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Faculty of Law and political Sciences

**"Memorandum presented for completion of requirements of  
obtaining Master's academic degree in law specialization: flags  
(or media) machine and internet"**

**Entitled:**

**The Legal Validity of Electronic Signatures  
and Mechanisms of Proof in Electronic  
Contracts in Algeria**

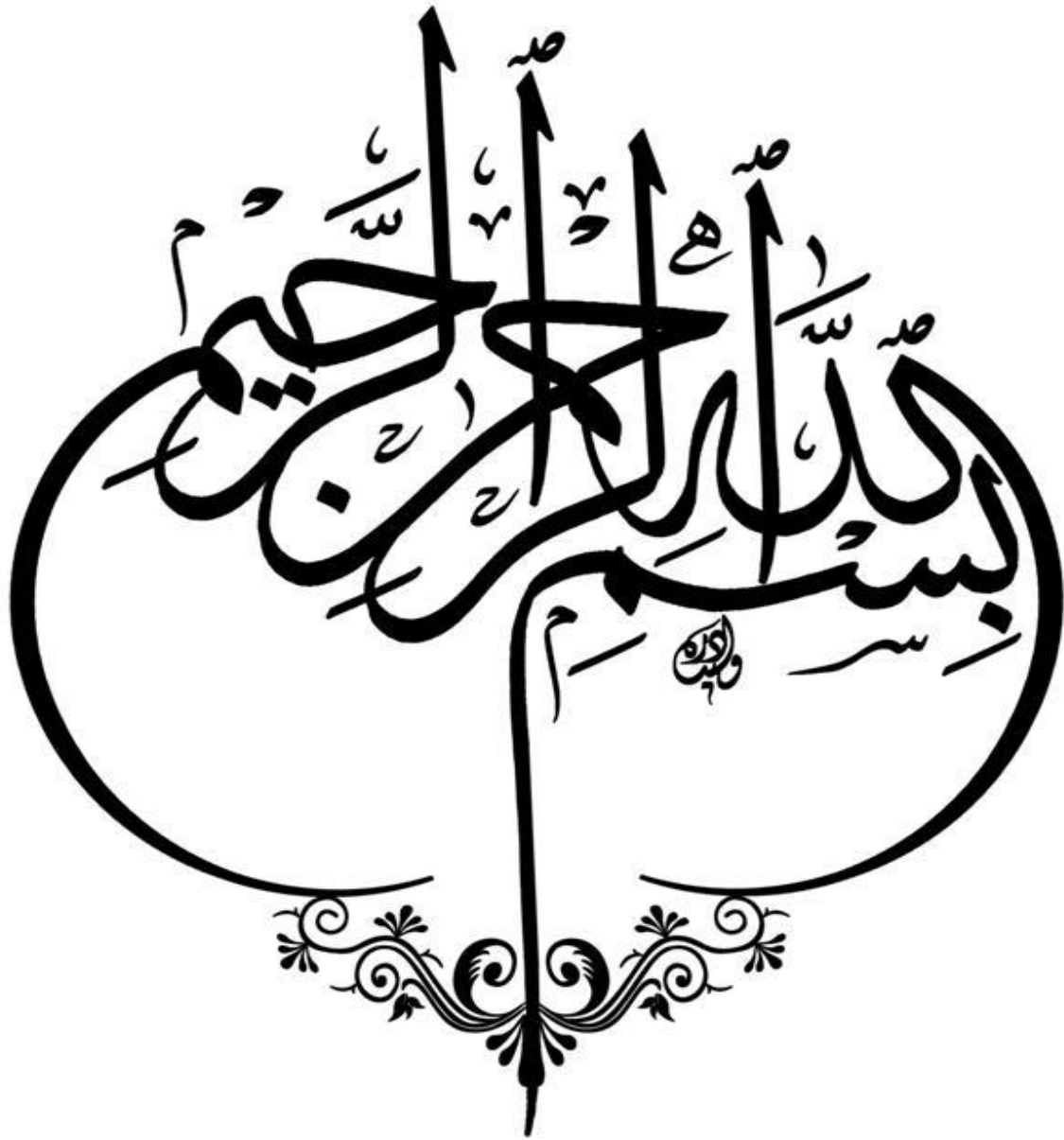
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First Name and Last Name	Academic Rank	University	Role

Academic Year: 2025 / 2024



"He said, 'We will strengthen your arm by your brother and grant you both supremacy so they will not reach you. With Our signs, you and those who follow you will be the dominant.

## **Dedication**

Praise be to God, Sufficient and Praiseworthy, and blessings and peace upon the Beloved Prophet, his family, and those who remain faithful.

To proceed:

Praise be to God who granted us success in solidifying this step in our academic journey with this memorandum, the fruit of effort and achievement by His grace.

Dedicated to our honorable parents, may God protect them and perpetuate their light upon our path.

To my esteemed wife and my dear children, may God protect them.

And to all who know me, appreciate me, and respect me.

حاجي محمد



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I extend my sincere gratitude to rima berriche, the supervisor of this work, who offered me a helping hand and generously provided me with valuable advice that gave me significant impetus to complete this work. My thanks are also due to all my loved ones and friends, each by name, and I especially mention my esteemed professors, without whom I would not have been able to reach this level.

I also cannot fail to express my gratitude to the esteemed committee that will discuss this work.

Hadji Mohammed



## **Introduction**

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Amidst the rapid technological evolution witnessed by our contemporary world, accompanied by a profound shift in the patterns of exchange and transactions, the digital environment has become a vital space for concluding contracts and executing various dealings. This trend towards digitization has given rise to new concepts and tools, among which is the 'electronic signature,' which aims to provide a reliable means of legitimizing legal actions conducted through electronic means.

With the increasing reliance on these means for concluding contracts, the question arises regarding the legal validity of this type of signature in proving those contracts, especially given the challenges posed by the intangible nature of electronic transactions. While the electronic signature facilitates the completion of transactions remotely, quickly, and efficiently, it simultaneously raises issues related to its reliability, the identification of parties, and ensuring the integrity of consent.

For Algeria, which is also witnessing a notable growth in the use of digital technology in various economic and commercial fields, the issue of the legal validity of the electronic signature and the mechanisms for proving contracts concluded through this means is of paramount importance. With the increasing volume of electronic transactions, the need for a clear legal framework governing these matters and defining the rules regarding the probative force of the electronic signature becomes evident, in order to preserve the rights of the parties and contribute to enhancing trust in digital transactions.

In this context, the study of 'The Legal Validity of Electronic Signatures and Mechanisms of Proof in Electronic Contracts in Algeria' holds particular significance, as it seeks to elucidate the legal framework governing this issue in Algerian legislation, analyze the available mechanisms for proving electronic contracts, and identify the challenges that may impede the recognition of electronic signatures in judicial proceedings.

### **Importance of the Study**

The significance of this study lies in its endeavor to analyze and evaluate the Algerian legal framework pertaining to the admissibility (hujia) of electronic signatures in the proof of electronic contracts, particularly in light of the increasing expansion of digital transactions. Its importance is also evident in identifying the

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challenges facing the recognition of this type of signature in legal proceedings and in offering insights on how to enhance its role in evidence.

### **Objective of the Study**

This study primarily aims to clarify the extent of the admissibility (hujia) of electronic signatures in the proof of electronic contracts under Algerian law. It also seeks to analyze the available evidentiary mechanisms for these contracts, identify the role of trusted third parties and the judiciary in this context, and propose recommendations that contribute to the development of the legal and practical framework for electronic evidence in Algeria.

In this context, the study "The Admissibility of Electronic Signatures and Evidentiary Mechanisms in Electronic Contracts in Algeria" holds particular importance, as it seeks to elucidate the legal framework governing this issue in Algerian legislation, analyze the available evidentiary mechanisms for electronic contracts, and identify the challenges that may hinder the recognition of electronic signatures in legal proceedings.

### **Reasons for Choosing the Topic**

The topic 'The Legal Validity of Electronic Signatures and Mechanisms of Proof in Electronic Contracts in Algeria' was chosen for this thesis for several fundamental reasons, which can be summarized as follows:

- Firstly, the increasing importance of electronic transactions and the role of the electronic signature as a fundamental tool for their completion and proof in Algeria.
- Secondly, the need for an in-depth analysis of the Algerian legal framework regulating electronic signatures and determining the extent of its adequacy in keeping pace with technological developments and ensuring the probative force of this signature.
- Thirdly, the desire to explore the mechanisms for proving electronic contracts in Algerian law and identify the challenges facing the judiciary in this area, as well as proposing ways to overcome them.

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### **Research Problem**

This study stems from a central problem: To what extent is the electronic signature legally valid in proving electronic contracts under Algerian legislation?

To answer this main problem, the study seeks to address a set of sub-questions:

- What is the legal framework for electronic signatures in Algeria? What are its types and conditions?
- What are the legal bases upon which the recognition of the probative force of the electronic signature in Algeria rests?
- What are the mechanisms for proving electronic contracts in Algerian law? What is the value of electronic evidence in this context?
- What is the role of trusted third parties and the judiciary in proving electronic contracts? What are the challenges they face?

### **Methodology**

To achieve the objectives of this study and answer its questions, the descriptive-analytical method will be employed. Through this method, the legal texts related to electronic signatures and electronic contracts in Algerian legislation will be described and analyzed, in addition to analyzing the prescribed mechanisms of proof. The comparative method will also be used when necessary, by referring to some comparative legislative experiences to enrich the analysis

### **Previous Studies**

In the context of preparing this study, some works and research that dealt with aspects related to the topic of electronic signatures and electronic contracts were reviewed. For example, we find a study by Dr./Ms. Amina Mansouri (2022) entitled 'The Legal Validity of Electronic Signatures in Maghreb Legislation: A Comparative Study,' which provided a comparative analysis of the legal validity of electronic signatures in the countries of the Maghreb, which differs from our study that focuses specifically on Algerian legislation and combines the analysis of the legal validity of electronic signatures and the mechanisms for proving electronic contracts.

A study by Professor/Ms. Samir Boualam (2020) entitled 'Means of Proving Online Contracts in Algerian Law' was also noted, which dealt more broadly with various means of proving electronic contracts in Algerian law, whereas our study

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makes the legal validity of the electronic signature a fundamental point of focus in the context of proving these contracts. In addition, a study by Dr. Rachid Farhat (2018) entitled 'The Legal Regulation of Electronic Transactions in Algeria: Analysis and Evaluation' was reviewed, which provided a comprehensive analysis of the legal framework for electronic transactions in Algeria, although it may not dedicate sufficient space for an in-depth analysis of the legal validity of electronic signatures as a tool for proving electronic contracts in particular.

This current study benefits from the valuable insights provided by these previous works and others, and seeks to provide an integrated analysis that links the legal framework of electronic signatures and their probative force with the mechanisms for proving electronic contracts specifically in Algeria, focusing on the legal validity of the electronic signature as a primary tool for proof, and analyzing other proof mechanisms and the role of the judiciary in this context, aspects of which may not all be combined with the same degree of detail and focus in the other studies mentioned.

This current study is distinguished by its attempt to provide a comprehensive and in-depth analysis of the legal validity of electronic signatures and the mechanisms of proof in electronic contracts within the specific context of Algerian legislation, with a focus on the challenges and future prospects of this topic.

### **Division of the Topic:**

To answer the research problem and achieve its objectives, this thesis will be divided into two main chapters, in addition to an introduction and a conclusion:

- Chapter One: The Legal Framework for Electronic Signatures in Algeria.
- Chapter Two: Mechanisms for Proving Electronic Contracts in Algeria.

Finally, the conclusion will include the most important findings of the study and the proposed recommendations.

