

Réinventer la pratique notariale marocaine à l'ère numérique : authenticité électronique, confiance juridique et autonomie professionnelle

Reinventing Moroccan Notarial Practice in the Digital Era: Electronic Authenticity, Legal Trust and Professional Autonomy

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Abstract: Background and objective: Digital transformation is reshaping regulated legal professions, including notarial practice, by changing how documents are created, exchanged, authenticated, stored and accessed. In Morocco, this transition raises a central question: how can notarial services benefit from dematerialization while preserving legal certainty, confidentiality, authenticity and professional independence? Method: This study adopts a qualitative doctrinal and documentary approach. It reorganizes and analyzes the legal, institutional and professional material relating to electronic legal exchanges, trust services, cybersecurity, personal-data protection and the organization of the notarial profession. Results: The analysis identifies five major findings. First, dematerialization has moved from a support function to a structural component of notarial activity. Second, electronic authenticity requires a layered architecture combining evidentiary rules, electronic signatures, trust services and secure document management. Third, cybersecurity and data protection are now inseparable from legal certainty. Fourth, digital public administration and institutional interoperability can reduce processing time, improve traceability and facilitate transactions. Fifth, technological dependence may create new risks for professional autonomy when critical functions are outsourced to private software or certification providers. Conclusion: Digitalization can strengthen notarial efficiency and legal trust only if technological modernization remains subordinated to professional responsibility, secure governance and continuous legal adaptation.

Keywords: electronic signature; legal certainty; cyber risk; dematerialization; public authority; data protection; professional independence

Résumé: Contexte et objectif : La transformation numérique reconfigure les professions juridiques réglementées, notamment le notariat, en modifiant les modalités de création, d'échange, d'authentification, de conservation et d'accès aux documents. Au Maroc, cette évolution soulève une question centrale : comment tirer profit de la dématérialisation tout en préservant la sécurité juridique, la confidentialité, l'authenticité et l'indépendance professionnelle ? Méthode : Cette étude adopte une démarche qualitative, doctrinale et documentaire. Elle réorganise et analyse les éléments juridiques, institutionnels et professionnels relatifs aux échanges électroniques, aux services de confiance, à la cybersécurité, à la protection des données personnelles et à l'organisation de la profession notariale. Résultats : L'analyse met en évidence cinq constats majeurs. La dématérialisation devient une composante structurelle de l'activité notariale ; l'authenticité électronique suppose une architecture combinant preuve, signature électronique, services de confiance et gestion documentaire sécurisée ; la cybersécurité et la protection des données deviennent indissociables de la sécurité juridique ; l'interopérabilité administrative peut améliorer la rapidité et la traçabilité ; enfin, la dépendance technologique peut fragiliser l'autonomie professionnelle. Conclusion : La transformation numérique peut renforcer l'efficacité du notariat à condition de demeurer encadrée par la responsabilité professionnelle, la gouvernance sécurisée et l'adaptation continue du droit.

Mots-Clefs: signature électronique; sécurité juridique; risque cyber; dématérialisation; autorité publique; protection des données; indépendance professionnelle

1 1. INTRODUCTION

Notarial practice occupies a distinctive position within legal systems because it combines private professional expertise with functions linked to public authority, documentary authenticity and legal certainty. The modern civil-law notarial model, historically structured in France by the law of 25 Ventôse Year XI, influenced a number of European and North African systems [1]. In Morocco, contemporary notarial practice has progressively developed around a model in which the notary prepares authentic instruments, operates within a regulated professional order and assumes responsibilities that go beyond ordinary contractual drafting [2], [3].

This institutional role explains why digital transformation cannot be treated as a simple technological upgrade. When documents, signatures, archives and exchanges with public administrations move from paper to electronic environments, the transformation affects the conditions under which authenticity, confidentiality, evidentiary value and professional accountability are produced. The challenge is therefore not merely to replace paper with digital files, but to reconstruct the architecture of legal trust in a technologically mediated environment.

The acceleration of electronic exchanges has already changed the daily organization of many legal and administrative activities. Document-management systems, electronic filing, digital signatures and remote interaction reduce physical circulation of files and can shorten administrative processing times. In the notarial field, these tools are particularly attractive because the profession manages high volumes of legally sensitive documents and interacts continuously with registration services, land-administration bodies, tax administrations and other public institutions. The literature on digital notarial practice emphasizes that these gains in efficiency must be accompanied by robust technical and legal safeguards [4], [5].

The Moroccan case is especially relevant because digital modernization has been accompanied by a succession of legal and institutional reforms. The legal framework for electronic exchanges, the regulation of trust services, cybersecurity legislation and personal-data protection provide essential components of this transition. At the same time, the law organizing the notarial profession remains a central reference for defining the notary's duties and professional responsibility [3]. This coexistence of professional regulation and digital regulation creates a new field of legal coordination.

The research question guiding this article is therefore the following: how does digital transformation reshape Moroccan notarial practice, and under what legal, institutional and professional conditions can dematerialization improve efficiency without weakening authenticity, security or professional autonomy? The objective is to move beyond a descriptive account of new technologies and to identify the main mechanisms through which digitalization changes notarial work, the principal risks it introduces and the governance conditions required for a sustainable transformation.

