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Theory Of Contract In The Digital Environment

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Abstract:
The general theory of contract has undergone successive disruptions in the modern era as a result of social changes, economic transformations, and technological developments. The latter, characterized by their continuous and rapid evolution, have exerted a profound influence on the fundamental principles of contract law, from the negotiation phase through to the performance of the contract. This influence has driven the transition from the traditional concept of contract to the electronic and smart contract, giving rise to numerous challenges concerning the application of the general theory of contract within the digital environment. These challenges could only be overcome through the renewal of its foundational principles, in order to achieve contractual balance and ensure legal and contractual security and stability.

KEY WORDS: Theory of Contract; Contract; Information and Communication Technology (ICT); Principle of Freedom of Will.

Introduction:
The general theory of contract, as developed under the classical individualist school of thought, was founded upon the philosophy of the principle of freedom of will (principe de l'autonomie de la volonté), which grants individuals the liberty to conclude contracts and to incorporate therein whatever rights and obligations they deem appropriate. Such autonomy results in a form of reconciliation that serves as a self-imposed law — ensuring equality and justice between the parties. Hence, it has often been said that "he who makes a contract establishes justice." This statement was not inaccurate, given the simplicity of contractual dealings that mirrored the simplicity of social and economic life at that time. The parties could defend their respective interests on an equal footing, a notion that was codified in the Napoleonic Civil Code of 1804, which remains a cornerstone of the French legal heritage.

Consequently, the theory of contract became one of the fundamental pillars of civil law, governing contractual relations for centuries under the doctrine of party autonomy. However, it has undergone successive disruptions due to social change, economic transformation, and, more recently, technological advancement. The latter has been particularly impactful owing to the rapid and continuous evolution of information and communication technologies (ICTs), which have imposed unprecedented challenges on the traditional theory of contract. These developments have necessitated a reconsideration of its foundational principles in order to adapt to a technologically driven reality, wherein the contract has evolved from its traditional concept into electronic and smart forms.

This study holds scientific, legal, and economic significance for several reasons. Firstly, it highlights the financial, economic, and legal value inherent in contracts, given their central role across all sectors of life. Secondly, it seeks to analyze the degree to which technological advancement in the field of information and communication has influenced contractual relations, a transformation that has shifted the contract from its traditional conception to the electronic contract. By examining the classical principles of contract theory within the digital environment, despite their differing legal nature, we can identify numerous gaps and challenges in applying these principles in cyberspace. This raises the following central question:

How has the general theory of contract confronted the challenges imposed by the digital environment, resulting from technological advancement, in order to ensure contractual and legal security and stability?

To answer this question, and other issues arising therefrom, this study adopts both the inductive method, to trace the evolution of the concept of contract, and the descriptive-analytical method, to examine the relevant legal texts that have prompted the renewal of the theory of contract to guarantee its continued applicability. The discussion is divided into two main sections:

I. The Contract in the Context of Technological Developments
II. The Renewal of Contractual Principles to Ensure Legal and Contractual Security

1- The Contract in the Context of Technological Developments:

Continuous and rapid technological advancement has profoundly affected contractual dealings, giving rise to a new virtual form of commerce known as electronic commerce (e-commerce). Through modern communication networks such as the Internet and intranets, individuals and institutions can now access a virtual marketplace to buy and sell goods or to request and provide services. This evolution has deeply transformed the nature of contracts, shifting them from the traditional form to electronic and smart contracts.

1.1- Technological Progress as a Driver of Contractual Transformation

The development of information and communication technologies (ICTs) has passed through several stages from the invention of the printing press to the present day. The contemporary era represents the most significant leap, as these technologies are now integrated within global networks that have effectively turned the world into a "global village," facilitating communication and transactions. This integration has been a major driver in the transformation of the contractual framework. To understand this impact, it is first necessary to examine the development of ICTs and their effects on the contractual nature of legal relations.

1.1. The Concept of Information and Communication Technology (ICT)

The expression "Information and Communication Technology" consists of three components: technology, information, and communication. To establish a comprehensive definition, each component must first be defined separately.

Technology:

The term derives from the Greek roots' techno (meaning technique or skill) and logy (meaning study or science). Generally, it refers to the systematic study and application of techniques. However, it is important to distinguish between technique and technology.

Technique refers to the method or process by which specific actions are performed, often involving the combination of resources, knowledge, and human labor to transform raw materials into finished products.