## **Chapter One: The Legal Framework of Electronic Signatures in Algeria**

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The inquiry into the legal framework of electronic signatures in Algeria constitutes a fundamental threshold for understanding the system of proof in digital transactions. Given the continuous expansion of the use of electronic means in concluding contracts, it becomes essential to clarify how the Algerian legislator has addressed this modern technology and to determine the legal value accorded to electronic signatures as a tool for legitimizing these actions.

To achieve this objective, this chapter will be addressed through two main sections. The first section will deal with the concept and types of electronic signatures, wherein the linguistic and legal definition of this term will be determined, its distinctive characteristics reviewed, and the differentiation between its various types, such as simple and qualified electronic signatures, will be made. The second section will focus on the legal validity (*hujiya*) of electronic signatures in Algerian legislation, through the elucidation of the legal basis of this validity by referring to the relevant legal texts, and the detailing of the necessary legal and technical conditions and controls for its recognition as evidence.

This chapter thus aims to provide a clear and detailed legal foundation for electronic signatures within the Algerian context, thereby paving the way for the analysis of the mechanisms for proving electronic contracts in subsequent chapt

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### **Section One: The Concept and Types of Electronic Signatures**

The subject of electronic signatures and their types lies at the heart of understanding how legal force is conferred upon actions conducted in the digital space. In a world increasingly reliant on electronic exchanges, recognizing the essence of the "digital fingerprint" attached to these actions and their various forms is paramount for determining their legal effects. Accordingly, the aim of this section is to establish a clear understanding of the nature of electronic signatures and their legally recognized categories, serving as an indispensable starting point for examining the extent of the probative force granted by the Algerian legislator to this mechanism within the context of electronic contracts, which will be detailed in subsequent sections.

In this section, we will address two fundamental aspects for comprehending this topic. The first will center on the concept of the electronic signature (Subsection One), where we will define the essence of this concept linguistically and legally, and then clarify the unique characteristics that distinguish it from the traditional signature, thus endowing it with its function in the realm of digital transactions. The second will address the types of electronic signatures (Subsection Two), where we will discuss the classification of electronic signatures, with a particular focus on distinguishing between the "simple" type, which represents the minimum requirements, and the "qualified" type, which enjoys the highest degrees of legal and technical reliability.

#### **Subsection One: Definition of the Electronic Signature**

Engaging in the precise definition of the electronic signature marks the initial step towards comprehending its legal essence. Prior to delving into its details and effects, establishing a clear understanding of the linguistic and legal implications of

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this concept, and identifying the fundamental attributes that distinguish it from other means of expressing intent, becomes essential. Accordingly, the aim of this subsection is to elucidate the terminological and legal boundaries of the electronic signature, and to reveal its core components.

Within this subsection, we will address two key aspects for defining this concept. The first will center on the linguistic and legal definition of the electronic signature (Paragraph One), where we will review the linguistic meaning of the term and then address the definition adopted by the Algerian legislator. The second will address the characteristics of the electronic signature (Paragraph Two), where we will clarify the intrinsic features that distinguish it and grant it its legal function in the digital environment.

### Section One: Linguistic and Legal Definition

Defining the concept of the electronic signature represents the first and fundamental step towards understanding its legal and practical nature. Before delving into its characteristics and types, it becomes necessary to establish a clear understanding of this term from its various aspects. In this section, we will clarify this concept starting with its linguistic meaning, which refers to the act of attribution and agreement through a mark or sign made by electronic means. Then, we will move to its legal definition, which specifies the criteria by which it acquires legal force in digital transactions. Furthermore, we will address other definitions that highlight the technical, security, procedural, and functional dimensions of the electronic signature, aiming to provide an integrated and comprehensive view of this concept.

**Linguistic Meaning of Electronic Signature:** Linguistically, a signature refers to placing a mark or sign indicating a person's identity and their agreement to or

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authentication of specific content. When the description "electronic" is added, it indicates that this mark or sign is made by electronic means. This meaning primarily focuses on the essential function of a signature, which is attribution and acceptance, while noting that this function is achieved through digital tools in the case of an electronic signature, instead of traditional means like handwriting<sup>1</sup>.

**Legal Definition of Electronic Signature:** Legally, an electronic signature is defined as a set of data in electronic form that is attached to or logically associated with other electronic data and is used to indicate the signatory's identity and their approval of the associated data. The specific legal definition of an electronic signature varies across legislations, but it generally shares the idea of linking the signatory to the electronic data and demonstrating their intention to be bound by it. This definition aims to establish legal standards for the recognition of digital signatures and to grant them the necessary legal force in electronic transactions.<sup>2</sup>

**Technical Definition of Electronic Signature:** From a technical standpoint, an electronic signature can be defined as data in digital form that is created, compiled, processed, or transmitted using electronic means, and is logically associated with other electronic data and used as a method to authenticate that data, verify its integrity, and identify the signatory. This definition highlights the technological aspects that enable the creation of the signature and its linking to the digital document, focusing on its functions in securing data and verifying its source.<sup>3</sup>

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<sup>1</sup> Aïcha Ben Ayad. *Electronic Signature: Linguistic and Legal Concepts*. Dar Al Thaqafa Al Qanounia, Tunis, 2023, p. 75.

<sup>2</sup> Nasser Al-Qahtani. *Legal Definitions of Electronic Signature*. Maktabat Al-Sharia, UAE, 2024, p. 48.

<sup>3</sup> Abdullah Al-Ali. *Electronic Signature and Modern Technologies*. Markaz Al-Dirasat Al-Qanounia, Qatar, 2023, p. 81.

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### **Definition from an Information Security Perspective on Electronic Signature:**

In the field of information security, an electronic signature is viewed as a cryptographic mechanism aimed at ensuring three main aspects: authentication, which is verifying the signatory's identity; integrity, which is ensuring that the data has not been altered since it was signed; and non-repudiation, which prevents the signatory from denying having signed. This perspective emphasizes the vital role of the electronic signature in building trust and security in the digital environment.

**Procedural Definition of Electronic Signature:** Procedurally, an electronic signature can be defined as the process by which a person's identity is linked to an electronic document in a way that allows for the verification of that identity and demonstrates that person's approval of the document's content. This definition focuses on the practical steps and mechanisms used to create an electronic signature with legal value, emphasizing its primary goal of linking identity to the document and indicating consent to the content.<sup>4</sup>

**Functional Definition of Electronic Signature:** Functionally, an electronic signature is known as a digital verification and authentication tool that performs the same function as a traditional paper signature, which is to legitimize the electronic document and identify the signatory's responsibility for it. This definition emphasizes the ultimate purpose of the electronic signature, which is to serve as the equivalent of a traditional signature in the digital world in terms of proving the source and bearing legal responsibility for the signed content.

**Comprehensive Definition:** An electronic signature is a mark or a set of digital data, created or processed by electronic means, which is attached to or logically

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<sup>4</sup> Jacob Smith. The Legal Framework for Electronic Signatures in the United States. Legal Press, USA, 2024, p. 33.

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associated with other electronic data, and is used to indicate the signatory's identity and their approval of that data, while providing mechanisms for identity authentication, ensuring data integrity and non-repudiation, with the aim of bestowing legal legitimacy upon the electronic document and determining the signatory's responsibility for it.

### Subsection Two: Characteristics of Electronic Signatures

Electronic signatures possess a set of inherent characteristics that distinguish them and grant them value in the digital environment. The most prominent of these characteristics are as follows:

- Association with the Signer: This characteristic means that the electronic signature must be uniquely linked to the person who performed the signing. This association is usually achieved through technical means that ensure the attribution of the signature to a specific identity. For example, digital certificates linked to the signer's identity or unique biometric data such as fingerprints may be used. The purpose of this characteristic is to ensure that the signature cannot be forged or attributed to someone other than the one who actually made it.<sup>5</sup>

This unique association forms the basis for attributing the legal act to its owner. Imagine signing a paper document; your signature distinguishes you from anyone else. In the digital world, this distinction is achieved through technological mechanisms. Digital certificates, for example, serve as a "digital identity" issued by trusted authorities and link the private key of the signature to the identity of a specific person. The use of biometric data, such as

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<sup>5</sup> Thomas Brown. *The Association of Electronic Signatures with Signers in UK Law*. Law Publishers, UK, 2023, p. 55.

fingerprints or facial recognition, links the signature to unique characteristics that cannot be easily replicated or impersonated. This characteristic ensures that the electronic signature is not just a random mark but an expression of the will of a specific person.

- **Verifiability of the Signer's Identity:** This characteristic goes beyond mere association with identity to include the ability to verify the validity of that identity. Mechanisms must exist that allow the receiving party or any concerned party to verify that the signature was indeed issued by the claimed person. This can be done by referring to the issuing authority of the digital certificate, or by comparing biometric data, or by using unique verification codes. This characteristic is necessary to build trust in electronic transactions. Merely linking to the signature is not enough; there must be a way to verify that this link is correct and reliable<sup>6</sup>. When using a digital certificate, the receiving party can verify the validity of the certificate and the authority that issued it to confirm the signer's identity. In the case of using biometric data, the provided data can be compared with the stored and authenticated data of the claimed person. Unique verification codes, such as one-time passwords, add an extra layer of assurance that the signer is indeed the rightful owner of the signature. This verifiability enhances the admissibility of the electronic signature and makes it acceptable in legal proof.
- **Integrity of the Signed Data:** This characteristic ensures that the electronic data that has been signed has not been altered or tampered with after the signing process is complete. This integrity is often achieved using encryption techniques and hash functions. Any slight change in the original data will lead

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<sup>6</sup> Roula Al-Khalil. *Electronic Signature and Identity Verification*. Dar Al Thaqafa Al Qanounia, Lebanon, 2022, p. 74.

to a significant change in the hash value, making the manipulation of the signed document detectable. This characteristic protects against the risks of forging the content of electronic documents after they have been signed. This characteristic is vital for maintaining the credibility of the signed document. Imagine someone signing an electronic contract, and then another party changes the terms of the contract after signing. The data integrity feature prevents this from happening or at least makes its detection possible. Hash functions create a unique "digital fingerprint" of the data. If any part of the data is changed, even a single character, the resulting hash value will be completely different. When verifying the signature, the hash value of the current data is recalculated and compared to the value stored with the signature. If the two values match, this is evidence that the data has not been changed since signing. This technique ensures that what was signed is the same as what is presented later.

- **Non-Repudiation:** This characteristic means that the signer cannot conclusively deny having signed the data. When an electronic signature is implemented using strong technologies such as public-key cryptography and digital certificates, it becomes very difficult for the signer to later claim that they did not perform the signing. This characteristic enhances trust in electronic transactions and protects parties from attempts to disavow obligations.<sup>7</sup>
- **Efficiency and Effectiveness:** Electronic signatures are characterized by their ability to speed up and facilitate the completion of transactions. They eliminate the need to print documents, sign them manually, and then send

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<sup>7</sup> Nawal Al-Kuwari. Verification of Non-Repudiation in Electronic Signature. Markaz Al-Dirasat Al-Qanounia, Qatar, 2023, p. 80.

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them by mail or deliver them in person. Electronic documents can be signed and sent instantly regardless of geographical distances, saving time, effort, and costs. This efficiency makes it a valuable tool in the fast-paced digital business world.

- **Interoperability:** The value of an electronic signature increases when it is usable across different systems, platforms, and applications. Achieving a good level of interoperability allows for the seamless exchange of electronically signed documents between various parties and entities, regardless of the technologies they use. Technical standards and specifications play an important role in achieving this characteristic<sup>8</sup>

### Subsection Two: Types of Electronic Signatures

Recognizing the types of electronic signatures is crucial for understanding the variations in their legal value. The electronic signature is not a singular form, but rather takes on multiple forms that differ in terms of their reliability and the necessary technical and legal requirements for their creation. Accordingly, the aim of this subsection is to classify this legal mechanism and to illustrate the differences between its various types.

