles of contract law to transformations arising from emerging technologies. It is hoped that the findings of this study can contribute to the development of theoretical frameworks and the presentation of appropriate legal solutions for addressing the emerging issues of smart and AI-based contracts.

## **2. Research Method**

The present article adopts a descriptive and analytical method. Since no questionnaire or interview was used, the library method was employed for data collection.

### 3. Findings

The findings of the study indicate that, in AI-based electronic contracts, the most important challenge in the area of contractual will concerns the ascertainment of the parties' genuine intention and consent in algorithmic decision-making processes and the attribution of legal effects to the performance of intelligent systems. The jurisprudential and legal analysis shows that although the use of artificial intelligence does not, in itself, prevent the validity of a contract, the absence of transparency, defects in information disclosure, or the impossibility of human oversight may undermine informed consent and contractual balance. Moreover, under crisis conditions, the automatic performance of obligations may continue without taking fundamental changes in circumstances into account, which may conflict with rules such as hardship and distress, no harm, and good faith. Accordingly, the findings indicate that, in order to preserve contractual justice, it is necessary for the legal system to establish a balance between technological efficiency and the protection of the will and rights of contracting parties by providing mechanisms such as human intervention, algorithmic transparency, reconsideration of rigid clauses, and strengthening the civil liability of users of artificial intelligence systems.

### 4. Discussion

The subsidiary discussions related to the subject of this research are presented as follows.

#### 4.1. *Conceptualizing Artificial Intelligence in the Context of Contract Law*

Artificial intelligence, in its general sense, refers to a set of technologies and computational systems that, by using advanced algorithms, machine learning models, and large-scale data analysis, are capable of simulating certain human cognitive functions, including analysis, prediction, decision-making, and problem-solving. In recent decades, this technology, through remarkable advances in fields such as deep learning, natural language processing, and big data analysis, has become one of the most important technological developments of the digital age. The expansion of artificial intelligence applications in economic, financial, managerial, and legal domains has gradually enabled this technology to play an effective role in decision-making structures and legal interactions. Under such circumstances, the analysis of the position of artificial intelligence within the framework of fundamental concepts of private law, especially contract law, has become increasingly important ([Amir-Moezzi, 2016](#)).

In the legal field, artificial intelligence was initially used as a tool for processing legal information and increasing the efficiency of legal services. Document analysis systems, intelligent search of judicial precedents, prediction of litigation outcomes, and management of legal data were among the earliest applications of this technology in the legal domain. However, recent developments show that the role of artificial intelligence has gone beyond that of an auxiliary tool and has gradually entered operational processes related to the formation and performance of contractual relations. In many electronic commerce platforms and digital services, intelligent systems analyze user behavior, market data, and transactional patterns, offer contractual proposals, regulate transaction terms, and, in some cases, even manage the performance of obligations automatically ([Elsan, 2014](#)).

Despite the expansion of these applications, from a legal perspective there is still no clear consensus regarding the legal nature of artificial intelligence. In most legal systems, including Iranian law, artificial intelligence is not regarded as possessing independent legal personality and cannot be classified among natural or legal persons. Legal personality in private law requires the capacity to hold rights and duties and the possibility of attributing legal responsibility, whereas intelligent systems lack independent will in the legal sense, and their decisions are ultimately the product of human design, input data, and programmed algorithms. Accordingly, the prevailing legal view is that artificial intelligence should be regarded as an "advanced decision-making tool" whose performance is attributed to the human persons involved in its design, development, or use.

Ultimately, it may be stated that the entry of artificial intelligence into the sphere of contractual relations is not merely a technological development but also a conceptual challenge for traditional theories of contract law. This development highlights the necessity of rethinking concepts such as will, liability, and contractual justice. At the same time, legal systems must seek to strike a balance between benefiting from the innovative capacities of technology and preserving the fundamental principles of justice and legal security. Therefore, analyzing the concept and position of artificial intelligence in the context of contract

law can be regarded as the starting point for understanding the broader challenges that have emerged with the expansion of intelligent technologies in legal relations (Shariat-Bagheri, 2016).

#### 4.2. *The Concept and Characteristics of Electronic Contracts*

An electronic contract refers to an agreement whose formation process—including preliminary negotiations, offer, acceptance, and, in some cases, the performance of obligations—is realized through electronic instruments and within digital environments. These contracts are concluded in environments such as electronic commerce systems, online service platforms, digital marketplaces, communication networks, and even automated systems based on artificial intelligence. From a substantive perspective, electronic contracts are subject to the general rules of contracts in Iranian law, and the essential conditions for the validity of a contract, including intention, consent, capacity, determinacy of subject matter, and legitimacy of purpose, must also be established in them. However, the manner in which these elements are realized in the digital environment has certain characteristics whose analysis requires a reinterpretation of traditional concepts of contract law (Jafari Langroudi, 2009).

One of the most important characteristics of electronic contracts is the “non-face-to-face” nature of contractual relations. In this type of contract, the parties usually interact with each other without physical encounter and through technological intermediaries. This has given the element of “trust” a special position and has increased the importance of technical and legal mechanisms for guaranteeing the authenticity of communication and the validity of data. In such an environment, instruments such as electronic signatures, digital certificates, and authentication systems play a key role in ensuring contractual validity. Another characteristic of electronic contracts is “speed and automation” in the formation process. In many digital platforms, offer and acceptance are realized merely by clicking a button or selecting an option by the user. This mode of formation, sometimes known as “click-wrap” or “browse-wrap,” raises questions about the extent to which the parties’ real awareness and consent are achieved. From a legal perspective, the mere registration of a click in a digital system can be regarded as valid acceptance only when it clearly indicates the intention to create legal effects and informed consent. Therefore, the design of the user interface and the degree of transparency of contractual terms can affect the assessment of the validity of consent (Mohammadi, 2023).

From an evidentiary perspective, electronic contracts have also been accompanied by important developments. In contemporary legal systems, including Iranian law, a “data message,” if it meets the legally prescribed conditions, may be treated as equivalent to writing and as evidence in litigation. This development has expanded the traditional concept of “document” and made the acceptance of electronic evidence possible in judicial proceedings. Nevertheless, the validity and evidentiary value of digital data depend on compliance with technical requirements such as integrity, attributability, and accessibility. Any defect in these elements may cast doubt on the validity of the contract. The dependence of electronic contracts on information technology infrastructures is also one of their fundamental characteristics. The formation and performance of these contracts depend on the proper functioning of servers, communication networks, software, and security systems. Disruptions in these infrastructures can have significant legal consequences, including delay in formation, errors in data transmission, or even loss of contractual information. In such cases, determining liability among users, internet service providers, and platform owners becomes important (Shahidi, 2003).

From a substantive perspective, electronic contracts are often confronted with the phenomenon of “information asymmetry.” In many cases, one of the parties—usually the provider of digital services—possesses broader technical knowledge and information than the user. This imbalance can affect freedom of will and contractual justice and create the basis for the inclusion of unilateral or unfair terms. Therefore, in analyzing electronic contracts, special attention must be given to the need to protect the weaker party and to ensure transparency and fairness in the drafting of terms. In addition, in the digital environment, the issue of the “time and place of contract formation” is also accompanied by complexities. In traditional contracts, determining the time and place of formation is usually clear; however, in electronic contracts that may be concluded between persons located in different geographical jurisdictions, determining the moment of offer and acceptance and the place of contract formation requires precise interpretation of legal rules. This issue plays a fundamental role in determining court jurisdiction, the governing law, and the tax consequences of the contract.

Ultimately, it can be said that although electronic contracts structurally represent the continuation of the traditional institution of contract in private law, the digital environment has added characteristics to them that require a dynamic and

flexible interpretation of legal rules. The integration of the fundamental principles of contract law with technical and technological requirements is an essential condition for ensuring validity, security, and justice in this type of contractual relationship. Therefore, a precise analysis of the characteristics of electronic contracts is a necessary prelude to examining the role of emerging technologies, including artificial intelligence, in transforming the system of contract law (Saket, 2007).