Technology, by contrast, denotes the systematic knowledge of techniques. That is, the body of scientific and technical knowledge required to achieve specific objectives, which evolves with advances in science and applied research. It may thus be defined as the set of processes that, through organized scientific inquiry, enhance basic techniques and apply scientific knowledge to industrial and productive development. (Al-Daqs, 2005, p. 43)

Accordingly, technology can be summarized as:

"Science constitutes the foundation of knowledge, technology represents the application of that knowledge, and while science drives technology, technology, in turn, propels technique." (Carrier & et al, 1991, p. 9)

Information and Communication: There is no universally accepted definition of these terms, as their meanings are broad and intersect across political, social, artistic, literary, and economic domains. Nonetheless, most scholars view information as a subset of communication, given that communication encompasses all living beings, while information pertains primarily to humans. The sociologist Charles Cooley, one of the pioneers in this field, defined communication as "the transmission of meaning and significance among individuals," or the process through which a sender and receiver interact within a social context to exchange ideas, messages, or information concerning a specific issue or reality. (El-Sayed, p. 97)

Comprehensive Definition: Based on the foregoing, Information and Communication Technology (ICT) can be defined as:

"The set of devices, tools, and systems designed to produce, distribute, and display information." Alternatively, it may be described as:
"A collection of techniques, means, and systems employed to process and transmit content through mass, interpersonal, or collective communication, enabling the collection, storage, retrieval, and dissemination of data and information, whether written, audio, visual, or digital, via electronic computers and related technologies." (de Boislandelle,, 1998, p. 67)

1.1.2. The Evolution of ICT Tools

The evolution of ICTs has gone through multiple stages. In early history, humans employed symbolic and rudimentary means such as fire or smoke signals. However, the twentieth century marked a major technological leap, beginning with the invention of the printing press, telegraph, and telephone, which revolutionized the speed and accessibility of information exchange. The integration of these technologies into the Internet has since accelerated communication and data retrieval to an unprecedented degree, effectively turning the world into a global village. One key outcome of this evolution has been the incorporation of ICTs into national legal frameworks, significantly influencing the general theory of contract. (Nour, 2005, p. 27)

1.2. The Evolution of the Contractual Relationship

Due to the distinctive features and advantages of information and communication technologies (ICT) , namely speed, global reach, and accessibility, the world has effectively become a "global village" in which individuals and institutions can interact within a virtual environment to exchange information, data, opinions, and even to conclude contracts.

This digital transformation has led to a fundamental change in the way contracts are concluded, executed, and managed. The absence of physical presence between contracting parties has given rise to the emergence of a virtual meeting place for contracts, governed by rules and standards distinct from those applicable in traditional contracting. Consequently, the validity of contracts has been influenced by changes in the concepts of consent, proof, legal capacity, and identity verification. This shift has transformed the classical contract into the electronic and smart contract, characterized by its unique legal nature.

As a result, the general theory of contract faces new challenges, particularly the need to adapt its traditional principles to the realities of the digital environment, especially in accordance with the information explosion driven by the rapid and continuous development of communication technologies. (Lotfi, 2002, p. 161)

2- The Evolution of the Concept of Contract: From the Classical to the Electronic and Smart Contract

Linguistically, the term contract denotes an agreement between two or more parties, where the acceptance of one corresponds to the offer of the other, thereby creating a binding legal relationship. The word originates from the notion of "binding" or "tying," much like the act of fastening a rope.

In civil law, a contract is defined as an agreement or an exchange of offer and acceptance that establishes specific obligations and rights. However, as technology evolved, so too did the concept of contract, moving from the traditional form to the electronic and then to the smart contract. To grasp this evolution, it is essential to first examine the concept, legal characterization, types, and characteristics of the electronic and smart contract.

2.1. The Concept of Electronic Contract:

It is not possible to define the concept of the electronic contract without addressing its definition, legal characterization, types, and features, in order to distinguish it from the traditional contract.

2.1.1. The Distinctiveness of Electronic Contract:

Definition: An electronic contract is the concurrence or meeting of wills through offer and acceptance conducted via an information network (online) or through any electronic means of negotiation concerning the contract or any of its components during its formation. Such agreement between the contracting parties may take place in the contractual forum, through computer screens, or by any

electronic audiovisual means. (Al-Mutaliqa, 2011) Therefore, the physical presence of the contracting parties in one place is not required, as the contract may be concluded within a virtual forum, characterized by the absence of material presence, meaning that the meeting of minds occurs virtually through communication networks rather than in a tangible meeting room.

It is also defined as an agreement wherein offer and acceptance meet through the international telecommunications network (the Internet), with the purpose of producing a legal effect, the creation, transfer, modification, or termination of an obligation. (Belkichi, p. 12) Likewise, it is the contract concluded through electronic data interchange (EDI) with the aim of creating contractual obligations resulting from the meeting of wills via international communication networks. (Khaled, 2011, p. 20) All definitions agree on the presence of an electronic intermediary between the contracting parties, created, signed, and represented digitally by communication networks, for the expression of their will to conclude a contract without meeting in a single physical forum. However, the electronic contract remains, in essence, subject to the general theory of contract, including its essential elements: consent, object, and cause.