Within this subsection, we will address two primary types of electronic signatures. The first will center on the simple electronic signature (Paragraph One), where we will clarify its characteristics and the extent of its legal sufficiency. The second will address the qualified electronic signature (Paragraph Two), where we will focus on the necessary criteria and conditions for considering it as such and the legal value it possesses.

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<sup>8</sup> Elizabeth Jones. *The Importance of Interoperability in Electronic Signatures*. Law Publishers, UK, 2023, p. 59.

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### Subsection One: Simple Electronic Signature

Definition of Simple Electronic Signature: It is any data in electronic form used to indicate the signatory's identity and their agreement to specific content, without the need to use advanced security mechanisms or digital certificates.

The simple electronic signature represents the most basic form of electronic signatures, as it does not require the use of complex encryption technologies or dedicated devices. It can manifest in various forms such as typing your name at the end of an email message, entering a password to log into a system, or even selecting an image as a signature mark.

This type of signature is characterized by its ease of creation and use. It often reflects the signatory's intention to agree to or acknowledge specific content. Despite its simplicity and prevalence, the legal admissibility of a simple electronic signature may be limited in some cases. Due to the absence of strong security guarantees such as advanced encryption or strict identity verification, it may be difficult to prove that the signature was indeed issued by the person concerned and that the data has not been tampered with after signing. Therefore, it may not be sufficient in transactions that require a high level of security and legal certainty.<sup>9</sup>

In the context of everyday online transactions, the simple electronic signature is widely used due to its ease of application. For example, when subscribing to an email newsletter, you are often asked to confirm your subscription by clicking on a link sent to you. This click can be considered a form of simple electronic signature that expresses your consent to receive messages. Similarly, submitting an online

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<sup>9</sup> Sarah Al-Awadhi. Legal Procedures for Simple Electronic Signature. Maktabat Al-Qanoun, UAE, 2024, p. 65.

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form often includes a "send" button that represents your agreement to the entered data.

However, a distinction must be made between these simple uses and situations that require stronger proof of intent and identity. In important commercial contracts or legal agreements, a simple electronic signature may not be sufficient to ensure the required admissibility. In such cases, resorting to more secure types of electronic signatures, such as the qualified electronic signature, becomes necessary to provide a higher level of trust and legal security.

In Algerian legislation, despite the absence of a specific and detailed legal definition of what is known as a simple electronic signature, Article 32 bis 1 of the Civil Code, as amended by Law No. 05-10 dated June 20, 2005<sup>10</sup>, is a significant starting point. This article, which recognized the admissibility of electronic writing as a means of proof with the same force as writing on paper when certain conditions are met, implicitly opened the door to the recognition of electronic expressions of will, including what can be considered a simple electronic signature. Its reference to the possibility of proof by electronic means implies that any form of electronic acknowledgment or consent can be presented as evidence, although its probative force will be subject to the judge's discretion.

Furthermore, the Electronic Commerce Law No. 18-05 of 2018<sup>11</sup> reinforces this trend by recognizing electronic messages as written evidence under Article 35. In this context, electronic messages may include forms of simple electronic signatures, such as typing a name at the end of the message. However, this article emphasizes

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<sup>10</sup> Law No. 05-10 of June 20, 2005, amending and supplementing the Civil Code, Official Gazette No. 44, dated June 26, 2005.

<sup>11</sup> Law No. 18-05 of May 10, 2018, related to Electronic Commerce, Official Gazette No. 28, dated May 13, 2018.

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that the evaluation of the probative force of these messages is subject to the judge's discretion, taking into account factors such as the content and clarity of the message. This means that a simple electronic signature contained in an electronic message may be considered as evidence, but its weight in proof will be less than that of more secure electronic signatures that ensure greater integrity of identity and content.

Consequently, it can be said that Algerian law recognizes the principle of the admissibility of simple electronic signatures as elements of evidence, but it leaves the judge with broad discretionary power in determining their admissibility and probative value, especially when compared to other types of electronic signatures that offer stronger security guarantees. This approach reflects the legislator's caution in granting absolute legal force to forms of electronic signatures that may be easily susceptible to forgery or impersonation.<sup>12</sup>

### Subsection Two: Qualified Electronic Signature

Definition of Qualified Electronic Signature: It is an electronic signature created using a qualified electronic signature creation device and based on a qualified electronic signature certificate issued by an accredited certification authority.

The qualified electronic signature is an advanced type of electronic signature linked to a qualified electronic signature certificate issued by a trusted and accredited certification authority. It is created using a qualified electronic signature creation device that ensures the protection of the signatory's private key. This type of signature provides a very high level of security and trust. The use of a qualified signature creation device ensures that the signatory alone has control over their

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<sup>12</sup> Roula Al-Khalil. Recognition of Electronic Signature in Algeria. Dar Al Thaqa Al Qanounia, Lebanon, 2022, p. 78.

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private key, preventing its use by unauthorized parties. Furthermore, the linking of the public key to the person's identity is done through a certificate issued by a trusted authority, which lends legal credibility to the signature. The qualified electronic signature enjoys very strong legal admissibility, often equivalent to a handwritten signature in probative force. It is typically used in transactions of significant legal and commercial importance that require strong safeguards against forgery and data manipulation.

The fundamental pillar upon which the qualified electronic signature rests is trust in the authorities that issue qualified digital certificates. These authorities are subject to strict supervision by regulatory bodies to ensure their compliance with specific standards in verifying the identity of certificate applicants and managing the certificate lifecycle. This oversight significantly contributes to enhancing the legal credibility of the qualified signature.

In addition, the requirement to use a qualified electronic signature creation device adds another layer of security. These devices are specifically designed to protect the signatory's private keys and prevent unauthorized access to them. This ensures that the signing process takes place under the sole control of the signatory, significantly reducing the risks of forgery or fraudulent use of the signature.

In Algerian law, the legislator attaches particular importance to the qualified electronic signature. Article 32 bis 1 of the amended Civil Code<sup>13</sup> stipulates that writing on an electronic medium has the same probative force as writing on paper, provided that the identity of the person from whom it originates can be verified and that it is prepared and stored under conditions that guarantee its integrity. The

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<sup>13</sup> Article 32 bis 1 of the Civil Code, as amended by Law No. 05-10 of June 20, 2005, amending and supplementing the Civil Code, published in Official Gazette No. 44, dated June 26, 2005

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qualified electronic signature, with the guarantees of identity and integrity it provides through trusted certificates and secure signature devices, is considered one of the strongest pieces of evidence for meeting these conditions.

Furthermore, Law No. 15-04 of 2015<sup>14</sup> on Electronic Signature and Certification has given the qualified electronic signature a privileged status, stating in Article 4 that "the qualified electronic signature shall have the same probative force as a handwritten signature." This provision grants the qualified electronic signature almost conclusive admissibility, making it a powerful legal tool in proving contracts and legal acts carried out by electronic means.

Given this legally recognized probative force, the qualified electronic signature plays a crucial role in facilitating sensitive electronic transactions that require a high level of trust and legal security. For example, it can be used in concluding formal contracts online, submitting legal documents to judicial and administrative authorities electronically, and executing high-value financial transactions. The legal recognition of this type of signature removes many of the obstacles that previously hindered the full transition to digitization in many sectors.

Moreover, the infrastructure for qualified electronic signatures, which includes trusted certification authorities and secure signature devices, contributes to building a more secure and reliable digital environment overall. The strict standards to which these authorities and devices are subject ensure a high level of protection against various security risks, such as identity theft and electronic forgery. This enhances the confidence of individuals and institutions in using electronic means to carry out their various transactions.

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<sup>14</sup> Law No. 15-04 of February 1, 2015, related to Electronic Signature and Electronic Certification Services, Official Gazette No. 06, dated February 8, 2015.

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It is also worth noting that the mutual recognition of qualified electronic signatures across borders can significantly contribute to boosting international electronic commerce and facilitating economic exchanges between countries. When countries recognize the legal validity of qualified electronic signatures issued in other countries, it reduces the need for complex paper-based procedures and helps to accelerate the pace of cross-border business<sup>15</sup>.

### Section Two: The Legal Validity (Hujjiya) of Electronic Signatures in Algerian Legislation

The subject of the legal validity (hujjiya) of electronic signatures within Algerian legislation represents a fundamental cornerstone for understanding the probative force that the law grants to this type of digital authentication. Having established the foundations for understanding the nature and classifications of electronic signatures in the previous section, it is now essential to inquire into the extent to which the Algerian legal system recognizes this "digital fingerprint" in the context of proving rights and obligations arising from electronic transactions. Accordingly, the aim of this section is to elucidate the legal bases and conditions under which an electronic signature acquires its legal validity in matters of proof.

The recognition of the legal validity (hujjiya) of electronic signatures marks a crucial step towards enhancing trust in and facilitating digital transactions. However, this recognition cannot be absolute; rather, it is subject to controls and standards aimed at ensuring the credibility of the signature and the integrity of its attribution to the signatory.

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<sup>15</sup> Karim El-Sa'id. *The Legal Validity of the Electronic Signature*. Dar Al-Fikr Al-Qanouny, Egypt, 2023, p. 95.

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From this standpoint, we will endeavor in this section to trace the rationale adopted by the Algerian legislator in conferring this legal validity, and to uncover the determinants it has established for recognizing an electronic signature as conclusive or contestable evidence.

In this section, we will address two main aspects to clarify this legal validity. The first will center on the legal basis for the legal validity (hujiya) of electronic signatures (Subsection One), where we will identify the legislative texts that recognize and rely upon this validity.

The second will address the conditions and controls for the legal validity (hujiya) of electronic signatures (Subsection Two), where we will detail the legal and technical criteria that must be met for an electronic signature to be considered admissible evidence.

### **Subsection One: The Legal Basis for the Legal Validity (Hujiya) of Electronic Signatures**

In this subsection, we will trace the legal roots from which the legal validity (hujiya) of electronic signatures derives its strength within the Algerian legislative system. Accordingly, the aim is to identify the legal documents that recognize and regulate this validity.

Within this subsection, we will address two fundamental aspects to determine this basis. The first will focus on the relevant legal texts (Paragraph One), where we will review the legal articles that directly or indirectly address the legal validity (hujiya) of electronic signatures. The second will address judicial precedents (Paragraph Two), where we will examine any established judicial opinions on this matter.

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### Subsection One: Relevant Legal Texts Regarding the Admissibility of Electronic Signatures in Algeria

In Algeria's pursuit to keep pace with rapid digital transformations, it has given special attention to regulating and legally securing electronic transactions. This concern has materialized in the establishment of an integrated legal framework governing the use of electronic signatures and recognizing their admissibility as evidence.

Law No. 15-04 dated February 10, 2015, marked a crucial turning point in the legal recognition of electronic signatures in Algeria. This law did not merely mention electronic signatures but delved into defining the conditions related to them, i.e., the criteria that an electronic signature must meet to gain legal recognition. More importantly, it addressed the admissibility of electronic documents signed in this manner, emphasizing the possibility of considering them strong evidence in judicial proceedings.<sup>16</sup>

In addition, this law established the necessary controls to protect electronic documents from risks threatening them in the digital environment, such as forgery and manipulation. These controls include technical and procedural requirements aimed at ensuring the integrity of information and preventing its alteration after signing.

Another significant step taken by Law 15-04 is its regulation of the work of bodies competent to issue electronic signature certificates. These bodies play the role of a trusted intermediary that links the public key used to create the signature with

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<sup>16</sup> Imad Ben Marwan. Law 15-04 and its Impact on Electronic Signature in Algeria. Dar Al-Abhath Al-Qanounia, Tunis, 2023, p. 87.

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the identity of the natural person signing. This linkage lends credibility to the signature and reduces the risks of identity theft.