#### 4.3. *The Role of Artificial Intelligence in the Formation and Performance of Electronic Contracts*

The entry of artificial intelligence into the domain of electronic contracts constitutes not only a technical development but also a structural transformation in the process of forming and performing contractual obligations. In the traditional model, contract formation was based on the direct or indirect interaction of persons and the exchange of human wills; however, in advanced digital environments, AI-based systems can play an active and sometimes decisive role in various stages, from the pre-contractual phase to the final performance of obligations. This transformation has caused legal analysis of contracts to move beyond the mere level of “electronic communication tools” and toward the examination of “decision-support and decision-making systems.” In the pre-contractual stage, artificial intelligence is capable of analyzing big data, users’ behavioral patterns, market conditions, and transactional records in order to provide personalized proposals. These proposals may include pricing, the suggestion of specific terms, risk assessment, or even the drafting of contracts. In such a situation, the traditional negotiation process is largely delegated to algorithmic data analysis. This increases the efficiency and speed of transactions, but at the same time raises the question of the extent to which human will plays a direct role in determining contractual terms and whether the user has sufficient awareness of the logic underlying these proposals. At the stage of contract formation as well, some intelligent systems may automatically register offer or acceptance. For example, in automated trading systems in financial markets, algorithms buy or sell on the basis of predetermined indicators. In such cases, the user’s initial will is manifested in the settings and input parameters of the system, while the final decision at the moment of concluding the transaction is made by the algorithm. Legal analysis of this situation requires examining whether this decision can be regarded as an extension of the user’s prior will or whether it should be treated as an independent act requiring separate assessment (Abizadeh & Minoei, 2023).

The role of artificial intelligence in the performance stage of contracts is even more prominent. In smart contracts based on emerging technologies, obligations are defined in the form of programming codes, and upon the realization of predetermined conditions, performance is carried out automatically without the need for human intervention. This feature can reduce performance costs and decrease the likelihood of breach of obligation; however, in contrast, it limits contractual flexibility in the face of unforeseen circumstances. If fundamental circumstances change, the system may continue to perform the obligation even if the result is harmful or unfair to one of the parties. From a theoretical perspective, the analysis of the role of artificial intelligence in electronic contracts is confronted with two main approaches: the “tool-oriented” approach and the “active agency” approach. Under the first approach, artificial intelligence is regarded merely as an advanced instrument for implementing human will, and all legal effects of its decisions are attributed to the person or persons behind the system. Within this framework, the true will is the will expressed at the stage of design, planning, or activation of the system. In contrast, some new perspectives, given the complexity of self-learning systems, argue that the degree of operational autonomy of these technologies may challenge the traditional analysis of attribution. Nevertheless, within the framework of Iranian law and the foundations of Imami jurisprudence, the principle is that entities lacking consciousness and independent intention do not possess the capacity to create legal effects, and no independent legal will can be attributed to them (Afzali Mehr et al., 2022).

From the perspective of the essential elements of contractual validity, the most important issue is whether decisions made by algorithms can express the intention to create legal effects and valid consent. If the user, with knowledge of the mechanism of the system and with informed will, has delegated decision-making authority to the system within a defined framework, subsequent decisions may be attributed to the user within the scope of that authority. However, in cases where the user lacks sufficient knowledge of the manner in which the system functions or the scope of its authority, full attribution of the outcomes to the user’s will is doubtful. This issue becomes more complex especially where algorithms operate dynamically and on the basis of continuous learning. Moreover, the role of artificial intelligence in drafting contractual terms can affect contractual balance. Systems that automatically insert standard terms or propose specific terms based on user behavior analysis may

unintentionally create an imbalance between the rights and obligations of the parties. Therefore, the performance of these systems should be assessed according to criteria such as transparency, fairness, and predictability (Amir-Moezzi, 2016).

Overall, it may be stated that artificial intelligence performs three fundamental roles in electronic contracts: an advisory role, involving the provision of proposals and analysis; an executive role, involving the registration and processing of offer and acceptance; and an operational role, involving the automatic performance of obligations. Each of these roles has its own legal effects, and analyzing the validity of AI-based contracts requires a precise distinction between these levels. The answer to the question of whether algorithmic decisions are manifestations of the parties' will or merely instruments for implementing human will depends on the degree of awareness, authorization, and human oversight at each of these stages. Thus, a precise explanation of the position of artificial intelligence in the process of contract formation and performance is a fundamental prerequisite for establishing a coherent framework in digital contract law.

#### 4.4. *Jurisprudential and Legal Challenges of Will in AI-Based Contracts*

The entry of artificial intelligence into the field of electronic contracts may be regarded as one of the most important developments in private law in the digital age. This transformation does not merely signify the use of technological tools in the process of contract formation; rather, it reflects a change in the traditional structure of decision-making and contractual interaction. In the classical model of contract law, contract formation was based on the direct or indirect interaction of persons and the exchange of human wills, while technologies merely played the role of intermediaries for transmitting messages. However, in advanced digital environments, AI-based systems can play an active and sometimes decisive role in various stages, from the pre-contractual phase to the final performance of obligations. For this reason, the legal analysis of electronic contracts in the age of artificial intelligence is no longer limited merely to examining electronic communication tools, but has expanded to the study of decision-support systems and, in some cases, decision-making systems (Bigdeli, 2007).

In the pre-contractual phase, artificial intelligence is capable of using big data analysis, users' behavioral patterns, market conditions, and transactional records to provide contractual proposals tailored to each user's circumstances. These proposals may include pricing, the suggestion of special transaction terms, analysis of contractual risks, or even the drafting of a complete contract. In many electronic commerce and digital service platforms, these systems analyze users' extensive data and offer proposals that are more likely to be accepted by the other party. Such a mechanism increases the efficiency and speed of transactions; however, it also raises the question of the extent to which the actual role of human will remains in such a process and whether the user has sufficient awareness of the logic of algorithmic decision-making that shapes contractual proposals.

At the stage of contract formation, some intelligent systems are also capable of automatically registering offer and acceptance. For example, in digital financial markets and algorithmic trading systems, computer programs carry out transactions on the basis of predetermined parameters. Under such circumstances, the user may determine only the general framework of decision-making, while the precise execution of decisions is delegated to the intelligent system. In this situation, the user's initial will is manifested in the initial settings and instructions, but the final decision at the moment of concluding the transaction is made by the algorithm. From a legal perspective, this raises the question of whether the decision made by the system should be regarded as an extension of the user's prior will or as an independent act requiring separate analysis. The answer to this question plays a fundamental role in determining the validity and legal effects of contracts based on intelligent systems (Ebrahimzadeh et al., 2025).

The role of artificial intelligence in the performance stage of contracts is even more prominent and complex. In some advanced digital contracts, especially smart contracts based on emerging technologies, the parties' obligations are defined in the form of programming codes, and once specified conditions are met, the obligation is performed automatically. This mechanism can reduce many traditional problems in contract performance, including delay in performance or refusal to perform. Nevertheless, automatic performance of obligations may produce undesirable results when fundamental circumstances have changed. For example, if economic or technical conditions change in such a way that performance of the obligation becomes extremely difficult or harmful for one of the parties, the intelligent system may still continue to perform the obligation without regard to these changes. Such a situation may conflict with the principles of contractual justice and rules such as no harm or hardship and distress.

From a theoretical perspective, the analysis of the position of artificial intelligence in electronic contracts is usually presented within two main approaches. The first approach, which may be called the tool-oriented approach, regards artificial intelligence merely as an advanced instrument for implementing human will. According to this view, all legal effects of the system's decisions are attributed to the persons who designed, programmed, or used it, and technology lacks any independent legal will. In contrast, some new perspectives, considering the complexity of self-learning systems and their capacity to make decisions based on changing data, speak of a kind of operational autonomy for these systems. Nevertheless, within the framework of Iranian law and the foundations of Imami jurisprudence, the principle is that an entity lacking consciousness and independent intention cannot possess the capacity to create legal effects, and therefore the decisions of intelligent systems must ultimately be attributed to human will.