The Legal Adaptation of Electronic Contract:

The electronic contract is characterized by its novelty, both in nature and form. Being a modern contractual mechanism, jurists have differed regarding its legal adaptation, whether it is a contract of adhesion or a consensual contract. One school of thought considers it a contract of adhesion, as the contracting party has no choice but to click on pre-set fields on the other party's website, with predetermined characteristics such as the nature of the goods and their price, without negotiating the terms of the contract. The party can merely accept or reject the offer. (Falah Hassan, 2007, p. 18)

This view argues that such contracts lack contractual equality since one party unilaterally drafts the terms without the other's participation. (Khaled, 2011, p. 22) On the other hand, another school regards the electronic contract as a consensual contract, since the contracting party is free to refuse the terms of one supplier and instead contract with another, given the abundance of suppliers and sellers in the electronic marketplace. (Falah Hassan, 2007, p. 19)

It can therefore be concluded that an electronic contract may take the form of either a negotiated contract or a contract of adhesion, depending on the electronic medium employed. If the medium allows for the exchange of opinions and negotiation between parties, the contract is deemed consensual; however, if it is concluded via platforms that use pre-drafted standard terms prepared by the offeror, without granting the offeree the right to negotiate, it is deemed a contract of adhesion. (Khaled, 2011, p. 23)

2.1.2. Types and Characteristics of Electronic Contracts

To determine the types of electronic contracts, it is necessary to consider the electronic medium through which the contract is concluded, as it defines the specific nature of each contract formed within the digital environment.

Types of Electronic Contract:

The increasing demand for goods and services through communication technologies has led to the evolution of electronic commerce, accompanied by a diversification of electronic contracts. The most common types include:

- Internet Subscription Contract: One of the most widespread electronic contracts, as it provides the essential means to access and use computer and Internet services in e-commerce. Through it, the user connects their device to the Internet and completes the necessary technical steps to register in communication programs.

- Information Leasing Contract: A data-based agreement between two parties for the exchange of various messages and information, whereby the Internet service provider allocates part of its technical and informational capabilities to the subscriber for use in achieving specific objectives.

- Virtual Store Contract: A contract of great significance in e-commerce, allowing merchants to display their products, conduct transactions, and conclude contracts through an electronic commercial website, thereby enabling the presentation of goods worldwide.

- Contract Concerning Informational Assets: A contract under which legal, technical, or economic consultations are provided to clients via the global information network, in return for a monetary consideration. (Al-Feel, p. 8)

Characteristics of the Electronic Contract:
While the electronic contract serves as an instrument of e-commerce, it differs substantially from traditional contracts in terms of negotiation, conclusion, execution, and proof, due to the digital environment in which it operates. Its principal characteristics are:

- Virtual Forum for Contracting: The parties do not physically meet but rather communicate through remote means of communication. The contract may be concluded instantly or after a time interval, and its legal effect arises only once the offeree accepts the offer made by the offeror through digital means. (Al-Feel, p. 8)

- Global Nature: Due to its reliance on communication technologies characterized by a global scope, the electronic contract transcends territorial boundaries, enabling the conclusion of contracts at any time and from any location, thus embodying the notion of a "global village." (Khaled, 2011, p. 77)

- Commercial Character: The electronic contract typically serves commercial purposes and seeks profit, except in cases where the law expressly provides otherwise for instance, professional services such as those of doctors or engineers, which are excluded from commercial status under certain legal systems. (Al-Feel, p. 11)

- Electronic Writing and Signature: The transition from paper-based contracts to electronic documentation necessitates the use of electronic signatures as proof of consent. Consequently, electronic payment methods such as digital currencies, magnetic plastic cards, electronic checks, and digital commercial instruments have emerged. (Suhleb, 2008, p. 26)

- Multiplicity of Contracting Parties: One contracting party may send a single electronic message to multiple recipients simultaneously, thereby enabling the conclusion of multiple contracts at once. (Al-Arabi, p. 102)

2.2. The Smart Contract
The concept of the smart contract cannot be properly understood without first examining its definitions, features, and types, to determine whether it can be classified as a form of electronic contract.

2.2.1. Definition of the Smart Contract
The credit for the creation of the concept and terminology of "smart contracts" is attributed to the legal scholar and cryptography expert Nick Szabo (1994). Szabo, a computer scientist, devised a model for a virtual currency in 1998 called Bit Gold, although it was never implemented.
He initially defined the smart contract as a "computerized transaction protocol that executes the terms of a contract." With technological progress, this definition evolved: the smart contract came to be understood as "a set of promises specified in digital form, including the protocols within which the parties perform on these promises". (Daoud, 2021, p. 36)

Vitalik Buterin, founder of the Ethereum network, defined it as "a mechanism involving digital assets and two or more parties, where some or all of the parties place assets into the contract, and those assets are automatically redistributed among the parties according to a formula based on certain data that was not known at the time of contract initiation." (Lauslahti et al., 2017)

Other jurists have defined smart contracts as "computer codes operating on the blockchain, containing a set of rules agreed upon by the parties, which are automatically executed once pre-defined conditions are met." According to Investopedia, it is "a self-executing contract programmed within a decentralized platform known as the blockchain" (Maaddawi, 2021, p. 62) Professor Régis de Boise defined it as "a digital contract based on blockchain technology that enables the control of each party's obligations under the contract." Likewise, it has been described as "a digital contract that relies on decentralized consensus, is self-enforcing, and is tamper-proof due to its automatic execution" (Ahmed Eissa, 2021, pp. 41-42)

These definitions, although technically complex, all converge on describing the operational mechanism of smart contracts. According to P. De Filippi, a smart contract is "software executed in a decentralized manner on a blockchain, whose functions are triggered by the fulfillment of predetermined conditions." Such contracts do not replace traditional agreements but rather complement and reinforce them, a view supported by Professor Mansour Dawood, who stated that "the smart contract is the ideal complement to the traditional contract, endowing it with digital and social strength." (Daoud, 2021, pp. 41-42)

From a legislative standpoint, the first attempt to define smart contracts appeared in the United States, where lawmakers sought to establish technical and legal boundaries for blockchain and smart contracts. The Arizona House Bill 2417 (2017) defines a smart contract as:

"An event-driven program, with state, that runs on a distributed, decentralized, shared, and replicated ledger and that can take custody over and instruct transfer of assets on that ledger."