To further enhance security, the law mandated the use of qualified electronic signature creation devices. These devices are characterized by technical specifications that ensure the confidentiality of the signatory's private keys (the secret element used by the person to create their signature) and protect them from unauthorized use. This ensures that the signing process takes place under the exclusive control of its owner.<sup>17</sup>

Subsequently, the Electronic Commerce Law No. 18-05 of 2018 came to complement this regulation and focus specifically on organizing electronic transactions in Algeria. This law emphasized the importance of electronic signatures as a fundamental tool for achieving security, trust, and safety in this type of commerce. The electronic signature grants legal credibility to transactions conducted online and protects the rights of the transacting parties.

The enactment of Law No. 15-04 of 2015 truly represents a significant legislative step reflecting Algeria's desire to keep pace with technological developments and remove obstacles to facilitating digital transactions. By establishing a clear legal framework for electronic signatures, the law provides a basis for the admissibility of this means in proving rights and obligations arising from various electronic exchanges. This official recognition of the legal value of digital signatures encourages their adoption and widespread use in various economic and legal sectors.

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<sup>17</sup> Laila Al-Fahid. *Algerian Law and the Electronic Signature: A Legal Analysis*. Maktabat Al-Qanoun, UAE, 2024, p. 72.

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The law's emphasis on the role of qualified certification authorities reflects the Algerian legislator's concern to ensure a high level of reliability and security for electronic signatures, especially those that meet the most stringent standards. By subjecting these authorities to precise regulatory oversight, it is ensured that the certificates they issue meet international standards, thereby enhancing trust in the use of qualified electronic signatures as a secure and reliable tool<sup>18</sup>.

The integration between Law No. 15-04 and the Electronic Commerce Law No. 18-05 clearly indicates a comprehensive vision on the part of the Algerian legislator aimed at regulating the legal and commercial aspects of digital transactions in a coherent manner. This integration seeks to create a clear and stable legal environment that encourages the growth and prosperity of electronic commerce in Algeria, while providing the necessary legal protection for all parties transacting online.

### **Subsection Two: Judicial Precedents Related to the Admissibility of Electronic Signatures in Algeria**

In Algeria, the legal framework for electronic signatures was primarily established by Law No. 15-04 dated February 10, 2015, which specifies the conditions related to electronic signatures and the admissibility of electronic documents. This law emphasizes the definition of electronic signatures, stipulates the conditions for their use, and sets out the necessary controls to protect electronic documents and ensure their integrity against forgery and manipulation.

In addition, Algerian law regulates the establishment of bodies competent to issue electronic signature certificates, emphasizing the link between the public key

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<sup>18</sup> Roula Al-Khalil. *The Evolution of Algerian Legislation Regarding Electronic Signature*. Dar Al Thaqafa Al Qanounia, Lebanon, 2022, p. 77.

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and the identity of the natural person. This aims to enhance the reliability of electronic signatures and grant them probative force in legal transactions. The law also mandates the use of qualified electronic signature creation devices that ensure the confidentiality of the signatory's private keys and protect them from unauthorized use. The Electronic Commerce Law No. 18-05 complements the regulation of electronic transactions in Algeria, emphasizing the importance of electronic signatures in this context, reflecting their role in achieving security, trust, and safety in Algerian electronic commerce.

Law No. 15-04 of 2015 is considered a significant legislative step towards keeping pace with technological developments and facilitating digital transactions in Algeria. By defining the legal framework for electronic signatures, it provides a basis for the admissibility of this means in proving rights and obligations arising from electronic exchanges. This law represents an official recognition of the legal value of digital signatures, encouraging their use in various sectors. The law's focus on the role of qualified certification authorities also reflects the Algerian legislator's concern to ensure a high level of reliability and security for electronic signatures. By subjecting these bodies to specific oversight, it is ensured that the certificates they issue meet international standards, thereby enhancing trust in the use of qualified electronic signatures in particular<sup>19</sup>.

The integration between Law No. 15-04 and the Electronic Commerce Law No. 18-05 indicates a comprehensive vision for regulating the legal and commercial aspects of digital transactions in Algeria. This integration aims to create a clear and

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<sup>19</sup> Ahmed El-Masry. *Electronic Signature in Algeria: Law 15-04*. Dar Al-Fikr Al-Qanouny, Egypt, 2023, p. 94.

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stable legal environment that encourages the growth of electronic commerce and provides the necessary legal protection for parties transacting online.

Despite the novelty of the legal framework for electronic signatures in Algeria, Algerian courts have begun to recognize electronic signatures as legal evidence, especially if they meet the requirements stipulated in Law No. 15-04. Some judicial precedents emphasize the necessity of verifying the identity of the signatory and reliably linking the signature to them, in addition to ensuring the integrity of the data and the impossibility of manipulating it after signing. Courts also rely on certificates from electronic signature issuing authorities as evidence of the signature's validity, which enhances its probative force in legal obligations.

However, there is still a need to develop judicial practice in this area, particularly regarding the assessment of complex technical evidence related to electronic signatures. Some legal researchers in Algeria have called for the necessity of training and technically qualifying judges to deal with electronic evidence and digital signatures, for the correct and effective application of electronic proof rules in courts. The evolution of judicial precedent in the field of electronic signatures goes hand in hand with legislative and technical developments<sup>20</sup>.

With the increasing use of electronic signatures in various transactions, it is expected that courts will see more cases requiring the adaptation of traditional legal concepts to the nature of digital evidence. This requires judges to acquire a deeper understanding of the technical aspects related to electronic signatures to enable them to issue fair judgments based on sound legal and technical grounds. Judicial recognition of electronic signatures as evidence significantly contributes to

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<sup>20</sup> Imad Ben Marwan. *Developing Judicial Practice in Electronic Signature*. Dar Al-Abhath Al-Qanounia, Tunis, 2023, p. 84.

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enhancing trust in digital transactions. When individuals and companies are assured that their electronic signatures will have the same legal force as traditional signatures before the courts, it encourages them to adopt digital means in their dealings, which benefits the digital economy as a whole.

The journey of judicial recognition of electronic signatures in Algeria is still in its developmental stages. As the use of this technology continues to expand, it is likely that we will see more judicial precedents that establish clear principles for dealing with electronic signatures as evidence in various types of cases.<sup>21</sup>

The approach adopted by Algeria in regulating electronic signatures represents a strategic step towards strengthening the digital economy and facilitating commercial and legal exchanges online. By laying clear legal foundations for the admissibility of electronic signatures, the state seeks to provide a safe and reliable environment for individuals and institutions to engage in digital transactions. The integration between the legislation that defines the general framework and the judicial precedent that is beginning to adapt legal concepts to the digital reality indicates a growing understanding of the importance of this technology in comprehensive development.

However, the challenge remains in accelerating the pace of awareness of the importance of electronic signatures and facilitating their widespread use. This requires joint efforts from government agencies, electronic signature service providers, and the private sector to adopt this technology and overcome obstacles that may hinder its spread. Enhancing trust in electronic signatures, through a strong legal framework and enlightened judicial application, will have a significant positive

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<sup>21</sup> Laila Al-Fahid. *The Strategic Impact of Algerian Law on the Digital Economy*. Maktabat Al-Qanoun, UAE, 2024, p. 71.

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impact on the growth of the digital economy in Algeria and the increased efficiency of transactions.

### **Subsection Two: Conditions and Controls for the Legal Validity (Hujjiya) of Electronic Signatures**

Defining the necessary conditions and controls for recognizing the legal validity (hujjiya) of electronic signatures is of paramount importance. Not every electronic signature possesses the same probative force; rather, the matter is subject to specific criteria determined by law. Accordingly, the aim of this subsection is to detail these criteria and controls.

Within this subsection, we will address two primary types of these conditions and controls. The first will focus on the legal conditions (Paragraph One), which pertain to the purely legal aspect of considering a signature as evidence. The second will address the technical conditions (Paragraph Two), which relate to the technical standards that ensure the reliability and integrity of the signature.

### **Subsection One: Legal Conditions for the Admissibility of Electronic Signatures**

The admissibility of electronic signatures in Algerian law is based on fundamental principles aimed at emulating the function of traditional signatures in the digital environment, while adding safeguards that ensure credibility and security. These principles are manifested in the necessity of verifying the signatory's identity to link the legal act to its true owner, complying with the legal framework governing this process to ensure legitimacy, clearly expressing the will of the party bound by the digital content, and finally, allowing the possibility of challenging the validity of the signature in accordance with the usual legal procedures.

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These criteria reflect the Algerian legislator's endeavor to strike a balance between facilitating digital transactions and guaranteeing the rights and legal protection of the transacting parties.

The admissibility of an electronic signature requires the fulfillment of a set of clear conditions that emphasize ensuring the validity of the signature and its legally sound connection to the signatory's identity. Among the most important of these conditions are:

**Verification of the Signatory's Identity:** The electronic signature must be linked to the identity of a specific natural person, and this is done by relying on electronic certificates issued by accredited certification authorities. These bodies play a crucial role in ensuring the credibility of the electronic signature by applying strict procedures to verify the identity of individuals or entities requesting these certificates. This verification may include submitting official documents, conducting interviews, or using other verification methods that ensure the certificate is indeed linked to the person or entity that holds it. This process aims to prevent identity theft and provide a basis of trust in the validity of the electronic signature and its attribution to its owner.

This principle is indicated by the provisions of Article 4 of Law No. 15-04 dated February 10, 2015,<sup>22</sup> concerning electronic signature and certification, which requires that "the electronic signature shall be linked to a valid electronic certification certificate." Article 10 of the same law also emphasizes the role of electronic certification bodies in verifying the identity of certificate applicants.

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<sup>22</sup> See Article 4 of Law No. 15-04 dated February 1, 2015, related to Electronic Signature and Electronic Certification Services.

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**Compliance with Specific Laws:** The electronic signature must be consistent with the national legislation governing the use of electronic signatures, such as evidence laws and electronic commerce laws, which specify the conditions for the validity and admissibility of electronic signatures as evidence. This condition ensures that electronic signatures are not used arbitrarily but are subject to a legal framework that regulates how they are created, used, and recognized as legal evidence. Compliance with these laws gives the electronic signature legal legitimacy and determines when it can be relied upon to prove rights and obligations before courts and other relevant authorities.

This condition reflects the spirit of Article 32 bis 1 of the amended Civil Code,<sup>23</sup> which recognizes electronic writing as a means of proof with the same force as writing on paper when it meets the legal conditions. The Electronic Commerce Law No. 18-05 also emphasizes the admissibility of electronic messages in accordance with the conditions stipulated therein.

**Expression of Will:** The electronic signature must express the signatory's will and acceptance of the content of the electronic document. This consent is the basis of the binding force of the signature in transactions. The signature, whether traditional or electronic, represents an acknowledgment by its owner of agreement to what is stated in the document.

In the electronic environment, the expression of will can take various forms, such as clicking an "I agree" button, entering a secret code associated with the person, or using a unique identifier that confirms the signatory's agreement to the content of the electronic transaction.

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<sup>23</sup> See Article 32 bis 1 of the Civil Code, as amended by Law No. 05-10 dated June 20, 2005, amending and supplementing the Civil Code.

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This principle is derived from the general rules in the law of contracts and obligations, where valid consent is required for the conclusion of any agreement. The electronic signature here represents one manifestation of this consent in the digital environment.

**Possibility of Challenge:** In the event of a dispute regarding the validity of an electronic signature, it must be challenged in accordance with legal procedures. The validity of an electronic signature cannot be denied merely because it is electronic and authenticated by a certification authority, unless its forgery or non-attribution to its owner is proven. This right to challenge ensures the existence of a legal mechanism to address any doubts or allegations of forgery or error related to the electronic signature.

The burden of proof lies with the party claiming the invalidity of the signature, and this is consistent with the general principles of legal evidence. This right is consistent with the general principles of evidence stipulated in the Code of Civil and Administrative Procedure, which grants parties the right to present evidence and challenge the evidence of the opposing party.<sup>24</sup>

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<sup>24</sup> Fahad Al-Kuwari. *Electronic Signature and the Burden of Proof*. Markaz Al-Dirasat Al-Qanounia, Qatar, 2023, p. 84.