From the perspective of the essential elements of contractual validity, the important issue is whether decisions made by algorithms can be regarded as expressing the intention to create legal effects and valid consent. If the user, with awareness of the system's mechanism and with informed will, delegates decision-making authority to it within a specific scope, the decisions made within that framework can be attributed to the user's will. However, where the user lacks sufficient knowledge of how the system functions or the scope of its authority, full attribution of the outcomes to the user's will will be doubtful. This issue becomes more complex especially in relation to systems that alter their behavior on the basis of continuous learning and analysis of new data. In addition, the use of artificial intelligence in drafting contractual terms can also affect contractual balance and justice. Systems that automatically insert standard terms or propose particular conditions based on analysis of users' behavioral data may unintentionally create an imbalance in the rights and obligations of the parties. Therefore, assessment of such systems must be accompanied by criteria such as algorithmic transparency, predictability of outcomes, and compliance with principles of fairness in order to prevent injustice in contractual relations (Afzali Mehr et al., 2022).

Overall, it can be stated that artificial intelligence has three fundamental functions in electronic contracts: first, an analytical and advisory function, whereby systems analyze data and provide contractual proposals; second, an executive function, which includes registering and processing offer and acceptance in digital environments; and third, an operational function, which relates to the automatic performance of contractual obligations. Each of these functions has its own legal consequences, and a precise analysis of the validity of AI-based contracts requires distinguishing these levels and examining the degree of human will involved in each. Accordingly, a precise explanation of the position of artificial intelligence in the process of formation and performance of electronic contracts may be considered one of the most important prerequisites for developing coherent legal frameworks in the age of the digital economy.

#### 4.5. *Performance of Contractual Obligations under Crisis Conditions*

The performance of contractual obligations is a fundamental stage in achieving the economic and legal objectives of contracts, and the validity and efficiency of any contractual system depend on ensuring the orderly and fair performance of obligations. Nevertheless, performance of obligations is always presumed to occur within a context of normal and predictable circumstances, whereas in reality, contractual relations may be affected by economic crises, sudden market changes, widespread technological disruptions, force majeure events, pandemics, or severe changes in social circumstances. Under such conditions, the precise and timely performance of obligations may face serious difficulty or even impossibility, which highlights the need to rethink the rules governing contract performance. In AI-based contracts, the issue of performing obligations under crisis conditions is more complex. Intelligent systems are generally designed on the basis of historical data, statistical patterns, and predefined rules, and they make decisions within the framework of those data. If conditions arise that fall outside the scope of the system's initial predictions or training data, the algorithm may lack the necessary flexibility to adapt to the new situation. Consequently, automatic performance of obligations without taking fundamental changes in circumstances into account may lead to results that conflict with contractual justice or the parties' genuine intention (Tajik Qaleh et al., 2025).

For example, in smart contracts where obligations are performed automatically on the basis of the realization of coded conditions, the occurrence of a technical condition may trigger performance without regard to fundamental economic or legal changes. Whereas in traditional contracts, the parties or the court may rely on concepts such as force majeure, impossibility of performance, or change of circumstances to modify or suspend the obligation, in automated contracts the possibility of stopping

or reviewing performance may be limited unless such contingencies have been predicted in advance within the structure of the system.

From the perspective of Iranian law and the foundations of Imami jurisprudence, rules such as the rule of no harm, hardship and distress, impossibility of performance, and the doctrine of change of circumstances can play a helpful role in analyzing the performance of obligations under crisis conditions. According to the rule of no harm, the imposition of abnormal harm on one of the parties is unacceptable, and where performance of an obligation causes excessive harm, legal intervention to eliminate or reduce that harm is possible. Likewise, where performance of an obligation becomes impossible due to an event beyond the obligor's control, the obligor's liability will be removed. In addition, technological crises such as widespread internet outages, security defects, or algorithmic errors can disrupt the performance of digital obligations. In such cases, distinguishing between "temporary technical impossibility" and "structural defect of the system" is important, because in the first case performance may merely be postponed, whereas in the second case liability arising from defective design or failure to anticipate crisis conditions will arise. This issue acquires broader dimensions especially in large digital platforms on which millions of users depend. From an analytical perspective, the performance of obligations under crisis conditions in AI-based contracts may be examined at three levels: first, the technical level, which concerns the system's capacity or incapacity to detect and respond to crisis; second, the contractual level, which concerns the inclusion of modification, suspension, or termination clauses in the contract; and third, the legal and judicial level, which concerns the possibility of intervention by legal institutions to prevent injustice or abnormal harm. The more precisely the system design and contract drafting anticipate emergency conditions, the lower the likelihood of legal disputes will be (Soltani & Nejat-Zadegan, 2022).

Ultimately, it can be stated that the automatic performance of obligations in AI-based contracts, although it increases speed and efficiency, may under crisis conditions lead to inflexibility and unfair outcomes. Therefore, it is necessary to provide mechanisms for emergency suspension of performance, review of terms, and human intervention in the design of these contracts in order to establish a balance between technological efficiency and the fundamental principles of contractual justice. A precise explanation of the position of jurisprudential and legal rules in this field can provide the basis for developing a coherent framework to address the challenges of performing obligations in the age of artificial intelligence.

#### *4.6. Jurisprudential Analysis of the Rules Governing Responses to Crisis in Smart Contracts*

Islamic jurisprudence, as one of the fundamental sources of law in the Iranian legal system, has provided a set of general rules and principles for regulating transactional relations and preventing oppression and injustice. These rules, which are the result of jurists' derivation from religious sources and the historical experience of the transactional system in Islamic jurisprudence, play an important role in ensuring justice and balance in contractual relations. In confronting technological developments and the emergence of AI-based electronic contracts, these rules can also provide a theoretical framework for analyzing new issues. Among the most important of these rules are the rule of no harm, the rule of hardship and distress, the principle of good faith in transactions, and the principle of transactional justice, each of which emphasizes, in some way, the prevention of the imposition of abnormal harm or hardship on the parties to a contract.

The rule of no harm is one of the well-known jurisprudential rules, based on the hadith "There shall be no harm and no reciprocating harm in Islam," and its content is the negation of any ruling or situation that causes unjust harm to individuals. In the field of contracts, this rule can serve as a basis for preventing the performance of obligations that, under particular circumstances, lead to severe harm to one of the parties. In smart contracts, where obligations are performed automatically and without human intervention, sudden changes in economic, technical, or social conditions may make performance harmful to one of the parties. In such a situation, invoking the rule of no harm can be regarded as a basis for suspending or modifying contract performance and preventing the imposition of abnormal harm (Nasser & Sadeghi, 2019).

The rule of hardship and distress is another important jurisprudential rule that emphasizes the removal of severe hardship from obligated persons. According to this rule, where the performance of an obligation is accompanied by intolerable hardship, the primary ruling may be changed or modified. In the context of AI-based contracts, circumstances may arise in which performance of an obligation becomes extremely difficult for one of the parties; for example, sudden market changes, economic sanctions, widespread technological disruptions, or social crises may render the performance of certain contractual obligations

highly burdensome. In such cases, the rule of hardship and distress can provide an appropriate jurisprudential basis for reconsidering the manner of performance or even suspending it.

In addition, the principle of good faith in transactions, which is also accepted in Islamic jurisprudence as a concept in transactional relations, requires the parties to a contract to act with honesty, fairness, and regard for mutual interests in the process of contract formation and performance of obligations. In smart contracts, where a substantial part of the performance of obligations is entrusted to automated systems, compliance with this principle requires that the design and use of artificial intelligence systems be carried out in such a way that the legitimate interests of the parties are protected and unfair conditions are prevented. In other words, the designers and users of these systems must act in a manner that prevents the technical structure of the contract from becoming a means of abuse or the imposition of unfair conditions.

The principle of transactional justice is another important foundation in the jurisprudence of transactions, emphasizing the need to establish balance and fairness in contractual relations. According to this principle, a contract should not be drafted or performed in such a way that one party is placed in an abnormally harmful position. In AI-based contracts, especially where contractual terms are drafted by algorithmic systems, there is a possibility of contractual imbalance. Therefore, attention to the principle of transactional justice requires that the design of smart contracts include mechanisms allowing review of unfair or unforeseen conditions (Bagheri et al., 2021).

Considering all these rules, it can be stated that Islamic jurisprudence has considerable capacity to confront the challenges arising from the automatic performance of contracts under crisis conditions. Rules such as no harm and hardship and distress, as flexible jurisprudential instruments, can prevent the mechanical and inflexible performance of smart contracts from leading to unjust outcomes. Consequently, utilizing these jurisprudential foundations can help design legal frameworks that, while preserving the efficiency of emerging technologies, also protect the principles of justice, fairness, and support for the contracting parties. Accordingly, it may be concluded that the connection between jurisprudential foundations and technological developments is not only possible but necessary for regulating contractual relations in the digital age. The use of the capacities of the jurisprudence of transactions can provide a foundation for ensuring that AI-based electronic contracts, in addition to technical efficiency, are aligned with the criteria of justice and fairness and prevent abnormal harm under crisis conditions (Ahangaran & Ahmadi, 2019).