Similar definitions have been adopted by the states of New York (2017), Tennessee (2018), and Ohio (2018). Meanwhile, Belarus provided a legislative definition in Decree No. 8 of 2017 on the Development of the Digital Economy, describing a smart contract as:

"A program code designed to operate on a distributed ledger (blockchain), which is another form of distributed information system intended for the automatic execution of transactions or the performance of other legal acts" (Ahmed Eissa, 2021, p. 42)

2.2.2. Characteristics and Types of Smart Contracts

Smart contracts differ fundamentally from traditional contracts, as they are digital agreements that execute automatically once their pre-defined conditions, embedded in the blockchain technology, are fulfilled. They are characterized by autonomy, transparency, and security, arising from their operation within a virtual environment. These attributes have given rise to several types of smart contracts.

Characteristics of Smart Contracts

Smart contracts are distinguished from traditional contracts as they are considered digital agreements that execute automatically upon the fulfillment of predetermined conditions on blockchain technology. They are characterized by their autonomy, transparency, and security, owing to their nature of operating within a virtual environment, which has resulted in the emergence of various types. (Ahmed Eissa, 2021, pp. 44-46)

-Electronic Nature: A smart contract cannot exist outside the electronic realm. It is the digital transformation of the parties' agreement into programming language deployed on the blockchain network for execution and formation. This inherently categorizes smart contracts as a form of electronic contract.

-Conditional Nature: The content of a smart contract is expressed through conditional statements ("if–then" clauses). For example: if the purpose of the contract is for Abderrahmane to purchase an e-book from Mona, it may be encoded as follows — If Abderrahmane receives the digital book from Mona, then he must transfer the payment to her account.

-Self-Verification:

Smart contracts require no central authority to validate performance; verification occurs autonomously through consensus mechanisms on the blockchain, ensuring trustless operation between the parties.

-Self-Execution:
Once th1e conditions and data specified within the contract are satisfied, execution takes place automatically without human intervention, guaranteeing autonomous enforcement.

-Tamper Resistance: This feature derives from the blockchain's cryptographic hashing mechanisms (Hash), which render any alteration or manipulation of the contract's content detectable and practically impossible, thereby ensuring integrity and reliability.

Types of Smart Contracts
With the expansion of electronic commerce, smart contracts have emerged as an alternative or complement to traditional contracts. Their terms are written as programmable code that executes automatically upon fulfillment of the specified conditions. Smart contracts are generally classified into two main categories:

Deterministic Smart Contracts:
These contracts do not rely on external data or information sources outside the blockchain network. All relevant data necessary for their execution are contained within the blockchain itself, allowing the contract to autonomously make decisions and carry out its operations. (Ahmed Eissa, 2021, p. 43)

- **Non-Deterministic Smart Contracts:** These depend on an external entity known as an Oracle, which supplies real-world data necessary for the contract's execution and decision-making. Such information, for instance, weather conditions, exchange rates, or market prices, lies beyond the blockchain's native data scope. (Ahmed Eissa, 2021, p. 43)

II. Renewal of Contractual Theory Principles to Ensure Contractual Balance
As an inevitable consequence of the rapid and continuous development of information and communication technologies (ICTs), the nature of contractual relationships has evolved. Contracts have transitioned from their traditional form to electronic contracts with distinct features. This evolution has presented new challenges to the general theory of contract, particularly regarding the extent to which the principle of freedom of contract (autonomy of will) can be maintained within the digital environment. The central question arises: can contractual freedom be exercised as fully as in traditional contracts, or must it be restricted by the structural realities of the digital environment to achieve equality and contractual balance, thus ensuring legal certainty and stability.

1. Application of the Principle of Autonomy of Will in Electronic and Smart Contracts
The principle of autonomy of will constitutes the cornerstone of contract theory and governs all contractual relations. It embodies the full freedom of the parties to conclude contracts and to include therein whatever rights and obligations they desire, serving as the "law of the parties." (Abdel-Hamid, p. 14) However, within the digital environment, this classical conception requires re-evaluation, given the transformation of contractual nature and the shift from traditional to electronic forms. A proper understanding of its application in digital settings thus necessitates an analysis of its definition and implications.