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role of electronic certification bodies in verifying the identity of certificate applicants.<sup>25</sup>

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<sup>25</sup> See Article 10 of Law No. 15-04

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<sup>26</sup> Ramy Khattab. *Challenging the Electronic Signature: Legal Bases*. Dar Al-Ma'rifa, Egypt, 2023, p. 92.

## Chapter Two: Mechanisms for Proving Electronic Contracts in Algeria

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The mechanisms for proving electronic contracts in Algeria constitute a matter of great importance for ensuring the stability of digital transactions and protecting the rights of contracting parties. Given the increasing growth of commercial and legal exchanges conducted via cyberspace, it becomes necessary to identify the legal means through which the formation, terms, and effects of these contracts can be proven. Accordingly, the aim of this chapter is to review the various tools and means recognized by Algerian law for proving the existence and content of electronic contracts, and how the judicial system deals with these mechanisms.

The technological evolution and the new methods of contracting it has produced necessarily require legal adaptation at the level of proof. Contracts concluded with a click of a button or through the exchange of electronic messages pose different challenges than those related to traditional contracts written on paper and signed manually. Hence, the importance of identifying the digital evidence that can be invoked before the courts, and clarifying the extent of its probative force and the necessary conditions for its recognition.

Furthermore, the role of the judiciary in this context is no less significant, as it bears the responsibility of adapting traditional legal rules to suit the nature of electronic evidence and establishing the necessary standards for assessing its probative value. The judge must be knowledgeable in both the technical and legal aspects of this evidence to be able to achieve justice in disputes related to electronic contracts.

To address this topic in detail, this chapter will be divided into two main sections. The first section will deal with the means of electronic proof, where the types of digital evidence that can be presented to prove electronic contracts and the role of trusted third parties in enhancing their probative value will be reviewed. The

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second section will focus on the role of the judiciary in proving electronic contracts, through the analysis of the judge's authority in assessing electronic evidence and the challenges they face in this area.

### **Chapter One: Means of Electronic Proof**

Addressing the means of electronic proof represents a significant turning point in our study of the mechanisms for proving digital contracts in Algeria. Having established the foundations for understanding the admissibility (*hujia*) of electronic signatures, it now becomes necessary to explore the other tools that a judge can use to verify the validity and enforceability of these contracts in the digital environment. Accordingly, the purpose of this chapter is to review the various types of electronic evidence recognized by law for the purpose of proof, and the role of trusted third parties in enhancing the probative force of this evidence.

The intangible nature of electronic transactions poses new challenges at the level of proof, necessitating the expansion of the scope of admissible evidence to include digital means. A judge, when adjudicating a dispute arising from an electronic contract, may find themselves faced with different types of evidence unfamiliar in the context of traditional transactions. Hence, the importance of defining the legal framework for admissible electronic evidence, stating the extent of its probative force, and how to handle it judicially becomes apparent.

In this chapter, we will address two fundamental aspects to clarify these means. The first will focus on the electronic evidence admissible in proof (Section One), where we will review the types of digital documents and data that can be presented as evidence, with a focus on electronic documents and messages. The second will address the role of trusted third parties in electronic proof (Section Two), where we

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will explain the tasks these entities undertake in documenting electronic transactions and their legal responsibilities.

### **Section One: Admissible Electronic Evidence in Proof**

Identifying the types of electronic evidence that can be relied upon to prove digital rights and obligations is fundamental. The electronic space abounds with information and data, but not all of it is suitable for presentation before the judiciary. Accordingly, the purpose of this section is to review the main forms of digital evidence recognized by law.

In this section, we will address two basic types of this evidence. The first will focus on electronic documents (Subsection One), where we will explain their nature and probative value. The second will address electronic messages (Subsection Two), where we will clarify the extent to which they are recognized as evidence in digital transactions.

#### **Subsection One: Electronic Documents**

Electronic documents are documents that are actively used, stored, sent, or received using electronic communication means, including electronic data interchange, email, or electronic copies of documents. These documents have evidentiary value equal to that of personal documents, especially if they are authenticated using a qualified electronic signature, which ensures their integrity and prevents tampering or forgery.

In Algerian law, Electronic Commerce Law No. 18-05 of 2018 confirms this principle in Article 12, stating: "Electronic documents produced according to the principles of law are considered independent of customary or official documents

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based on their principle, and they enjoy legal freedom upon their inception."<sup>1</sup> Algerian Code of Civil and Administrative Procedure (Article 45) <sup>2</sup>also allows for the submission of certified electronic copies of paper documents as evidence, provided they meet the standards of conformity and security. Algerian Electronic Signature Law No. 15-04 of 2015 in Article 22 emphasizes the force of the electronic signature in this context.

The recognition by Algerian law of electronic documents as evidence represents a significant development that keeps pace with the digital transformation in transactions. This recognition facilitates legal procedures and provides a clear framework for dealing with digital documents in various legal and commercial contexts. It also encourages the adoption of electronic means due to the speed and efficiency they offer in completing transactions.

The requirement to authenticate some electronic documents with a qualified electronic signature to enhance their evidentiary value reflects the legislator's keenness to balance facilitating the use of electronic means with ensuring the credibility and admissibility of evidence before the courts. This contributes to building trust in digital transactions and protects the rights of the parties involved.

The legal recognition of electronic documents as an evidence tool has constituted a qualitative shift in modern legal systems, and Algerian law has not been isolated from this development. The definition of electronic document contained in the text, which includes multiple forms of digital documents circulated through electronic means, establishes a broad understanding of this concept that transcends the traditional paper format. Equating their evidentiary value with customary or

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<sup>1</sup> See Article 12 of Law No. 18-05.

<sup>2</sup> See Article 45 of Law No. 08-09 dated February 25, 2008, containing the Code of Civil and Administrative Procedure, published in Official Gazette No. 21, dated April 23, 2008.

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official documents, especially when using a qualified electronic signature, reflects an awareness of the importance of securing these transactions and ensuring their integrity in a digital environment exposed to risks.

However, despite the explicit text of Article 12 of the Electronic Commerce Law on the independence and evidentiary value of electronic documents, practical application raises questions regarding the requirements for "production according to the principles of law." This phrase implies the necessity of fulfilling technical and legal conditions that ensure the reliability of the document, such as the integrity of the creation and storage system, accessibility, and ensuring non-alteration after issuance, except through documented methods. Here arises the role of executive regulations and technical standards that must complement the legislative text to provide a clear framework for parties and the judiciary alike.<sup>3</sup>

The gradation in the evidentiary value of electronic documents based on the type of electronic signature used, as indicated by Electronic Signature Law No. 15-04, represents a fundamental point worth analyzing. While the qualified electronic signature grants the strongest evidentiary value, which approaches that of a handwritten signature, other types of signatures (such as simple and advanced) or even unsigned electronic documents may be accepted as preliminary evidence or presumptions, and are subject to the judge's discretion in light of the surrounding circumstances and the strength of the evidence supporting their integrity and source. This distinction is necessary to balance security requirements with the flexibility of daily transactions that may not always require the highest levels of authentication.

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<sup>3</sup> Youssef Ben Aissa. *Technical and Legal Conditions for the Electronic Signature*. Dar Al-Nashr Al-Qanounia, Tunis, 2023, p. 88.

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Furthermore, the text allowing the submission of certified electronic copies of paper documents as evidence according to the Code of Civil and Administrative Procedure (Article 45) opens the door for the digitization of archives and the exchange of documents between judicial and administrative bodies and parties more efficiently. Nevertheless, the requirement to "meet the standards of conformity and security" places a burden on the issuing entities of these copies to ensure the correctness of certification and the reliability of the paper-to-digital conversion process. This necessitates reliable electronic document management systems and auditing mechanisms that ensure the integrity of both original and digital copies.

These legal developments undoubtedly reflect the Algerian legislator's will to keep pace with the digital age and facilitate transactions. However, the real challenge lies in practical application. Judges, lawyers, and experts need continuous training to understand the technical aspects of electronic documents and signatures, and how to assess their evidentiary value in disputes. Furthermore, legal awareness among parties regarding the necessity of securing their electronic documents and using accredited authentication methods is of utmost importance to enhance trust in the digital legal system as a whole.<sup>4</sup>

### Subsection Two: Electronic Messages

Electronic messages, such as email, are considered important electronic evidence in proof, especially in sharing correspondence and agreements between registered parties. The Algerian Electronic Commerce Law in Chapter Five (Article 35) established the evidentiary value of electronic messages, stating: "Electronic messages are accepted as written evidence, and their evidentiary assessment is

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<sup>4</sup> Amira Al-Abdullah. *Integration of Laws and Technical Standards*. Markaz Al-Dirasat Al-Qanounia, Qatar, 2023, p. 82.

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subject to the judge's discretionary evaluation on a case-by-case basis, considering factors such as the message's content and clarity." This grants electronic messages recognition as written evidence subject to the court's assessment.

The evidentiary strength of electronic messages increases if they are accompanied by an electronic signature, especially a qualified signature, which enhances confidence in the message's content and source. The Electronic Signature Law in Article 28 confirms this, stating: "Electronic messages electronically signed enjoy a strong right to evidentiary value and are considered evidence attributing their content to the sender." This grants electronically signed messages significant evidentiary power and clear attribution to the sender.

In addition, website logs (server logs) and identity certificates can be used to strengthen the evidentiary value of electronic messages, confirming the judiciary's tendency towards accepting electronic evidence while granting the judge discretionary authority to assess their credibility. These additional elements help build the court's conviction in the authenticity of electronic messages and their content.<sup>5</sup>

The acceptance of electronic messages as evidence aligns with the reality of daily exchanges that heavily rely on this medium for communication and agreement. However, the assessment of the evidentiary strength of these messages remains subject to the judge's discretion, who examines the circumstances surrounding each case and the specifics of the message exchange.

Adding an electronic signature to electronic messages significantly enhances their value as evidence, especially if the signature is qualified. This reduces the

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<sup>5</sup> Rana Al-Jamal. *Legislation and Technical Standards for the Electronic Signature*. Dar Al Thaqafa Al Qanounia, Lebanon, 2022, p. 79.

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likelihood of challenging the message's source and content and increases confidence in its use as conclusive evidence in proof.

Electronic messages, foremost among them email, are among the most common and widely circulated forms of digital communication in our daily and professional lives, and by virtue of reality, they have become a record of many important agreements and correspondences between individuals and companies. Therefore, it was logical and legislatively required that they be granted evidentiary value to keep pace with this reality, which the Algerian legislator sought to achieve through Electronic Commerce Law No. 18-05 and Electronic Signature Law No. 15-04, recognizing them as written evidence that can be submitted before the judiciary.

The text of Article 35 of the Electronic Commerce Law<sup>6</sup> on the acceptance of electronic messages as "written evidence" represents an explicit acknowledgement of their initial legal value. However, the legislator wisely linked their evidentiary strength to "the judge's discretionary evaluation," and this aspect is what grants the legal system the necessary flexibility to deal with the specific nature of email. Electronic messages, by nature, may be less formal than traditional documents and more susceptible to alteration or impersonation if not sufficiently secured. Therefore, the judge's discretionary authority allows him to assess the reliability of the message in light of the circumstances of each case, taking into account its content, the full context of its exchange, and its consistency with other submitted evidence.

The greatest challenge in dealing with electronic messages as evidence lies in proving their authenticity and attribution to a specific sender, particularly those that do not bear a qualified electronic signature. The mere fact that a message originated from an email address attributed to a specific person is not necessarily sufficient to

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<sup>6</sup> See Article 35 of Law No. 18-05 dated May 10, 2018, related to Electronic Commerce.