#### 4.7. *The Necessity of Legal Regulation of AI-Based Contracts*

The increasing use of artificial intelligence in the formation, interpretation, and performance of electronic contracts shows that legal systems cannot confront this emerging phenomenon solely by relying on traditional rules of contracts. Although many classical principles of contract law remain applicable, the technical complexity of intelligent systems, algorithmic opacity, and the growing role of automated decision-making require the design of appropriate and forward-looking regulatory frameworks. Such regulation must be designed in a way that, on the one hand, does not obstruct innovation and technological development, and on the other hand, guarantees the rights, genuine will, and legitimate interests of the parties to the contract. The first axis in regulating AI-based contracts is algorithmic transparency. Many intelligent systems, especially those based on machine learning, have complex structures that are incomprehensible to ordinary users. Under such circumstances, a contracting party may accept terms or results that have important legal effects without awareness of the decision-making logic of the system. Therefore, establishing minimum requirements for disclosing the general manner in which the system functions, the scope of its authority, and its decision-making criteria can play an important role in ensuring informed consent and preventing gharar.

The second axis is the necessity of providing for human oversight and intervention in automated decision-making processes. Although one of the main advantages of AI-based contracts is the speed and automation of performance, the complete removal of human oversight can lead to unfair outcomes under crisis or unforeseen conditions. Therefore, legal regulation may emphasize the need to provide mechanisms for emergency suspension of performance, review of algorithmic decisions, or the possibility for users to object. Such mechanisms will help create a balance between technological efficiency and the guarantee of contractual justice (Saatchi & Niazabadi, 2014).

The third issue is the precise determination of the liability of persons for the decisions and errors of intelligent systems. In AI-based contracts, an error may arise from defective algorithm design, defects in input data, user abuse, or even cyberattacks.

The absence of a clear framework for attributing liability can cause ambiguity and distrust in digital transactions. Therefore, the legal system must prevent liability gaps and provide the basis for compensating injured parties by explaining the criteria of civil liability of users, developers, and service providers.

The fourth axis is the creation and development of dispute resolution mechanisms in digital environments. AI-based contracts are often concluded in online environments and between persons located in different geographical jurisdictions. Under such circumstances, recourse to traditional methods of dispute resolution may be accompanied by difficulties. The development of digital arbitration and mediation, the use of online dispute resolution systems, and the inclusion of specialized dispute resolution clauses in smart contracts can help reduce costs and increase the efficiency of the dispute resolution system.

Alongside these matters, regulation must be designed in such a way as to establish a balance between a strict approach and a minimalist approach. Excessively restrictive regulations may weaken innovation and competition in the field of technology, whereas the absence of sufficient regulation may create the basis for abuse, injustice, and legal instability. Therefore, adopting a gradual and risk-based approach, in which the degree of oversight and legal requirements is determined in proportion to the level of risk and impact of the intelligent system, can be an appropriate solution.

Ultimately, it can be stated that the legal regulation of AI-based contracts does not mean restricting technology, but rather creating a secure infrastructure for its responsible use. The design of transparent, fair, and flexible legal frameworks can strengthen public trust in digital transactions and provide the basis for the sustainable development of the digital economy. Thus, alongside technological progress, the legal system must also adapt itself to new developments with a forward-looking approach based on the fundamental principles of justice and protection of the parties' genuine will (Shahidi, 2003).

#### *4.8. The Legal Nature of Algorithmic Decisions and Their Analysis within the Framework of the Tool Theory or Agency Theory*

One of the fundamental issues in analyzing AI-based contracts is determining the legal nature of algorithmic decisions and the manner in which their effects are attributed. The central question is whether an artificial intelligence system should be regarded merely as a "tool" for implementing human will, or whether it can be considered an "independent executive agent" in the process of contract formation and performance. The answer to this question has a direct impact on the analysis of the essential elements of contractual validity, the attribution of intention and consent, and the determination of civil liability in the event of damage. According to the tool theory, an artificial intelligence system is treated as an advanced instrument for carrying out human decisions and is considered to lack any independent legal will. Within this framework, all actions and decisions made by the system are attributed to the person or persons who designed, configured, or used it. Just as, in traditional law, the use of mechanical or electronic tools does not sever the attribution of the act to the human actor, the use of intelligent algorithms also does not alter the basis of attribution. Consequently, human will remains the fundamental element of contractual validity, and the artificial intelligence system is merely the channel for expressing or implementing that will.

In contrast, some new perspectives in contemporary legal systems, considering the complexity of self-learning systems and their capacity to analyze extensive data and make decisions that are not fully predictable even for their designers, speak of a form of "operational autonomy." According to this analysis, although the system lacks independent legal personality, it possesses a level of functional autonomy that distinguishes its analysis from that of traditional tools. This view has been raised mostly in the field of civil liability and technology regulation and seeks to respond to situations in which direct attribution of error to the user or developer is difficult. Nevertheless, within the framework of Imami jurisprudence and Iranian law, the principle is that the capacity to create legal effects and valid intention belongs exclusively to persons possessing consciousness and will, and an entity lacking independent perception cannot be regarded as a party to a contract or the bearer of an obligation. Therefore, the acceptance of a form of independent personality or agency for artificial intelligence is incompatible with traditional foundations of liability and the theory of will. From this perspective, algorithmic decisions, although complex and unpredictable, must ultimately be attributed to human behavior and will. A precise analysis of this attribution can be carried out through known legal institutions such as direct causation, indirect causation, and agency. In cases where the user directly determines the decision-making parameters and the system acts within that framework, the user may be regarded as the direct actor, because the algorithmic decision is in fact the direct implementation of the user's prior will. In cases where defective design or technical defect of the system causes damage, the analysis can be examined within the framework of indirect causation

and liability arising from the stronger cause. In some cases, it may also be possible, by analogy with agency, to analyze the system as an instrument for expressing the principal's will, although this agency lacks the element of independent will in the agent and can be used only analogically (Safaei, 2009).

From the perspective of the elements of a contract, acceptance of the tool theory means that valid intention and consent are established at the stage of configuring, activating, or accepting the terms of use of the system, and subsequent algorithmic decisions are regarded as valid within the scope of that initial authorization. However, if the decisions made fall outside the scope of authorization or the user's reasonable foreseeability, their attribution to human will becomes doubtful, and the validity of the contract or the liability arising from it may need to be reconsidered.

Ultimately, it can be stated that although the technical complexity of artificial intelligence systems has made their legal analysis difficult, within the framework of existing theories in Imami jurisprudence and Iranian law, the tool-oriented approach remains more coherent. Nevertheless, a precise explanation of the position of these systems within the institutions of direct causation, indirect causation, and agency is of fundamental importance for responding to practical issues and determining the limits of persons' liability. This analysis can provide a theoretical basis for developing rules appropriate to smart contracts in the digital age (Katouzian, 1991).

#### 4.9. *Implied Will, Presumed Consent, and the Challenges of Informed Consent in Intelligent Environments*

One of the important issues in the legal analysis of AI-based contracts is the manner in which the parties' will and consent are realized in digital environments. In many of these contracts, direct and conscious interaction between the parties in its traditional form does not exist, and a considerable part of the contract formation process is based on the user's prior settings, acceptance of the general terms of platforms, or the automated performance of intelligent systems. Under such conditions, the contracting party's consent is often realized not expressly, but in the form of "implied consent" or "presumed consent." This situation raises important questions regarding the validity of such consent within the framework of jurisprudential and legal foundations. In traditional contract law, the formation of a contract is based on the intention to create legal effects and the consent of the parties, and this consent must be expressed in a manner that indicates informed acceptance of the contractual terms. In digital environments, this expression of will sometimes takes the form of actions such as activating an intelligent system, determining initial parameters, or accepting the terms of use of a platform. Thereafter, many contractual decisions and interactions are carried out automatically on the basis of those initial settings. As a result, a will that was expressed initially in a limited and general form becomes the basis for a series of subsequent decisions whose scope and effects may not be fully clear to the user (Nouri, 2011).