1.1. Definition of the Principle of Autonomy of Will
This principle has received significant attention in legal doctrine and has been defined in various ways, all converging on the notion of freedom of the individual will in the creation, modification, and termination of contractual obligations, without interference from external authority, so long as public order and morality are respected. In essence, it reflects the absolute freedom of parties to establish contracts and to stipulate therein whatever terms they choose, within the framework of equality and liberty. Such contracts, once concluded, become binding as the law between the parties, determining their rights and obligations according to their mutual consent.
This freedom manifests in the following core aspects:'

1.1.1. Freedom of Contract

Freedom of contract is a fundamental legal principle guaranteeing individuals the right to enter into agreements by their free will, without coercion or external pressure, and to determine the content and conditions of such contracts within the limits of public order and morality. While not uniquely defined in law, the principle is enshrined in numerous legal systems. It is embodied, for example, in Articles 6, 1123, and 1131 of the French Civil Code, and recognized by the French Constitutional Council as a constitutional principle derived from the Declaration of the Rights of Man and of the Citizen (Decision No. 2000-473, 19 December 2000).
Similarly, the Algerian Civil Code (Article 59) affirms this principle by establishing consensualism as the general rule in contract formation, without the requirement of a specific form. (Bouhentala, 2024, p. 90) The freedom of contract encompasses:

- Freedom to contract or not to contract;
- Freedom to determine the content of the contract;
- Freedom to choose the contracting party;
- Freedom to define the effects of the contract; and
- Freedom to amend or terminate the contract.

1.1.1. Manifestations of Contractual Freedom in Electronic Contracts

As a general rule, electronic contracts remain governed by the general theory of contract. Thus, parties retain contractual freedom, beginning with the negotiation stage, which enables them to define the foundations of the agreement and delineate the scope of contractual liability arising from non-performance.

- Freedom to Negotiate:

At the pre-contractual stage, contractual freedom implies that individuals are free to negotiate or to abstain from contracting altogether. It does not bind them to conclude a final contract. Both parties are legally equal, each expressing their will freely. (Rödl, p. 62)

In the context of electronic negotiation, the autonomy of will manifests through the unrestricted ability of individuals to engage in digital discussions, whether via email correspondence, video conferencing, or online chat systems to exchange proposals, counteroffers, and technical or legal analyses essential to reaching mutual understanding.

1.1.2. Definition of Electronic Negotiation:

The term combines negotiation and electronic, and refers to the exchange of dialogue and contemporaneous presence of negotiating parties through audiovisual communication technologies. It enables the discussion of proposals, bargaining, and the exchange of technical, legal, and advisory reports, so that each party is fully informed of the most advantageous legal arrangements and the resulting rights and obligations prior to concluding the contract. (Maazouz, 2020, p. 284)

1.2. Via Electronic Mail (E-mail):

E-mail is the electronic means through which contractual negotiations are conducted between the parties. It allows them to exchange data, information, images, diagrams, and designs for the purpose of determining the structure and content of the contract. Consequently, e-mail has become the most effective and widely used means of conducting electronic negotiations. (Arjilos, 2018, p. 54) The French Law on the Digital Economy of 22 June 2004, in Article 2, defines electronic mail as:

"Any message, whether textual, auditory, or accompanied by images or sounds, transmitted through a global communications network and stored on the servers of that network or on the recipient's terminal equipment, enabling the latter to access and use it". (Atik, 2012, p. 12) Negotiation may also take place by connecting computers equipped with audio and video communication tools installed on each negotiator's device, without the parties' physical presence, a method now largely obsolete due to technological advancement. (Arjilos, 2018, p. 54)

Via Video Conferences: This method is widely used in both domestic and international business transactions. Major corporations have conference rooms equipped with television screens and cameras

that are directly connected to similar facilities in other companies, allowing real-time audiovisual communication between negotiating parties. (Arjilos, 2018, p. 55)

Via Chat or Instant Messaging: In this form of negotiation, each party opens a dedicated window on their device simultaneously. Messages typed by one party appear instantly on the other's screen, enabling real-time synchronous communication across different geographical locations through electronic mail. (Hamdi, 2015, p. 141)

2. Digital Consent "The Principle of Mutual Agreement in Electronic Contracts"

In general, consensualism in contracts means that a contract is formed, valid, and legally binding merely upon the mutual assent (offer and acceptance) of the parties, without the need for any particular formality. This presupposes that the consent is free from defects such as mistake, fraud, or duress, and that both parties possess full legal capacity. Electronic contracts, being an extension of traditional contract theory, adhere to this same principle. However, the expression of offer and acceptance differs due to the medium employed.

Electronic Offer: Refers to an unequivocal declaration of intent by one party to enter into a contract with another and to create legal effects through the completion of the contract, communicated via electronic means. (Sarhan, 2019, p. 61)

Electronic Acceptance: Denotes the manifestation of will by the offeree, transmitted through digital or electronic channels, expressing assent to the offer in all essential terms. (Dnaï, 2017, p. 97) Although the essential elements of contract formation (consent, subject matter, and cause) remain unchanged, electronic contracts differ in their virtual or remote nature. The meeting of minds occurs between absent parties in an electronic (virtual) space, which gives rise to several legal challenges:

Identification of the Contracting Party: Determining the true identity of the contracting party can be difficult, raising concerns over the validity of consent.