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definitively prove that it was issued by that person, due to the possibility of account hacking or unauthorized use by others. In such cases, the electronic message may not reach the level of complete written evidence; rather, it may be considered merely a preliminary proof in writing or a simple presumption subject to rebuttal, and its weight depends on what reinforces it from other evidence or strong presumptions supporting its authenticity and issuance by the person against whom it is invoked.

Here emerges the decisive role of the electronic signature in enhancing the evidentiary strength of electronic messages, as affirmed by Article 28 of the Electronic Signature Law. The signature, especially the qualified one, links the message to a specific identity in a secure and reliable manner, significantly reducing the possibility of challenging its issuance by the signatory and granting it evidentiary strength that approaches that of customary documents signed by hand. Furthermore, the use of email server logs and digital authentication certificates plays a supporting role in proving the message's path and the time of its sending and reception, which reinforces the technical evidence provided by the parties to support the evidentiary value of their electronic correspondences before the court.<sup>7</sup>

In conclusion, it can be said that Algerian law has provided a legal framework for the recognition of electronic messages as evidence, which aligns with technological development and the reality of daily transactions. However, their effectiveness in proof is significantly affected by the extent of their technical security (especially through the use of a qualified electronic signature) and the parties' ability to provide evidence and presumptions that support their authenticity and integrity before the court. The challenge remains in the necessity of enhancing legal and technical awareness among all parties to the lawsuit, and developing judicial

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<sup>7</sup> Adel Ben Sa'id. *Electronic Signature and its Role in Enhancing Probative Force*. Dar Al-Abhath Al-Qanounia, Tunis, 2023, p. 91.

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expertise to deal with digital evidence efficiently and fairly, to ensure the achievement of justice in the era of digital transformation.

### **Section Two: The Role of Trusted Third Parties in Electronic Proof**

The presence of trusted third parties lends credibility to electronic transactions and contributes to enhancing trust in them. Accordingly, the purpose of this section is to highlight the role these entities play in the process of electronic proof and their legal responsibilities.

In this section, we will address two fundamental aspects of the role of these entities. The first will focus on the tasks of trusted third parties (Subsection One), where we will review the roles they undertake in documenting transactions. The second will address the responsibility of trusted third parties (Subsection Two), where we will explain the legal framework for their liability for errors and omissions in the performance of their tasks.

#### **Subsection One: Tasks of Trusted Third Parties in Algeria**

The tasks of trusted third parties in Algeria are based on the Electronic Signature Law No. 15-04 dated February 10, 2015, which is the fundamental framework for regulating electronic signatures and certification services in Algeria. Among the most prominent tasks stipulated for these entities are:

- Issuance of Electronic Signature Certificates: Article 12 of Law No. 15-04<sup>8</sup> stipulates that trusted third parties are authorized to issue electronic signature certificates that link the public key to the identity of a person, after verifying their identity according to specific procedures prescribed by law. This task is the core function of trusted third parties. These entities verify the identity of

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<sup>8</sup> See Article 12 of Law No. 15-04.

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individuals or organizations and then issue them digital certificates. These certificates serve as a "digital passport" confirming the relationship between the user's identity and the public key of their electronic signature. Legal procedures ensure that this verification is carried out reliably.

- **Ensuring the Safety and Security of Certificates:** According to Article 15<sup>9</sup> of the same law, trusted third parties are obligated to protect the private keys of signatories and ensure the safety of digital certificates throughout their validity period, while taking the necessary technical measures to prevent tampering or forgery. The role of the trusted third party is not limited to issuing the certificate; it extends to their responsibility for the safety of these certificates. They must implement security procedures to protect users' private keys and ensure that the certificates themselves cannot be forged or tampered with throughout their validity.
- **Providing Services Related to Electronic Signatures:** Article 18 indicates that trusted bodies provide services for verifying the validity of electronic signatures, maintaining signature records, and providing consultations related to electronic signatures. In addition to issuance and security, these entities offer valuable services such as verifying the authenticity of an electronic signature presented in a transaction, maintaining records of these signatures for reference when needed, and providing technical and legal advice to individuals and organizations on how to use electronic signatures correctly and securely.
- **Compliance with Law and Technology:** Trusted third parties are subject to the oversight of Law Article 20 of the law, which obliges them to comply with the

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<sup>9</sup> See Article 15 of Law No. 15-04.

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legal and technical standards stipulated in Algerian legislation. To ensure the quality and reliability of their services, trusted third parties are subject to oversight by competent government bodies. They must adhere to the legal, procedural, and technical standards defined by Algerian laws relating to electronic signatures and digital transactions. This oversight aims to protect consumers and ensure the integrity of the system.

### Subsection Two: Responsibility of Trusted Third Parties in Algeria

The Electronic Signature Law No. 15-04 specifies the responsibility of trusted third parties in a number of articles, the most prominent of which are:

- **Civil Liability:** Article 25<sup>10</sup> stipulates that trusted third parties are civilly liable for damages caused to others as a result of their failure to fulfill their obligations, such as issuing certificates based on incorrect information or failing to protect keys, which may lead to forgery or identity theft. If the trusted third party causes harm to others due to negligence or error in the performance of their duties (such as improper identity verification), they bear the responsibility of compensating those affected by these damages. This encourages them to exercise caution and accuracy in their work.
- **Criminal Liability:** According to Article 27<sup>11</sup>, representatives or officials of trusted third parties are criminally liable if they commit crimes such as forgery or the issuance of certificates based on false data. If the trusted third party or its employees commit acts considered crimes under the Penal Code (such as forging certificates or issuing them knowingly based on false information),

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<sup>10</sup> See Article 15 of Law No. 15-04.

<sup>11</sup> See Article 27 of Law No. 15-04

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they are subject to the penalties stipulated by law. This serves as a strong deterrent against fraudulent behavior.

- **Administrative Liability:** Article 29 indicates that trusted third parties may be subject to administrative penalties by regulatory authorities, including the withdrawal of licenses or the imposition of financial fines if they violate the laws and regulatory provisions. In addition to civil and criminal liability, trusted third parties are also accountable to regulatory bodies. If these entities violate the laws and regulations governing their operation, they may face administrative penalties such as the revocation of their operating license or the payment of financial fines<sup>12</sup>.

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<sup>12</sup> Karam El-Sawy. *The Role of Digital Certificates in Supporting Legal Evidence*. Dar Al-Fikr Al-Qanouny, Egypt, 2023, p. 93.

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### **Chapter Two: The Role of the Judiciary in Proving Electronic Contracts**

The role of the judiciary in proving electronic contracts represents a crucial juncture in understanding the mechanisms for resolving disputes arising from these digital transactions. Having reviewed the types of electronic evidence and the role of trusted third parties, it now becomes necessary to shed light on how the judicial authority deals with this evidence and the challenges it faces in achieving justice in this digital context. Accordingly, the purpose of this chapter is to clarify the judge's discretionary power in evaluating electronic evidence and to review the most prominent obstacles that hinder their work in this area.

A judge, when adjudicating disputes related to electronic contracts, faces a delicate task that requires them to understand not only legal texts but also the specific nature of digital evidence. Assessing the admissibility of this evidence, which may take various and technically complex forms, necessitates possessing cognitive and methodological tools that enable them to distinguish between the acceptable and the rejected, and between what rises to the level of conclusive proof and what amounts to no more than a simple presumption. Hence, the importance of defining the scope of the judge's authority in this assessment and the criteria they rely on to form their judicial conviction becomes apparent.

In this chapter, we will address two fundamental aspects to clarify this role and the challenges. The first will focus on the judge's authority in evaluating electronic evidence (Section One), where we will explain the criteria they rely on in assessing this evidence and the role of expertise in assisting them in this. The second will address the challenges facing the judiciary in proving electronic contracts (Section Two), where we will review the most prominent legal and technical difficulties that hinder the resolution of these cases.

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### **Section One: The Judge's Authority in Evaluating Electronic Evidence**

The evaluation of the probative value of the evidence presented in a lawsuit is central to the judge's work, and in the context of electronic evidence, this evaluation takes on particular importance due to its distinct nature. Accordingly, the purpose of this section is to clarify the foundations and criteria that the judge relies on in assessing digital evidence and the role of seeking expertise in this area.

In this section, we will address two fundamental aspects of this authority. The first will focus on the criteria for evaluating electronic evidence (Subsection One), where we will review the bases on which the judge relies in assessing the admissibility of this evidence. The second will address the role of expertise in evaluating electronic evidence (Subsection Two), where we will explain the cases in which the judge seeks the assistance of experts to decipher digital evidence

#### **Subsection One: Criteria for Evaluating Electronic Evidence**

The judge possesses broad authority in evaluating the evidence presented to him, including electronic evidence, which is confirmed by the provisions of the Algerian Civil and Administrative Procedure Law and the Electronic Commerce Law. Among the relevant legislative texts:

Article 46 of the Code of Civil and Administrative Procedure stipulates that: "The investigator [judge] shall evaluate the evidence presented to him according to his discretionary authority, taking into account its importance, the reliability of its source, its integrity, and its ability to prove the facts." This article grants the judge general discretionary<sup>13</sup> authority in evaluating evidence.

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<sup>13</sup> See Article 46 of Law No. 08-09 dated February 25, 2008, containing the Code of Civil and Administrative Procedure.

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This article emphasizes the principle of the judge's discretionary authority in evaluating all types of evidence, including electronic evidence. The judge must take into account the importance of the evidence in proving the fact, the degree of trust in the source of this evidence, whether its integrity has been preserved without alteration, and its actual ability to prove what is claimed.

More specifically for electronic evidence, Electronic Commerce Law No. 18-05 in Article 30 stipulates that: "Electronic evidence shall be evaluated according to criteria including data integrity, clarity, and relevance to the subject matter of the dispute, while taking into consideration the nature of the electronic evidence."<sup>14</sup> This article specifies special criteria for evaluating electronic evidence.

This article provides more detailed criteria for evaluating electronic evidence. The judge must verify the integrity of the electronic data (has it been tampered with?), its clarity (is it understandable?), and its relevance to the ongoing dispute, while taking into account the unique characteristics of each type of electronic evidence (such as the difference between email and an electronically signed document).

Article 31 of the same law also emphasizes the importance of placing electronic evidence within the context of other presumptions and evidence, stating: "Electronic evidence shall not be relied upon solely unless it is clear and convincing, and in its assessment, the existence of other presumptions and supports that back its existence shall be considered."<sup>15</sup> This directs the judge not to rely solely on electronic evidence unless it is conclusive.

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<sup>14</sup> See Article 30 of Law No. 18-05 dated May 10, 2018, related to Electronic Commerce.

<sup>15</sup> See Article 31 of Law No. 18-05

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This article stresses that the judge should not rely on electronic evidence alone unless it is in itself clear and capable of creating conviction. Mostly, the judge must consider the electronic evidence in light of the other evidence and presumptions presented in the case to form a comprehensive and reliable understanding of the fact.

The evaluation of evidence in any judicial system is a fundamental process to ensure the soundness of judicial decisions and their conformity with truth and justice. With the increasing reliance on digital transactions and communications, electronic evidence has gained increasing importance in judicial disputes. The Algerian legislator recognized this fact and granted the judge broad discretionary authority in evaluating this evidence, while simultaneously setting specific criteria to guide this authority to ensure the reliability of digital evidence.<sup>16</sup>

Article 46 of the Code of Civil and Administrative Procedure establishes the general principle of the judge's discretionary authority in evaluating all evidence presented to him. This means that the judge is not bound by rigid rules dictating a specific weight for each type of evidence; rather, he has the authority to assess the value of the evidence based on his conviction, which is formed by examining its importance, the reliability of its source, its integrity against alteration, and its actual ability to prove the disputed fact. This general principle naturally extends to electronic evidence, but its specificity required setting more detailed criteria to guide the judge's assessment.