From the perspective of Islamic jurisprudence, valid consent must be based on knowledge and awareness. In analyzing transactions, jurists emphasize that the parties must have at least general knowledge of the nature of the transaction and its principal effects, and the existence of material ambiguity in the subject matter of the transaction may result in *gharar* and consequently in the invalidity or ineffectiveness of the contract. Accordingly, if a contracting party uses an intelligent system without sufficient awareness of its decision-making mechanism or the scope of its authority, the question arises whether the party's consent can be regarded as genuine and informed. The technical complexity of many machine-learning-based systems intensifies this issue, because in some cases even the designers of the system cannot accurately predict all outcomes of algorithmic decisions.

On the other hand, the concept of "implied will" is recognized in Islamic jurisprudence and Iranian law, and in many transactions, conduct and external circumstances can indicate the existence of consent. Nevertheless, acceptance of such consent is usually possible under conditions where the parties have relative awareness of the nature and essential effects of the transaction. In intelligent environments, if the gap between the user's initial decision and the practical results of the system is very broad, reliance on implied will to justify all contractual effects may become difficult. This issue acquires greater importance under crisis conditions. When environmental data, economic circumstances, or the technical status of the system undergo fundamental changes, algorithmic decisions may produce outcomes different from what the user initially imagined. If the user, at the time of activating the system, was unaware of such scenarios, full attribution of the outcomes to the user's consent will be doubtful. In this situation, examining the degree of the user's awareness of the system's mechanism and the

scope of its decision-making authority plays a decisive role in assessing contractual validity ([Ahmadvand & Jahanshahi, 2024](#)).

Consequently, it can be said that the challenge of informed consent in AI-based contracts is one of the key issues in digital contract law. Although the use of implied and presumed consent is inevitable in many digital interactions, in order to preserve the legal validity of contracts and prevent gharar, it is necessary to provide a degree of transparency and information disclosure regarding the manner in which intelligent systems operate. This can strengthen the genuine consent of the parties and reduce legal ambiguities in contractual relations based on emerging technologies.

#### *4.10. The Principle of Algorithmic Transparency and Its Relationship with the Rule of Negation of Gharar*

The expansion of AI-based contracts has revealed the necessity of rethinking the principle of transparency as one of the fundamental requirements of contractual relations. In intelligent environments, important contractual decisions—from pricing and prioritization of services to automatic termination or suspension of obligations—are made by algorithms whose mechanisms are often obscure or incomprehensible to the user. This situation can disrupt the informational balance between the parties and create the basis for relations in which one party lacks sufficient awareness of the grounds for decisions. In such a context, the principle of “algorithmic transparency” becomes important as a guarantee of contractual justice and as a means of preventing ambiguity and deception. Algorithmic transparency means providing sufficient information about the manner in which the system functions, its decision-making criteria, the limits of its authority, and the possible effects of its decisions, and does not necessarily mean full disclosure of source codes or trade secrets. The purpose of such transparency is to create a level of awareness that enables the contracting party to make a decision with reasonable and general knowledge of the consequences of using the system. In the absence of such transparency, the user’s consent may be formal or based on incorrect assumptions, thereby challenging the legal validity of the contract. This principle can be analyzed in light of the jurisprudential rule of “negation of gharar.” Gharar in transactions means the existence of material ambiguity and risk arising from ignorance of the subject matter or essential attributes of the transaction, in such a way that the parties cannot reasonably evaluate their obligations and benefits. Imami jurists have considered gharari transactions invalid because they conflict with justice and create the basis for dispute. Accordingly, whenever the algorithmic decision-making mechanism places one of the parties in a state of material ignorance regarding the principal effects of the contract, one may speak of a form of gharar ([Amini & Vali, 2023](#)).

In smart contracts, gharar may appear not in the traditional subject matter of the transaction but in the “decision-making logic” of the system. For example, if pricing or resource allocation is carried out on the basis of criteria that are completely unknown to the user and reasonable prediction of outcomes is impossible, the element of material ambiguity arises. Such ambiguity can disrupt contractual balance and conflict with the jurisprudential foundations of transactional justice. From this perspective, algorithmic transparency may be regarded as a modern manifestation of the same jurisprudential concern for preventing gharari transactions. Of course, a distinction must be made between “inevitable technical ambiguity” and “material and harmful ambiguity.” All complex systems have degrees of uncertainty, and complete elimination of such uncertainty is impossible. What matters from the perspective of the rule of negation of gharar is the existence of ambiguity that affects the essential elements of the obligation and disrupts the customary evaluation of the transaction. Therefore, the criterion for assessing gharar in this area must also be formulated on the basis of ordinary understanding and the reasonable expectations of users.

Under crisis conditions, the importance of transparency is doubled. Sudden changes in data or environmental conditions may significantly alter the behavior of the system. If users are not previously informed about the possibility of such changes and the limits of the system’s response, the resulting outcomes may be regarded as a form of unpredictable risk and therefore as gharar. For this reason, providing information mechanisms, a right of human intervention, and the possibility of suspending or reviewing automated decisions can help reduce ambiguity and strengthen the contract’s conformity with jurisprudential standards ([Hassani, 2023](#)).

In summary, it can be stated that the principle of algorithmic transparency is not merely a technological demand but the logical extension of the rule of negation of gharar in the digital context. Ensuring a reasonable level of awareness regarding the decision-making logic of intelligent systems is an essential condition for the realization of valid consent, the prevention of material ambiguity, and the preservation of contractual justice in the age of artificial intelligence.

#### 4.11. *The Impact of Incorrect or Biased Data on Contractual Justice*

One of the fundamental issues in the functioning of AI-based systems is the deep dependence of these systems on the data that form the basis of their analysis and decision-making. Intelligent algorithms are, in fact, trained on input data and provide proposals, predictions, or decisions through analysis of the patterns existing in those data. However, in many cases, the data used may be incomplete, incorrect, or affected by structural biases. Such a situation can lead to decisions that are incompatible with contractual justice from legal and ethical perspectives. In the field of AI-based contracts, data quality plays a decisive role in shaping contractual proposals, determining prices, assessing risk, or even performing obligations. If the data used contain errors or biases, the results of algorithmic analysis will naturally be affected by those defects. For example, if an intelligent system relies on incomplete or biased data in pricing or credit assessment, it may create conditions in which one party to the contract is placed in an imbalanced and unfair position. In such a case, although the decision is apparently made by a neutral system, in reality it is the result of a process that was shaped from the outset on the basis of distorted data.

From the perspective of Islamic jurisprudence, one of the important principles in transactions is the observance of commutative justice and the balance of counter-values. This principle indicates that the reciprocal obligations of the parties must be regulated in terms of value and conditions in such a way that neither party is exposed to unjust harm. If the contractual decision-making mechanism is designed in such a way that, due to incorrect or biased data, unfair conditions are created for one of the parties, this situation may be regarded as incompatible with the foundations of transactional justice in jurisprudence. In fact, distorted data may indirectly lead to a form of imbalance in the contractual relationship. Moreover, the use of biased data can lead to hidden discrimination in contractual relations. Algorithms trained on historical data may reproduce discriminatory patterns existing in those data and consequently make decisions that systematically harm certain users or groups. Such a situation is not only incompatible with the principles of justice in Islamic jurisprudence but may also conflict with the foundations of civil liability, because harm arising from algorithmic decisions ultimately returns to the persons who designed, supplied, or used the system (Saatchi & Niazabadi, 2014).

Therefore, in the legal analysis of AI-based contracts, the issue of data quality cannot be treated merely as a technical matter; rather, it must be considered part of the legal obligations of those who use these systems. Designers and users of intelligent systems must adopt measures to ensure, as far as possible, the accuracy, comprehensiveness, and relative impartiality of the data used. These measures may include mechanisms for data evaluation, continuous monitoring of algorithmic performance, and the possibility of human review in sensitive cases.

Ultimately, it can be stated that data in artificial intelligence systems play a role similar to the basis of human decision-making in traditional contracts. Just as error or deception in the foundations of human decision-making may lead to invalidity or liability, the use of incorrect or biased data may also affect the validity and justice of AI-based contracts. Therefore, attention to data quality and oversight of data-driven processes is an essential condition for realizing contractual justice in the age of artificial intelligence (Heydari, 2014).