Verification of Legal Capacity: It is equally challenging to ensure that the other party has full legal capacity, especially since contracts are concluded between absent individuals, some of whom may be minors or legally incapacitated. Moreover, the age of majority varies across jurisdictions, and it may be unclear whether a party acts personally or through an agent. (Koussam, 2015, p. 347)

Doctrinal Solutions: Legal scholars have proposed several mechanisms to address these challenges, such as the use of pre-drafted standard contract models and the involvement of trusted third parties (public certification or registration authorities) to verify the parties' identities and capacities. For example, professional e-contractors may be legally required to disclose identifying information such as corporate logos or registered trademarks. (Al-Faliti, 2021) However, these mechanisms may lead to an excessive degree of formality and standardization, resulting in adhesion contracts, which can undermine contractual freedom.

2.1. Right to Amend the Contract and Electronic Liability Rules

Since the contract originates from the parties' will, they may mutually agree to amend it to safeguard their interests, provided such amendments comply with the law and public order. (Al-Faliti, 2021) These modifications may involve adjusting the rules of liability, either increasing or reducing it based on fault, damage, unforeseen circumstances, or force majeure. In the digital context, such amendments and the resulting liabilities are affected electronically, distinguishing them from traditional contracts.

Right of Withdrawal in Electronic Contracts

The right of withdrawal (or right to rescind) is among the most important manifestations of contractual freedom in the electronic environment. It allows contracting parties, particularly consumers, to revoke a contract voluntarily under legally recognized conditions, without justification or penalty, within a specific time frame. (Nasser, 2016, p. 73)

Comparative legislation, including Algerian Law No. 18-05 on Electronic Commerce, explicitly grants consumers this right in all distance selling transactions. This serves as a vital safeguard for contractual freedom and consumer protection in e-commerce.

Effects of Applying the Principle of Autonomy of Will in Electronic and Smart Contracts
Applying the principle of autonomy of will in electronic contracts naturally reinforces contractual freedom. that is, the right of the parties to determine their rights and obligations, which serve as the "law between them" (pacta sunt servanda). However, the distinctive features of electronic contracts, particularly distance and speed, create new challenges requiring legislative and judicial intervention to maintain contractual balance. This invites examination of the binding force of contracts in the digital environment and its implications.

2.2. The Binding Force of Electronic Contracts
Definition:
The binding force of contract (pacta sunt servanda) means that the agreement forms the law between the parties and cannot be revoked or amended except by mutual consent or for reasons recognized by law and public policy. It reflects the organization of contractual relationships based on the free will of the parties to achieve their private interests. (Boutiouta, 2024, pp. 181-182) This principle is enshrined in Article 106 of the Algerian Civil Code, which states:
"The contract is the law of the parties; it may not be revoked or amended except by their mutual agreement or for causes authorized by law." (106, 1975)

Importance: In electronic contracts, this principle grants them the same legal binding force as traditional contracts, ensuring that parties perform their obligations voluntarily and that electronic transactions, especially in e-commerce, are stable, secure, and trustworthy. Articles 1103 and 1193 of the French Civil Code reiterate this doctrine, affirming that contracts legally formed are binding upon the parties and may be modified or terminated only by mutual consent or for causes recognized by law. (Bouhentala, 2024, p. 131)

Consequences of the Binding Force in Electronic Contracts
The effects of the binding force lie in the idea that the contract is the law between the parties, it cannot be altered or rescinded except by their mutual agreement. Hence, the binding nature primarily applies to the contracting parties, with judicial intervention being exceptional.

Obligations Between the Contracting Parties:
Based on the traditional rule that a contract is the law of the parties; the electronic contract derives its binding effect from the free expression of their will. However, for such a contract to be legally binding, it must include the essential elements of any valid electronic contract namely, electronic offer and acceptance, lawful subject matter, lawful cause, as well as verified identity and legal capacity of the parties. Nevertheless, electronic contracts introduce a new dimension: the right of withdrawal, a consumer protection mechanism allowing the weaker party (the consumer) to cancel the contract, particularly when they have no practical opportunity to inspect the goods or verify their characteristics prior to concluding the transaction. (Ibrahim, 2005, p. 84)

The Binding Nature of Contractual Terms for the Judge: According to the concept of binding force, judges are generally not permitted to interfere with the terms of a contract. However, as an exception, a court may intervene to adapt the contract in cases of exceptional circumstances or force majeure, but only to the extent necessary to ensure its execution, while preserving its nature and balance. (Boutiouta, 2024, p. 188) This principle applies equally to electronic contracts, which retain the same binding authority as traditional ones, albeit with particular nuances arising from their virtual context.