Here comes the role of Article 30 of the Electronic Commerce Law, which provided more precise criteria suitable for the digital nature of evidence. The requirement of "data integrity" means verifying that the evidence has not been tampered with or altered since its creation or extraction, which may require the use

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<sup>16</sup> Peter King. *Evaluating Digital Evidence in Judicial Systems*. Legal Insights, USA, 2024, p. 54.

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of complex technical mechanisms such as hash values or reliable timestamping certificates. As for the criterion of "clarity," it relates to the evidence's intelligibility and readability, whether in terms of presentation format or its linguistic or technical content. Finally, the criterion of "relevance to the subject matter of the dispute" is a general principle in the admissibility of evidence related to the direct connection of the evidence to the facts required to be proven in the lawsuit. Considering "the nature of the electronic evidence" imposes on the judge the need to understand the differences between various types of digital evidence (such as email, server logs, electronically signed documents, and data extracted from devices), as each type has inherent characteristics and a degree of reliability that may differ from others<sup>17</sup>.

In addition to the qualitative criteria for evaluating the electronic evidence itself, Article 31 of the Electronic Commerce Law emphasizes the importance of the context in which this evidence is presented. It stipulates that electronic evidence shall not be relied upon solely unless it possesses a high degree of clarity and persuasiveness that leaves no room for doubt about its authenticity and content. This text guides the judge to compare the electronic evidence with other available evidence and presumptions in the lawsuit, such as witness testimonies, other material evidence, or even other electronic evidence that may strengthen or weaken the evidentiary value of the evidence being assessed. This holistic approach prevents the fragmentation of evidence and ensures the formation of a firm conviction by the judge based on the totality of the elements presented before him.

Applying these criteria in judicial practice poses real challenges, as it requires judges and judicial assistants to acquire sufficient understanding of digital technologies and how they work to correctly assess the integrity and reliability of

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<sup>17</sup> Lucy Harris. *Judicial Discretion in Assessing Electronic Evidence*. Law Review, UK, 2023, p. 67

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electronic evidence. In many cases, it may necessitate resorting to technical experts specializing in digital evidence to provide technical reports that help the court understand the complex technical aspects related to how evidence is collected, how its integrity is maintained, and how its source and attribution to a specific person are verified. The effectiveness of applying these criteria heavily depends on the level of technical training and qualification of judges and experts, and on the availability of the necessary tools and mechanisms for examining digital evidence in a scientific and reliable manner.<sup>18</sup>

In summary, the Algerian legislator has established an advanced legal framework for evaluating electronic evidence that combines the judge's discretionary authority with objective criteria related to the integrity, clarity, and relevance of the evidence, while emphasizing the importance of context and supporting evidence. The success of this framework depends on its practical implementation through building technical capabilities within the judicial system and developing judicial practices to keep pace with the rapid development in the nature of digital evidence and methods of manipulation

### **Subsection Two: The Role of Expertise in Evaluating Electronic Evidence**

Given the technical complexity of some electronic evidence, Algerian law allows the judge to enlist the assistance of technical experts, according to the following:

Article 60 of the Code of Civil and Administrative Procedure stipulates: "The judge may appoint a technical expert to examine technical evidence and provide a technical report clarifying the nature of the electronic evidence, its integrity, and its

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<sup>18</sup> Amira Al-Abdullah. *The Discretionary Authority of Judges in Evaluating Digital Evidence*. Markaz Al-Dirasat Al-Qanounia, Qatar, 2023, p. 82.

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credibility."<sup>19</sup> This article grants the judge the right to use experts to understand the technical aspects of evidence.

This article authorizes the judge to appoint a specialized expert when dealing with evidence of a technical nature that requires specific understanding. The expert's role is to examine this evidence and provide a report explaining its technical nature, and assessing its integrity (has it been tampered with?) and its credibility (how trustworthy it is).

The Electronic Commerce Law in Article 33 also permits the possibility of using experts to examine the source of electronic evidence and verify that it has not been tampered with.

This article particularly focuses on the possibility of using experts to examine the source of electronic evidence (where did it come from?) and verify whether it has been subjected to any form of unauthorized tampering or alteration. This helps the judge assess the reliability of the electronic evidence.

The expert provides an advisory technical opinion that helps the judge form his judicial conviction, but it does not oblige the judge to follow it, as the final decision in evaluating evidence remains within the judiciary's authority. The expert's role is to clarify the technical aspects that may be difficult for the judge to understand alone.

The decision to assess the value of electronic evidence remains with the judge himself. The expert's opinion is an advisory opinion that helps the judge understand complex technical aspects, but it is not binding on the judge. The judge is the one who decides, based on all the evidence and circumstances of the case, whether the electronic evidence is convincing and sufficient for proof.

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<sup>19</sup> See Article 60 of Law No. 08-09.

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Given the continuous increase in evidence of a digital nature in legal cases, the technical complexity of this evidence has become a major challenge for the traditional judiciary accustomed to dealing with physical and paper evidence. Understanding how electronic data is created, stored, transmitted, and the possibility of its alteration or manipulation requires specialized knowledge that is not necessarily available to the judge by virtue of his legal background. From this, the urgent need arose to enlist the assistance of technical experts to provide the necessary help to the judge in examining and evaluating this evidence, which the Algerian legal texts have explicitly affirmed.

Article 60 of the Code of Civil and Administrative Procedure and Article 33 of the Electronic Commerce Law are among the most important texts that grant the judge the legal authority to appoint a technical expert. The expert's role here is not limited to merely providing a descriptive report; rather, it extends to in-depth analytical examination of the electronic evidence<sup>20</sup>. The expert uses digital forensic tools and techniques to extract data, examine metadata, track communication paths (such as email or network logs), and search for any traces indicating attempted tampering or unauthorized alteration. The expert's report aims to clarify the technical nature of the evidence and its degree of technical integrity and credibility, which helps the judge build an informed conviction regarding this evidence.

Despite the utmost importance of the expert's work in deciphering the ambiguity of electronic evidence, it is necessary to emphasize that the expert's opinion remains merely an "advisory opinion" not binding on the judge, as confirmed by the provided text. This rule reflects a fundamental principle in the legal system, which is that the judge has full authority in evaluating evidence and forming

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<sup>20</sup> See Article 33 of Law No. 18-05

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his conviction based on the totality of evidence and circumstances presented before him. The expert's role is limited to providing technical support and clarifying the technical aspects that may be obscure to the judge, but the judge is the one who ultimately evaluates the strength of the evidence in proving the legal fact, and may, depending on the circumstances of the case and other evidence, take or not take the expert's opinion in whole or in part.

The judge's task in evaluating the technical expert's report on electronic evidence is not easy. He does not re-perform the technical examination himself but evaluates the report in terms of its methodology, technical logic, the expert's qualifications, and the consistency of the report's findings with the rest of the evidence in the case. In some complex cases or when there are conflicting reports from different experts (such as prosecution experts and defense experts), the judge may be obliged to summon the experts for discussion or even appoint a third expert or a committee of experts to clarify obscure or technically disputed points, all with the aim of reaching an accurate understanding of the technical aspects before issuing his judicial decision.<sup>21</sup>

In conclusion, it can be said that the two legal texts mentioned (Article 60 of the Code of Civil and Administrative Procedure and Article 33 of the Electronic Commerce Law) constitute a solid legal basis for resorting to technical expertise in the field of electronic evidence, which is a practical necessity to enable the judiciary to deal efficiently with digital evidence. Although the expert's opinion is advisory, the quality and reliability of this opinion play a crucial role in assisting the judge in applying the legal standards for evaluating electronic evidence (such as integrity, credibility, and source) correctly and fairly. The challenge remains in developing the

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<sup>21</sup> Karam El-Sawy. *Challenges of Expert Evaluation in Technical Cases*. Dar Al-Fikr Al-Qanouny, Egypt, 2023, p. 92.

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system of judicial expertise in the field of digital evidence in terms of qualification, accreditation, and ensuring impartiality to keep pace with rapid technological development.

### Section Two: Challenges Facing the Judiciary in Proving Electronic Contracts

Proving electronic contracts presents the judiciary with challenges not typically encountered in the context of traditional proof, whether at the legal or technical level. Accordingly, the purpose of this section is to review the most prominent of these obstacles that a judge faces when considering disputes related to digital contracts.

In this section, we will address two basic types of these challenges. The first will focus on legal challenges (Subsection One), which relate to legal texts and the extent of their suitability for dealing with digital evidence. The second will address technical challenges (Subsection Two), which relate to understanding the nature of this evidence and how to handle it from a technical standpoint.

#### Subsection One: Legal Challenges

The Algerian judiciary faces several legal challenges when proving electronic contracts, the most prominent of which are:

- **Adapting Traditional Legal Concepts:** It can be difficult to directly apply some traditional legal concepts related to writing, signature, offer, and acceptance to the digital environment. For example, determining the "place" of conclusion of an electronic contract or the concept of "original" and "copy" in electronic documents raises new legal questions<sup>22</sup>. Traditional laws were often established for a physical world. In electronic contracts, the traditional material element disappears.

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<sup>22</sup> Jassim Al-Shamsi. *Legal Challenges in Electronic Contracts*. Maktabat Al-Qanoun, UAE, 2024, p. 75.

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Determining the place of conclusion of the contract when the parties are in different countries and interacting online becomes complex. Likewise, the distinction between the original version and copies in digital documents is not as clear as with paper documents. The law must adapt to this immaterial nature of electronic transactions.

- **Proving Consent and Agreement:** In remote electronic contracts, it can be difficult to ensure the validity of the parties' consent and the absence of defects therein (such as error, fraud, or duress). Proving that a party was aware of the terms of the contract and freely agreed to them requires specific digital evidence. In a traditional contract, there is often direct interaction or a physical signature indicating consent. In the electronic environment, consent may be just a button click. The challenge lies in ensuring that this click genuinely expresses a free and informed will, and that the party has read and understood the terms of the contract in full, and has not been subjected to pressure or misrepresentation<sup>23</sup>.
- **Determining the Identity of the Contracting Parties:** Verifying the identity of the contracting parties online poses a challenge. Although digital identity verification methods exist, they may not always be reliable or universally accessible. It is relatively easy to impersonate someone online. Ensuring that the person contracting is indeed who they claim to be is crucial for the validity of the contract. Although technologies such as digital certificates exist, their use is not universal and may not always be sufficient to definitively guarantee the identity of a party.

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<sup>23</sup> Youssef Ben Aziz. *Adapting Traditional Legal Concepts in the Digital Environment*. Dar Al-Ulum, Tunis, 2023, p. 88.

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- **Evolution of Legislation:** Despite the existence of laws regulating electronic transactions and electronic signatures in Algeria, the rapid pace of technological development may necessitate updating certain aspects of these legislations to keep pace with new developments. Technology evolves at a tremendous speed, and laws may lag behind these developments. What is considered secure and reliable today may not be so tomorrow. Therefore, there is a continuous need to review and update legislation related to electronic contracts to ensure its effectiveness and ability to address emerging challenges.
- **Jurisdiction and Applicable Law:** In electronic contracts where the parties are located in different countries, a dispute may arise regarding the determination of the competent court to hear the dispute and the law applicable to the contract. Traditional rules of jurisdiction and private international law may not always provide clear solutions in this cross-border digital context. When the parties to an electronic contract are in different countries, determining the court with the authority to hear the dispute and the law that will govern the contract becomes complex. Traditional legal rules for determining jurisdiction and the applicable law may not be fully designed to handle these international online transactions<sup>24</sup>.
- **Consumer Protection in the Digital Environment:** Consumers in electronic contracts may face difficulties in obtaining sufficient and clear information before contracting, and in exercising their rights such as the right of withdrawal. The challenge lies in providing effective legal

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<sup>24</sup> Timothy Harris. *Legal Frameworks for International Online Transactions*. Law Review, UK, 2023, p. 70.