#### 4.12. *Fundamental Change of Circumstances (Hardship) in Automated Contracts*

One of the important challenges in AI-based contracts is the manner of dealing with unforeseeable changes in the conditions of performance. In traditional contractual relations, between the time of contract formation and performance, economic, social, or technical circumstances may change in such a way that performance of the obligation becomes extremely difficult or harmful for one of the parties. In such cases, contemporary law, by introducing the doctrine of “fundamental change of circumstances” or hardship, has sought to provide a mechanism for modification or review of the contract so that the initial balance of the contractual relationship is preserved. According to this doctrine, if after the conclusion of the contract circumstances arise that were not reasonably foreseeable and make performance of the obligation abnormally burdensome, the injured party may request renegotiation or modification of the contractual terms. The purpose of this mechanism is to preserve contractual justice and prevent the imposition of unfair harm on one of the parties. Although this doctrine is not expressly stated in Iranian civil legislation, many jurists have considered it acceptable in light of the general principles of fairness and contractual justice.

In Imami jurisprudence, there are also rules that perform a similar function. Among the most important of these rules are the rule of “hardship and distress” and the rule of “no harm.” According to the rule of hardship and distress, if the performance

of a duty or obligation causes severe and abnormal hardship, the binding ruling may be reconsidered. Likewise, the rule of no harm states that, in the Islamic legal system, a ruling that entails significant harm to persons is unacceptable. These rules show that Islamic jurisprudence also recognizes the principle of flexibility in the face of abnormal circumstances. Nevertheless, in AI-based contracts, and especially automated contracts, the issue becomes more complex. Many of these contracts are designed in such a way that obligations are performed automatically and without direct human intervention. Intelligent systems may continue the process of contract performance on the basis of predetermined data and algorithms, even if environmental or economic circumstances have changed fundamentally. In such a situation, the absence of a possibility of intervention or suspension of the process may lead to the performance of obligations that are no longer fair or reasonable under the new circumstances. Therefore, one of the important requirements in designing AI-based contractual systems is the inclusion of mechanisms for dealing with changed circumstances. These mechanisms may include the possibility of temporarily suspending the automatic performance of the contract, referring the decision to human review, or activating a process for revising contractual conditions. Such measures enable the system, in the event of abnormal or crisis conditions, to avoid mechanical and inflexible performance of obligations. Under crisis conditions—such as economic crises, widespread disruptions in digital infrastructures, or severe changes in environmental data—the importance of this flexibility is doubled. If automated contracts are designed without considering such situations, they may lead to results incompatible with the principles of contractual justice and jurisprudential standards. Conversely, providing adaptive mechanisms in system design can prevent many legal conflicts (Nasser & Sadeghi, 2019).

Ultimately, it may be stated that combining jurisprudential rules such as no harm and hardship and distress with modern concepts of contract law, such as the doctrine of hardship, provides an appropriate framework for analyzing AI-based contracts. This approach shows that the realization of contractual justice in the age of technology requires that “legal flexibility” also be taken into account in the technical design of intelligent systems so that contracts can adapt to changing and unforeseeable circumstances.

#### 4.13. *Civil Liability Arising from Algorithmic Error*

The expansion of the use of artificial intelligence systems in the formation and performance of contracts has made civil liability arising from algorithmic errors one of the central issues of technology law. Algorithmic error may have various origins: defects in the conceptual design of the system, programming errors, use of defective or biased data, inappropriate updates, or even incorrect learning in self-learning processes. In all these cases, the result may be harm to one of the parties to the contract or to third parties. The fundamental question is what the basis of liability is in these cases and how it should be analyzed. Within the traditional framework of civil liability, the principle is fault-based liability; that is, the injured party must prove that the person causing the damage committed fault and that there is a causal relationship between the fault and the harm. However, in the field of complex technologies, proving fault faces serious difficulties. The technical structure of artificial intelligence systems, especially systems based on deep learning, is such that accurately identifying the source of the error and attributing it to the conduct of a particular person, such as a designer, programmer, or user, is not always possible. This complexity can impose a heavy evidentiary burden on the injured party and, in practice, create obstacles to compensation.

For this reason, some views in contemporary law suggest moving toward a form of risk-based liability or strict liability in the field of high-risk and complex technological activities. According to this approach, the mere creation and use of a system capable of causing harm may serve as the basis of liability, even if the fault of the responsible person is not directly proven. The justification for this theory is that a person who benefits from technology must also accept the risks arising from it and compensate for its social costs (Tajik Qaleh et al., 2025).

In Iranian law, although the prevailing system of liability is fault-based, a tendency toward strict or risk-based liability can be observed in some fields. This tendency may also be considered in the field of artificial intelligence by relying on general principles of protection for the injured party. Especially in cases where proving fault is practically impossible due to technical complexity, the acceptance of risk-based liability may be more efficient and more just.

From the perspective of Imami jurisprudence, this issue can be analyzed within the framework of the rules of “destruction” and “causation.” According to the rule of destruction, whoever destroys another person’s property is liable, whether or not the act was intentional. In cases where an artificial intelligence system directly causes harm and customary attribution can be

established between the system's act and the user, this rule can be used to establish liability. Likewise, the rule of causation states that whoever causes harm is liable to compensate if the cause is stronger than the direct actor or if the harm is customarily attributed to that person. Designing or using a defective system may be regarded as an instance of creating a cause. Of course, determining the responsible person in the complex chain of production and use of artificial intelligence systems requires precise distinction between roles. The designer, data producer, platform provider, and final user may each have a share in the occurrence of the error. In such cases, liability may be analyzed on the basis of multiple causes and assessment of the extent of each party's contribution. Criteria such as foreseeability of risk, degree of control over the system, and economic benefit derived from it can affect the determination of the scope of liability (Heydari, 2014).

Ultimately, it can be stated that algorithmic error is an inevitable phenomenon in complex systems, but this should not lead to absence of responsibility. Considering the difficulty of proving fault and the necessity of effective protection for injured parties, a tendency toward risk-based liability, alongside jurisprudential analysis based on the rules of destruction and causation, can provide a coherent framework for legal accountability in the field of AI-based contracts. Such an approach, while preserving compensatory justice, is also consistent with the jurisprudential foundations of liability and the prohibition of causing harm.

#### 4.14. *The Principle of Party Autonomy versus Regulatory Intervention by the State*

One of the fundamental issues in the legal analysis of AI-based contracts is determining the relationship between the "principle of party autonomy" and the "necessity of regulatory intervention by the state" in the digital environment. The principle of party autonomy, which is one of the fundamental pillars of contract law, requires that persons be able, within the framework of law, to decide freely on the conclusion, content, and manner of performance of contracts. This principle also has a firm position in Iranian law through the recognition of freedom of contract and the validity of contractual conditions, and it is reinforced in Imami jurisprudence by the rule that "believers are bound by their conditions." In the context of AI-based contracts, the principle of party autonomy allows the parties to use technological instruments for the conclusion and performance of obligations, to design automated processes, and even to replace human interventions with algorithmic decision-making. From this perspective, the choice to use intelligent systems is itself a manifestation of contractual will, and unwarranted restriction of it may conflict with economic freedom and technological innovation.

Nevertheless, the specific characteristics of the digital environment raise serious questions about the sufficiency of relying solely on party autonomy. The technical complexity of artificial intelligence systems, information asymmetry between users and platforms, the monopolistic power of certain digital service providers, and the widespread use of adhesion contracts may, in practice, deprive users of real bargaining power. Under such circumstances, users' apparent consent does not necessarily mean the realization of free and informed will. This situation can justify a form of regulatory intervention to protect the weaker party to the contract. In contemporary law, legislative intervention in fields characterized by imbalance of power or information is well recognized. Consumer protection regulations, information disclosure requirements, and rules concerning unfair terms are all examples of relative limitation of party autonomy in order to ensure contractual justice. In the field of artificial intelligence as well, the adoption of rules concerning algorithmic transparency, accountability, data protection, and the right to object to automated decisions may be regarded as necessary forms of regulation (Asghari Aghmashhadi & Abouei, 2010).