Limits to the Application of the Principle of Autonomy of Will in Electronic Contracts
Although the autonomy of will constitutes the cornerstone of contract law, granting parties full freedom to conclude agreements and determine their contents, with binding legal force, its application is not

absolute. It is subject to various restrictions aimed at balancing public and private interests, ensuring justice and contractual equality. Just as in traditional contracts, the application of this principle in electronic contracts faces both conventional and modern constraints the former arising from public order and morality, and the latter from the specific digital context and the need to protect the weaker party (the consumer), in pursuit of contractual balance and legal security

Requirement Public Order and Morality in Electronic Contracts

Public order is a broad and evolving concept, not easily confined within rigid definitions. To understand its implications in electronic contracting, it is necessary to clarify its meaning first:

Definition of Public Order: Legal scholars have associated the concept of public order with three foundational ideas, morality, legality, and the protection of public interest. It remains a flexible and evolving notion that adapts to societal and ethical developments. Its essential purpose is to safeguard public security, social tranquillity, public health, and public morality.

Throughout history, contractual dealings have always been framed within the boundaries of public order and morality, forming the overarching framework through which any legal system asserts its legitimacy. Accordingly, for a state to ensure compliance with its legislation, it must confer upon such rules the status of imperative norms. that is, rules of public order.

As defined by scholars Pillet and Niboyet, public order represents "one of those notions we feel more than we can define", (Fadhel, 2006, p. 275) Similarly, Dr. Al-Sanhouri, in his seminal work "Al-Wasit", describes rules of public order as those intended to achieve political, social, or economic interests essential to the structure of society, interests that prevail over individual considerations. (Al-Sanhouri, 1952, p. 434)

Restricting the Principle of Autonomy of Will by Means of Regulatory and Competitive Public Order:

The principles of autonomy of will and public order stand in contrast, the expansion of one necessarily limits the other. Public order serves as the instrument through which legislators and judges intervene in contractual relationships to adapt contracts and ensure their execution. This intervention seeks to prevent unfair or anti-competitive practices, thereby limiting contractual freedom only to the extent necessary to guarantee contractual balance, uphold legal certainty, and enforce public policy objectives. (Boutiouta, 2024, p. 96)

Ensuring Justice and Legality: The formation of electronic contracts via the Internet remains governed by the general rules of contract law established under civil legislation.

According to Article 54 of the Algerian Civil Code, "A contract is an agreement whereby one or more persons undertake to give, to do, or to abstain from doing something." Similarly, Article 12(1) of Law No. 18-05 on electronic commerce reaffirms that no special rules exist that deviate from general contract principles, except as required to ensure:

The Validity of the Consent: Parties to an electronic contract must enjoy freedom of contract and freedom to choose the form through which they express their will. Article 59 of the Algerian Civil Code establishes that expression of intent may be made verbally, in writing, through recognised customary gestures, or by any conduct that leaves no doubt as to the actor's intention (Article 60). It may also be implied unless expressly required to be explicit by law or agreement (Article60/2). Accordingly, the expression of intent in electronic contracts may take any of these forms, as confirmed by Article 12(1) of Law No. 18-05.

Validity of the Capacity: Like any traditional contract, the electronic contract must be concluded by parties possessing legal capacity. that is, the competence of a person to undertake legal acts. However, proving such capacity is particularly challenging in the digital environment. Therefore, technical means are employed to verify the existence of capacity, such as electronic certification authorities that ensure

the data conform to the legal requirements stipulated in Article 40 of the Civil Code. Furthermore, consent must be free from defects such as mistake, fraud, or duress.

Validity of the Cause: The cause in an online contract refers to the purpose intended by each contracting party. It is governed by three conditions: existence, legitimacy, and lawfulness. Although distinct from intent, the cause remains inseparable from it. Hence, there is no substantive difference between the cause in a traditional contract and that in an electronic one. The cause must therefore comply with public order and morality to be valid, and it is subject to the general provisions of contract law, particularly since the promulgation of Law No. 18-05 on Electronic Commerce, which did not, however, contain specific provisions regarding offer, acceptance, or defects of consent. (Abtiwan Ould Taleb, p. 604)

Validity of the Object: For an electronic contract to be valid, its object must be determined or determinable, consistent with the same conditions applicable to traditional contracts. The electronic consumer must be informed of all relevant information concerning the goods or services at the time of conclusion. The object must also be lawful and not contrary to public order or morality, as prescribed in Article 12(2) of Law No. 18-05 on Electronic Commerce. (Abtiwan Ould Taleb, p. 603) However, the object assumes a specific character in the digital environment due to the potential impossibility of delivery, referring here to legal impossibility, not merely physical impossibility. Article 12 of Law No. 18-05 requires that the electronic consumer verify all details of the order, including products, services, prices, and nature, prior to confirming the order, which constitutes the conclusion of the contract. (Hamdi, 2015, p. 143)

Protection of the Weaker Party (Electronic Consumer)

While the electronic contract falls within the scope of general contract theory, similar to traditional contracts, certain particularities justify additional protective mechanisms for the weaker party. Such protection, both primary and subsidiary, encompasses the legislative and judicial instruments designed to restore contractual balance between the parties, supplemented by special statutes. These mechanisms include:

Right of Withdrawal and Duty of Information

Right of Withdrawal: As a general rule, contracts constitute a binding source of obligations, and neither party may unilaterally withdraw once offer and acceptance coincide, a principle enshrined in Article106 of the Algerian Civil Code.