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protection for consumers in this virtual environment. In the digital environment, it may be difficult for consumers to obtain complete and transparent information about a product or service before purchasing. Also, exercising consumer rights such as the right to withdraw from a purchase may be more complicated in electronic transactions compared to traditional transactions.

- **Enforceability of Judgments:** Enforcing judicial decisions issued regarding electronic contracts on digital assets or against parties located in other countries can be complex and requires international cooperation and clear rules for judicial cooperation in this area. Even after a judicial ruling is issued in a dispute concerning an electronic contract, its enforcement may be difficult if the digital assets in dispute are located outside the court's jurisdiction or if the party against whom the ruling is made is located in another country. This requires cooperation between countries to enforce judgments across borders<sup>25</sup>.

### Subsection Two: Technical Challenges in Proving Electronic Contracts

In addition to legal challenges, the judiciary faces technical challenges when proving electronic contracts, including:

1. **Difficulty in Understanding Technical Evidence:** Judges may lack the necessary technical expertise to understand the nature of electronic evidence (such as protocols, server logs, and encryption) and correctly assess its probative value. Many judges do not have a specialized technical background. Electronic evidence is often abstract and intangible, requiring a deep

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<sup>25</sup> Adel Ben Sa'id. *Enforceability of Judgments in Electronic Contracts*. Dar Al-Abhath Al-Qanounia, Tunis, 2023, p. 93.

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understanding of technologies such as encryption, which transforms data into unreadable codes except for those who possess the decryption key; how servers that host websites and applications work and record various activities; and internet protocols that regulate the process of data exchange. A lack of understanding of these technical fundamentals makes it difficult for the judge to assess the credibility of this evidence and determine its admissibility and importance in proving the disputed facts in the case. For example, a judge may not be able to appreciate the significance of server logs in tracking logins and logouts from a specific system or understand the strength of the encryption used to protect certain data.

2. Possibility of Manipulation of Electronic Evidence: Digital evidence is inherently modifiable, raising doubts about its integrity and authenticity. Verifying the absence of manipulation requires specialized technical tools and expertise. Unlike paper documents that leave physical traces when tampered with (such as erasures or ink alterations), digital files can be easily modified using specialized software without leaving obvious traces to the naked eye. This raises serious questions about whether the electronic evidence presented to the court is the original version created at the time of contracting and whether its content or creation date has been subsequently tampered with. Verifying the integrity of digital evidence requires the use of specialized tools and techniques such as verifying digital signatures (if any), comparing hash values of files to ensure they have not been changed, and examining metadata that may reveal the creation and modification history<sup>26</sup>.

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<sup>26</sup> Karam El-Sawy. *Content Manipulation in Electronic Documents*. Dar Al-Ma'rifa Al-Qanounia, Egypt, 2023, p. 95.

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3. Diversity of Technologies: The wide variety of technologies used in concluding electronic contracts (e-commerce platforms, messaging applications, etc.) makes it difficult to establish uniform standards for the presentation and evaluation of evidence.

There is a wide range of means and platforms through which contracts are concluded online, starting from major e-commerce platforms that maintain detailed transaction records, through instant messaging applications where agreements may be exchanged, to emails and documents shared via cloud services.

Each of these means generates different types of electronic evidence in varying formats and data structures. The absence of a uniform legal or procedural standard for how to present these different types of evidence or how the judge should evaluate them complicates their task in each case and requires them to understand the nature of the technical system from which the evidence originated.

4. Need for Experts: The judiciary often needs to enlist technical experts to examine electronic evidence and provide technical explanations, which may increase the cost and complexity of legal proceedings. Given the difficulty of independently understanding complex technical evidence and verifying its integrity and authenticity, it may become necessary for the judge to seek the assistance of experts specializing in digital evidence and computer science. These experts examine the evidence and provide technical reports explaining its nature, how related technologies work, and assessing its reliability.

While the expert's opinion helps the judge form their conviction, the use of experts entails additional costs borne by the parties to the dispute, and the

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process of appointing an expert and submitting their report may take additional time, which may delay the resolution of cases.<sup>27</sup>

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<sup>27</sup> Sarah Al-Khalil. *Techniques for Verifying the Integrity of Digital Evidence*. Dar Al Thaqafa Al Qanounia, Lebanon, 2022, p. 78.

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Electronic transactions have become an integral part of our daily lives, encompassing a wide range of commercial and civil activities conducted through digital means. In this growing context, proving contracts concluded electronically is of paramount importance to ensure the stability of transactions and protect the rights of the contracting parties. However, the judiciary faces unique challenges when dealing with this type of proof, given the intangible nature of electronic evidence and the technical specificities that distinguish it from traditional evidence.

The main problem lies in how to enable the Algerian judiciary to prove electronic contracts efficiently and effectively in light of the legal and technical challenges that surround this area. It has become clear that the judiciary faces difficulties in adapting traditional legal concepts to the nature of electronic contracts, and in understanding technical evidence and verifying its integrity and authenticity. These challenges may affect the ability of the courts to adjudicate fairly and quickly in disputes related to these contracts.

### **Results:**

Through our review of the legal and technical challenges facing the Algerian judiciary in proving electronic contracts, we have reached the following conclusions:

- Firstly, on the legal front, the need to adapt traditional legal concepts to suit the nature of digital transactions is evident. Concepts such as writing, signature, and the place of contract conclusion require new interpretations that take into account the unique characteristics of electronic contracts. Furthermore, proving consent and identifying contracting parties remotely constitute legal challenges that require reliable digital evidence and clear

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legal mechanisms. In addition, legislative development remains necessary to keep pace with the continuous technological changes in this field.

- Secondly, on the technical front, judges face difficulty in understanding and evaluating complex electronic evidence, necessitating the enhancement of their technical expertise or the use of experts. Moreover, the possibility of manipulating digital evidence and the diversity of technologies used in concluding electronic contracts complicate the process of proof and require specialized evaluation tools and standards.

Overall, there is a clear need for concerted efforts between the legislator, the judiciary, and technical experts to develop effective mechanisms for proving electronic contracts in Algeria. This requires updating legal frameworks, qualifying judicial competencies, and adopting best technical practices to ensure the achievement of justice in disputes related to this type of contract.

### **Recommendations:**

To address these challenges and enhance the Algerian judiciary's ability to prove electronic contracts, we propose the following recommendations:

- **Develop and Update Legislation:** Work on periodically reviewing and updating laws related to electronic transactions and electronic signatures to keep pace with technological developments and provide clear legal solutions to emerging issues, such as determining the place and time of conclusion of an electronic contract, and the admissibility of new types of digital evidence.
- **Enhance the Technical Expertise of Judges:** Organize specialized training courses for judges on the fundamentals of digital evidence and related

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technologies, and facilitate their access to the knowledge necessary to evaluate this evidence effectively.

- **Activate the Role of Experts:** Facilitate the procedures for engaging technical experts in cases involving complex electronic evidence, and establish lists of accredited experts that the courts can rely on.
- **Develop Judicial Guidelines:** Develop judicial guidelines to assist judges in assessing different types of electronic evidence, taking into account their nature and technical characteristics.
- **Legal and Technical Awareness:** Organize awareness campaigns for those involved in e-commerce on the importance of documenting their contracts electronically using secure and reliable means, and enhance their understanding of their rights and obligations in this area.

**Firstly: Books**

1. Adel Ben Sa'id. *Electronic Signature and its Role in Enhancing Probative Force*. Dar Al-Abhath Al-Qanounia, Tunis, 2023.
2. Adel Ben Sa'id. *Enforceability of Judgments in Electronic Contracts*. Dar Al-Abhath Al-Qanounia, Tunis, 2023.
3. Ahmed El-Masry. *Electronic Signature in Algeria: Law 15-04*. Dar Al-Fikr Al-Qanouny, Egypt, 2023.
4. Aïcha Ben Ayad. *Electronic Signature: Linguistic and Legal Concepts*. Dar Al Thaqafa Al Qanounia, Tunis, 2023.
5. Abdullah Al-Ali. *Electronic Signature and Modern Technologies*. Markaz Al-Dirasat Al-Qanounia, Qatar, 2023.
6. Amira Al-Abdullah. *Integration of Laws and Technical Standards*. Markaz Al-Dirasat Al-Qanounia, Qatar, 2023.
7. Amira Al-Abdullah. *The Discretionary Authority of Judges in Evaluating Digital Evidence*. Markaz Al-Dirasat Al-Qanounia, Qatar, 2023.
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**Abstract:** Amidst technological development, the digital environment has become a vital space for contracts, and the electronic signature has emerged as a tool to legitimize electronic legal actions. This thesis raises questions about the legal validity of this signature in proving electronic contracts in Algeria, taking into account the challenges related to its reliability, identity verification, and the integrity of consent. The significance of this thesis lies in analyzing and evaluating the Algerian legal framework for the probative value of the electronic signature and providing insights to enhance its role in evidence. This thesis aims to clarify the extent of the electronic signature's probative value in electronic contracts under Algerian law, analyze the mechanisms of proof and the role of certification authorities and the judiciary, and propose recommendations for developing the legal and practical framework for electronic evidence. This topic was chosen due to the increasing importance of electronic transactions and the role of the electronic signature, the need to analyze the Algerian legal framework, and the desire to explore evidentiary mechanisms and judicial challenges. This thesis stems from the central problem: What is the probative value of the electronic signature in proving electronic contracts under Algerian law? It seeks to answer subsidiary questions related to the legal framework, the legal bases for recognizing probative value, evidentiary mechanisms, and the role of certification authorities and the judiciary. This thesis will rely on the descriptive-analytical method, with the occasional use of the comparative method. Previous studies addressing related aspects have been reviewed, and this thesis seeks to provide an integrated analysis linking the legal framework, the probative value of the electronic signature, and the evidentiary mechanisms for electronic contracts in Algeria.

**ملخص:** في ظل التطور التكنولوجي، أصبحت البيئة الرقمية فضاءً حيويًا للعقود، وبرز التوقيع الإلكتروني كأداة لإضفاء الشرعية على التصرفات القانونية الإلكترونية. تثير هذه المذكرة تساؤلات حول مدى الاعتداد القانوني بهذا التوقيع في إثبات العقود الإلكترونية في الجزائر، مع الأخذ في الاعتبار التحديات المتعلقة بموثوقيته وتحديد الهوية وسلامة الرضا. تكمن أهمية هذه المذكرة في تحليل وتقييم الإطار القانوني الجزائري لحجية التوقيع الإلكتروني وتقديم رؤى لتعزيز دوره في الإثبات. تهدف هذه المذكرة إلى استجلاء مدى حجية التوقيع الإلكتروني في إثبات العقود الإلكترونية في التشريع الجزائري، وتحليل آليات الإثبات ودور الجهات الموثقة والقضاء، واقتراح توصيات لتطوير الإطار القانوني والتطبيقي للإثبات الإلكتروني. تم اختيار هذا الموضوع للأهمية المتزايدة للمعاملات الإلكترونية ودور التوقيع الإلكتروني، والحاجة إلى تحليل الإطار القانوني الجزائري، والرغبة في استكشاف آليات الإثبات والتحديات القضائية. تنطلق هذه المذكرة من إشكالية: ما مدى حجية التوقيع الإلكتروني في إثبات العقود الإلكترونية في ظل التشريع الجزائري؟ وتسعى للإجابة على أسئلة فرعية تتعلق بالإطار القانوني، والأسس القانونية للاعتداد بالحجية، وآليات الإثبات، ودور الجهات الموثقة والقضاء. إعتدلة المذكرة على المنهج الوصفي التحليلي مع الاستعانة بالمنهج المقارن عند الضرورة. وقد تم الاطلاع على دراسات سابقة تناولت جوانب متعلقة بالموضوع، وقدمت المذكرة تحليل متكامل يربط بين الإطار القانوني وحجية التوقيع الإلكتروني وآليات إثبات العقود الإلكترونية في الجزائر.