From the perspective of Islamic jurisprudence, the principle of freedom of contract is also not absolute and unrestricted. Conditions and contracts are valid as long as they do not conflict with the Book, the Sunnah, or mandatory religious rules and do not cause harm or injustice. Rules such as no harm and the prohibition of unjust enrichment show that whenever the exercise of will leads to abnormal harm or injustice, it may be limited. Therefore, regulatory intervention, if undertaken for the purpose of preventing harm, removing gharar, or supporting transactional justice, can also be compatible with jurisprudential foundations. Nevertheless, the main challenge lies in determining the "limits" of this intervention. Excessive regulation may restrict technological innovation and eliminate the flexibility necessary for the development of new contractual instruments; conversely, the absence of supervisory frameworks may lead to the emergence of unfair relations and a decline in public trust in intelligent technologies. Therefore, a precise theoretical explanation of the relationship between contractual freedom and state intervention is necessary.

In summary, it may be stated that in AI-based contracts, the principle of party autonomy remains the basis of the legitimacy of contractual relations, but in the digital context it needs to be supplemented by appropriate regulatory mechanisms. Legislative

intervention must be designed in such a way that, while preserving freedom and innovation, it prevents injustice arising from information asymmetry and technological complexity. Achieving this balance is the essential condition for forming an efficient and just system in the law of smart contracts.

#### 4.15. *Comparative Analysis with International Legal Approaches*

A legal analysis of AI-based contracts without attention to developments in leading legal systems would provide an incomplete picture of the existing situation. Since digital technologies have a transnational nature and many platforms operate at the international level, examining the legal approaches of the European Union, UNCITRAL instruments on electronic commerce, and legislative developments in other countries can provide an analytical framework for assessing and completing the Iranian legal system.

In the European Union, the regulatory approach to artificial intelligence is designed on the basis of risk management and the guarantee of accountability. The European Union's artificial intelligence regulations classify systems according to their level of risk and provide different requirements for design, transparency, human oversight, and conformity assessment. Emphasis on "effective human oversight," documentation of decision-making processes, and traceability of system performance shows that even in the most advanced legal systems, the principle remains the preservation of human responsibility and control. This approach is consistent with the tool-oriented analysis of artificial intelligence and avoids granting independent legal personality to systems. In the field of electronic commerce, UNCITRAL instruments, especially the Model Law on Electronic Commerce and the Convention on the Use of Electronic Communications in International Contracts, emphasize the principle of "functional equivalence." According to this principle, data messages and electronic instruments can perform the function of traditional documents and signatures, provided that attributability, accessibility, and integrity of information are guaranteed. These instruments have also addressed the issue of the use of automated systems in contract formation and state that the absence of direct human intervention does not, by itself, prevent contractual validity, provided that the act can be attributed to a specific person.

In some countries, recent legal developments have focused on the need for algorithmic transparency, the right to object to automated decisions, and the protection of personal data. For example, in the field of data protection, the obligation to provide information about the general logic of automated decisions and the provision of a right to human review in certain cases have been proposed as guarantees for protecting persons' rights against algorithmic decisions. These approaches show that contemporary legal systems seek to establish a balance between technological innovation and the preservation of human dignity and fundamental rights (Abizadeh & Minoei, 2023).

Comparative analysis of these approaches reveals several fundamental points. First, most legal systems emphasize the principle of human accountability and refrain from transferring full responsibility to artificial intelligence systems. Second, transparency, documentation, and the capacity for oversight are recognized as key elements in the regulation of artificial intelligence. Third, protection of the weaker party to the contract and reduction of information asymmetry occupy a special position in legislative policies. For the Iranian legal system, benefiting from these experiences can be useful at several levels: more precise explanation of the rules of attribution and liability in contracts based on automated systems, provision of transparency and human oversight requirements, and design of a framework for risk management in high-risk applications of artificial intelligence. Of course, the adoption of these experiences must be carried out with attention to jurisprudential foundations and the structure of domestic law so that, while preserving local identity, international achievements can also be utilized.

Ultimately, comparative analysis shows that the legal challenges arising from artificial intelligence have a global nature, and responding to them requires continuous dialogue among legal systems. The development of a local regulatory framework in Iran, inspired by principles such as human accountability, algorithmic transparency, and support for contractual justice, while relying on jurisprudential rules such as no harm, negation of gharar, and causation, can lead to a coherent and efficient model in the digital age.

#### 4.16. Future Studies of Contract Law in the Age of Artificial Intelligence

The increasing expansion of artificial intelligence applications in economic and commercial fields shows that this technology has gradually moved from the stage of auxiliary tools to the level of fundamental infrastructures of contractual relations. From the automatic drafting and proposal of contractual terms to the direct performance of obligations through smart contracts, the role of algorithmic systems in shaping, interpreting, and performing agreements is growing. This transformation compels contract law to engage in conceptual and institutional rethinking. In the future, it can be expected that the concept of “contractual will” will become increasingly connected with technological mechanisms. Will may be manifested not only through oral or written expression but also through system settings, software parameters, and default choices. This transformation requires classical theories concerning intention and consent, attribution, and liability to be reinterpreted in light of digital environments. At the same time, the fundamental principle of attributing system behavior to a human person must be preserved in order to prevent a rupture between technology and legal responsibility.

One foreseeable trend is the expansion of “legal coding,” meaning the translation of contractual rules and legal terms into programming language and their implementation in executable codes. Under such conditions, jurists will be required to become familiar with technical concepts, and cooperation between legal experts and software engineers will need to be strengthened. This convergence between law and technology can increase accuracy, speed, and transparency in the performance of obligations, but it simultaneously entails the risk of reducing flexible legal concepts to the rigid logic of code. On the other hand, the concept of “smart regulation” is also emerging as a new horizon. Under this approach, the legislator facilitates oversight of contract performance not merely through traditional rules but also by using technology. The use of digital supervisory systems, mandatory technical standards, and risk assessment frameworks can contribute to the formation of a dynamic system proportionate to rapid technological developments. Nevertheless, such an approach must be accompanied by sufficient guarantees for the protection of privacy and contractual freedoms (Bagheri et al., 2021).

In the context of Iranian jurisprudence and law, future-oriented analysis in this field requires reinterpreting rules such as no harm, negation of gharar, hardship and distress, and the rule of causation in light of emerging technologies. The ijthadi capacities of Imami jurisprudence make it possible to adapt traditional concepts to emerging phenomena and can provide an appropriate theoretical foundation for developing the law of smart contracts. In particular, the emphasis of jurisprudence on commutative justice, the prohibition of unjust enrichment, and the necessity of informed consent can provide clear normative criteria for assessing algorithmic mechanisms. Ultimately, the most important future challenge of contract law in the age of artificial intelligence will be preserving the balance between “technological efficiency” and “protection of contractual justice.” If legal systems can, through a gradual and flexible approach, combine innovation with accountability and automation with human oversight, it can be expected that contract law will not be destabilized by technological change but will instead, through the redefinition of its fundamental concepts, enter a new stage of maturity and efficiency.

## 5. Conclusion

The jurisprudential and legal analysis of the challenges of will and performance of obligations in AI-based electronic contracts shows that the system of contract law stands on the threshold of a structural transformation; a transformation that is not merely caused by changes in the instruments of contract formation, but is affected by changes in the logic of decision-making, the manner of performing obligations, and the pattern of distributing liability. Artificial intelligence, by entering the processes of proposal, analysis, decision-making support, and automatic performance of contracts, has exposed many traditional concepts of civil law to reinterpretation. Nevertheless, the findings of this study indicate that this transformation does not require a rupture from the classical foundations of contract law; rather, it requires the creative interpretation and adaptation of those foundations to the requirements of emerging technology.

First, in the area of conceptualization, it was emphasized that artificial intelligence should be analyzed within the framework of the “tool theory,” not as an independent legal person. Algorithmic decisions, although complex and sometimes unpredictable, are ultimately attributable to human persons, including designers, users, or operators. This approach, while preventing liability gaps, is also compatible with the jurisprudential foundations of causation, destruction, and liability, and prevents the improper or dispersed transfer of responsibility to a non-human entity.