Nevertheless, modern legislation governing electronic transactions allows the consumer to withdraw from electronically concluded contracts, marking an exception to general rules. The Algerian legislator confirms this in Article 11 of Executive Decree No. 15-114 of 12 May 2015 on the conditions and modalities of consumer credit, (Article11, 2015) which grants the right of withdrawal within eight (8) working days from the date of signature. Accordingly, the contract does not become effective until the expiry of this period. Article 19(2) of Law No. 18-09 on Consumer Protection and the Repression of Fraud defines withdrawal as “the consumer’s right to cancel the acquisition of a product without justification.” (Law No , 2018) This right is intended to protect consumers, given the nature of such contracts.

Duty of Information: The duty of information requires that each contracting party be fully informed of all aspects of the contract to ensure genuine consent and free will, thus fostering credibility and mutual trust in electronic dealings. This principle has been expressly recognised in consumer contracts, which are inherently imbalanced. The imbalance becomes more pronounced in electronic contracts, where parties interact virtually. Consequently, electronic merchants are obliged to inform consumers of all data and details related to the contract. The Algerian legislator addressed this obligation in Article 17 of Law No. 09-03 on Consumer Protection and Fraud Repression concerning traditional contracts, and more specifically in Articles 10 to 13 of Law No. 18-05 on Electronic Commerce, which regulate the implementation of the duty of information. (Abtiwan Ould Taleb, p. 608)

Prohibition of Unfair Terms in Electronic Contracts

Legislative and judicial mechanisms aim to protect the weaker party, typically the consumer, by prohibiting unfair terms in contracts. To address this protection, it is essential to define unfair terms and clarify how their prohibition operates:

Unfair Terms: Contracts often include unfair terms due to widespread commercial practices. Accordingly, many legal systems have prohibited them, including the Algerian legislator through Law No. 04-02 on Rules Applicable to Commercial Practices. Article 29 limits their scope to adhesion contracts, considering any imbalance between the rights, And obligations of parties as a criterion for unfairness. Article 2(2) of the same law defines an unfair term as "any clause or condition, individually or collectively, that evidently disturbs the balance between the rights and obligations of the contracting parties." (Ben Tayia & Lachheb, 2000, p. 316)

Prohibition of Unfair Terms: Since electronic consumer contracts are typically adhesion contracts, where negotiation is limited or impossible, the consumer, as the weaker party, may resort to the courts to seek amendment or annulment of unfair terms under Article 110 of the Algerian Civil Code. This principle aligns with general rules, such as the seller's obligation to warrant against hidden defects.

Moreover, specific legislation governing electronic commerce reinforces consumer protection by prohibiting unfair or anti-competitive commercial practices under consumer law, trade law, and competition law, thereby ensuring free and fair competition in the marketplace. (Abtiwan Ould Taleb, p. 612)

Conclusion:

In conclusion, this study on Contract Theory in the Digital Environment confirms that the classical theory of contract, with its essential elements, conditions, and foundational principles, remains resilient in the face of technological disruption. Its flexibility enables it to accommodate the challenges posed by electronic and smart contracts occurring in a virtual environment lacking physical meeting points. The key findings are as follows:

Departure from Classical Conceptions: Traditional individualistic notions of contract have lost their former authority, as contractual theory has evolved within the digital environment to ensure legal and transactional stability, and thus contractual and legal security.

Adaptability: The general theory of contract has successfully integrated electronic contracts by evolving from the traditional to the electronic and smart contract models.

Freedom of Contract: The principle of party autonomy remains the cornerstone of electronic contracting, ensuring the freedom of the parties to stipulate obligations that govern their relationship.

Effects of Autonomy: The impact of party autonomy extends to both the formation and performance of electronic contracts, though subject to certain restrictions derived from the specific nature of digital transactions, notably the consumer's right of withdrawal.

Limits of Autonomy: The limits of autonomy in electronic contracts mirror those in traditional contracts, with some adjustments concerning formation and evidence due to digital formalities, thereby reinforcing the judiciary's role in maintaining public order and contractual balance.

Despite its adaptability, the theory of contract still faces challenges inherent in technological evolution, such as determining the place and time of contract formation and verifying capacity, which may disturb contractual equilibrium and prompt legislative and judicial intervention. Accordingly, the following recommendations are proposed:

- National and international legislation should continue to develop anticipatory legal frameworks to keep pace with technological innovations, particularly artificial intelligence.
- Legal harmonisation is needed to resolve conflicts of laws arising from cross-border transactions.

- A comprehensive legal framework should guarantee the protection of contracting parties, especially the weaker party, throughout all contractual stages, from negotiation to execution, whether under civil law or specialized statutes, to foster trust in electronic commerce.
- Specialized consumer protection laws must be refined to safeguard the weaker party in contractual relations.
- Greater coherence between legislative instruments is essential to ensure contractual transparency and fairness.

Finally, smart contracts should be developed in a balanced legal-technical framework through cooperation between legislators and programmers to ensure compliance with traditional legal norms.

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