Second, in examining the elements of contractual validity, it became clear that “intention and consent” do not disappear in the digital context; rather, the form of their manifestation changes. The informed choice to use an intelligent system, acceptance of platform terms, and configuration of contractual parameters can be regarded as manifestations of valid will, provided that consent is based on genuine awareness and is free from material gharar. From this perspective, the main challenge does not lie in the validity of AI-based contracts in principle, but in ensuring transparency, removing ambiguity, and preventing information asymmetry.

Third, with regard to the performance of obligations under crisis conditions, the study showed that the inherent rigidity of some automated systems may conflict with jurisprudential and legal rules concerning the modification of obligations, such as no harm, hardship and distress, and the doctrine of change of circumstances. The proposed solution is the development of mechanisms of “programmed flexibility” in the design of smart contracts, meaning that the possibility of suspension, review, or human intervention under unforeseen conditions should be incorporated into the code. Such an approach can create a connection between the rigid logic of code and the justice-oriented spirit of law.

Fourth, the analysis of civil liability in this field showed that reliance solely on the theory of fault may not respond adequately to the complexities of harm arising from automated systems. In some cases, a tendency toward risk-based liability or the expansion of the scope of causation can be helpful, especially where the injured party is in a weaker position or where proving technical fault is difficult. This result is also consistent with the protective policies of contemporary law and the jurisprudential foundations of prohibiting harm.

Fifth, at the regulatory level, the article showed that the principle of party autonomy remains the cornerstone of contractual relations, but in the digital context it needs to be supplemented by mandatory protective rules. Smart regulation—based on algorithmic transparency, human accountability, and risk management—can prevent structural injustices without weakening innovation. The experiences of the European Union and UNCITRAL instruments also confirm that most leading legal systems emphasize the preservation of human responsibility and the capacity for oversight and avoid granting legal independence to artificial intelligence systems.

Looking to the future, contract law will inevitably engage more deeply with technology. The expansion of legal coding, the growing role of self-executing contracts, and the emergence of technology-based regulation depict a new face of private relations. On this path, the Iranian legal system can, by relying on the ijthadi capacities of Imami jurisprudence and selectively benefiting from international experiences, present a local model that is nevertheless aligned with global developments.

In final summary, it can be stated that the challenges of will and performance of obligations in AI-based electronic contracts are not a sign of the collapse of the traditional foundations of law, but rather an opportunity for their rethinking and evolution. If the principles of human accountability, transparency, commutative justice, and protection of the weaker party are considered as guiding lines for future regulation, it will be possible to design a legal system that simultaneously responds to technological efficiency and protects human dignity and rights. Such an approach can enhance the position of Iranian law in the emerging discourse of “digital private law” and create the basis for broad scientific publication and attention to this research in specialized journals in the field of digital law.

### **Ethical Considerations**

All procedures performed in this study were under the ethical standards.

### **Acknowledgments**

Authors thank all who helped us through this study.

### **Conflict of Interest**

The authors report no conflict of interest.

### **Funding/Financial Support**

According to the authors, this article has no financial support.

## References

- Abizadeh, A., & Minoei, M. (2023). Access Control in Financial Smart Contracts Using Digital Identity Management and Machine Learning to Facilitate Internet of Things Exchanges. *Financial Knowledge*, 25(53), 111-122.
- Afzali Mehr, M., Dehghani, M., & Eskini, R. (2022). A Comparative Study of the Legal Requirements for Designing Digital Smart Contracts in Iranian and French Law. *Comparative Law Research*, 6(2), 29-51.
- Ahangaran, M. R., & Ahmadi, A. (2019). Jurisprudential and Legal Effects and Rulings of Mistake and Error in Electronic Contracts. *Jurisprudential Research*, 15(1), 1-25.
- Ahmadvand, B., & Jahanshahi, A. (2024). A Comparative Study of the Concept of Personal Data in the Legal Systems of the European Union and Iran.
- Amini, E., & Vali, A. (2023). A Comparative Study of Termination of Electronic Transactions in Iranian Law and English Law. Proceedings of the 8th International Conference on Research in Sciences and Engineering and the 5th International Congress on Civil Engineering, Architecture, and Urban Planning of Asia,
- Amir-Moezzi, A. (2016). *Conflict-of-Laws Rules in the Law Governing Contractual Obligations* (1st ed.). Dadgostar Publishing Institute.
- Asghari Aghmashhadi, F. a.-D., & Abouei, H. (2010). Good Faith in the Performance of Contracts in English and Iranian Law. *Law Quarterly*, 2(4), 1-21.
- Bagheri, L., Safavi, M., & Yemerli, S. (2021). Foundations and Challenges of Determining the Governing Law of International Electronic Contracts. *International Legal Research*, 16(59), 107-131.
- Bigdeli, S. (2007). *Contract Adjustment* (1st ed.). Mizan Publishing.
- Ebrahimzadeh, S., Soltanshahi, Z., Soltanshah, D., & Soltanshah, H. (2025). The Time of Formation of Electronic Contracts: A Comparative Study of UNCITRAL Regulations, U.S. Law, and English Law. Proceedings of the 20th National Conference on Law, Social Sciences and Humanities, Psychology, and Counseling, Shirvan.
- Elsan, M. (2014). *Electronic Commerce Law, Vol. 1* (2nd ed.). SAMT Publishing.
- Feyzi Chekab, G. N. (2007). The Moment of Formation of Electronic Transaction Contracts. *Journal of Commercial Research*, 42(51), 167-206.
- Hassani, K. (2023). Validation of Smart Contracts in Jurisprudence and the Laws of Iran and the United States. *Political Science Studies*, 9(1), 472-499.
- Heydari, H. (2014). The Status of Price in Electronic Contracts from the Perspective of Jurisprudence and Iranian Law. *Quarterly Journal of Jurisprudence and Foundations of Islamic Law*, 7(4), 22-41.
- Jafari Langroudi, M. J. (2009). *Encyclopedia of Civil and Commercial Law, Vol. 1* (2nd ed.). Ganj-e Danesh Publishing.
- Katouzian, N. (1991). *Legal Acts: Contract and Unilateral Legal Act, Vol. 1* (13th ed.). Bahman Borna Publishing.
- Mohammadi, R. (2023). Legal Examination of Smart Contracts in the Oil, Gas, and Petrochemical Sector. *Mellal Research*, 11(25), 87-101.
- Naderi Anari, M., & Dorostkar, H. (2025). Legal Analysis of Electronic Contracts: Challenges and Opportunities in the Digital Age. Proceedings of the 7th International Conference and 8th National Conference on Law and Political Science, Tehran. <https://civilica.com/doc/244335>
- Nasser, M., & Sadeghi, H. (2019). Validation and Legal Challenges of Applying Smart Contracts: A Comparative Study of the Legal Systems of Iran and the United States. *Private Law Research*, 7(27), 225-288.
- Nejat-Zadegan, S., & Soltani, M. (2022). Evaluation of the General Conditions for the Validity of Smart Contracts from the Perspective of Iranian and U.S. Law. *Law and Technology*, 19(25), 303-335.
- Nouri, N. (2011). *Electronic Commerce Law, Vol. 1* (2nd ed.). Ganj-e Danesh Publishing.
- Saatchi, A., & Niazabadi, M. (2014). A Comparative Analysis of Hardship in Contract Law with Emphasis on the Approach of the Principles of International Commercial Contracts. *Private Law Research*, 2(3), 41-54.
- Safaei, S. H. (2009). *General Rules of Contracts, Vol. 2* (7th ed.). Mizan Publishing.
- Saket, M. H. (2007). *Personality and Legal Capacity in Civil Law, Vol. 1* (3rd ed.). Jangal Publishing.
- Shahidi, M. (2003). *Formation of Contracts and Obligations, Vol. 1* (2nd ed.). Majd Publishing.
- Shariat-Bagheri, M. J. (2016). *Private International Law, Vol. 1* (1st ed.). Mizan Publishing.
- Soltani, M., & Nejat-Zadegan, S. (2022). Evaluation of the General Conditions for the Validity of Smart Contracts from the Perspective of Iranian and U.S. Law. *Law and Technology*, 19(25), 303-335.
- Tajik Qaleh, Z., Bahmani, M., & Moayer-Mohammadi, M. A. (2025). Principles Governing the Validity of Contracts Concluded by Artificial Intelligence in Iranian and English Law. *Scientific Biannual Journal of Civil Law Knowledge*, 14(28), 43-61.