2 MATERIALS AND METHODS

The study follows a qualitative doctrinal and documentary methodology. It is based on the legal and professional materials associated with the digitalization of Moroccan notarial practice, including legislation governing the profession, electronic legal exchanges, trust services, cybersecurity and personal-data protection, together with institutional and professional publications addressing dematerialization. The analysis does not rely on a statistical survey or experimental design; it is an interpretive legal analysis intended to identify the relationships between technological change, legal validity and professional governance.

The material was reorganized around three analytical dimensions. The first concerns legal recognition: the conditions under which electronic documents, electronic signatures and trust services can support legally valid transactions. The second concerns infrastructure and institutional interoperability: the capacity of digital public administration and document-management systems to facilitate notarial procedures. The third concerns professional governance: cybersecurity, confidentiality, data protection, continuity of service and the preservation of the notary's autonomy in relation to technology providers. This framework makes it possible to examine digitalization not as a single reform, but as a combination of legal, organizational and technical transformations.

3 LEGAL AND PROFESSIONAL CONTEXT OF DIGITAL NOTARIAL TRANSFORMATION

3.1 FROM DOCUMENTARY FORM TO DIGITAL LEGAL TRUST

The core function of the notary is inseparable from trust. An authentic instrument is valuable not merely because information is recorded, but because the process through which it is established provides guarantees concerning identity, consent, date, conservation and legal effect. In a paper-based environment, these guarantees are supported by physical signatures, formal procedures, archival practices and professional responsibility. Digitalization changes the medium and therefore requires these guarantees to be reproduced through new mechanisms.

Dematerialization can be defined as the transition from paper-based processing to the creation, transmission, storage and management of documents in electronic form. In practical terms, this transition involves electronic document management, secure archives, authenticated access, electronic signatures and digital interaction with public administrations. Such tools can improve traceability and reduce the risk of physical loss, but they also shift part of the security burden toward information systems and authentication technologies.

3.2 ELECTRONIC EXCHANGES AND THE LEGAL BASIS OF DEMATERIALIZATION

Morocco has progressively established a legal environment for electronic transactions. Law No. 53-05 on the electronic exchange of legal data constitutes an important stage in the recognition of electronic documents and signatures [6]. More recently, Law No. 43-20 on trust services for electronic transactions has reinforced the regulatory framework surrounding digital trust [7]. These instruments provide legal foundations for electronic exchange, but the transition to fully operational electronic authentic instruments also requires coherence with the specific rules governing notarial practice.

This need for coordination is central. The legal validity of an electronic transaction is not sufficient by itself to reproduce the full effects of notarial authenticity. Notarial work includes identity verification, legal advice, control of legality, preservation of evidence and long-term conservation. Digital reform must therefore connect general electronic-transaction rules with the specific obligations imposed on the notary by professional legislation. In this respect, the digital transformation of notarial practice is best understood as a process of legal integration rather than simple technological substitution.

4 4. RESULTS

4.1 4.1. DEMATERIALIZATION IS BECOMING A STRUCTURAL COMPONENT OF NOTARIAL WORK

The first finding is that dematerialization has moved beyond peripheral administrative support and increasingly affects the core workflow of notarial activity. Electronic registration, digital document exchange and electronic archiving reduce dependence on physical files and facilitate interaction with public institutions. Professional discussions cited in the underlying material also indicate a strong demand for more extensive dematerialization of registrations, conservation procedures and exchanges with administrations [8].

The operational benefits are clear. Electronic processing can reduce delays, standardize procedures, improve document traceability and limit the physical movement of files. It may also contribute to a more fluid investment environment by reducing administrative friction in transactions requiring authenticated legal documentation. However, these benefits are conditional: a faster procedure is not necessarily a safer procedure unless the digital chain preserves identity control, integrity, confidentiality and evidentiary reliability.

4.2 4.2. ELECTRONIC AUTHENTICITY DEPENDS ON A LAYERED LEGAL AND TECHNICAL ARCHITECTURE

The second finding is that electronic authenticity cannot be reduced to the use of an electronic signature. A trustworthy digital notarial environment requires several layers to operate together: legally recognized electronic documents, reliable identification, qualified or regulated signature mechanisms, secure time-stamping where appropriate, controlled access, auditability and durable archival systems. The legal framework on trust services strengthens this architecture by providing a more explicit basis for mechanisms intended to establish confidence in electronic transactions [7].

The transition toward remote or partially remote execution of notarial formalities illustrates this point. Secure remote signing or videoconference-based interaction may improve accessibility, but such practices can be credible only if the system preserves the notary's capacity to verify identity, consent and legal capacity. Digital convenience must therefore remain subordinate to the evidentiary and protective functions of the profession.

4.3 4.3. CYBERSECURITY AND DATA PROTECTION HAVE BECOME COMPONENTS OF LEGAL CERTAINTY

The third finding is that cybersecurity is no longer merely an information-technology issue. Once authentic documents and sensitive personal information are stored and exchanged electronically, a cyber incident can directly affect legal certainty. Risks include unauthorized access, alteration, loss of availability, fraudulent use of credentials and unlawful disclosure of personal data. In this environment, confidentiality and integrity become both legal and technical obligations.

Moroccan legislation has progressively addressed these issues. Law No. 05-20 establishes a framework relating to cybersecurity [9], while Law No. 09-08 addresses the protection of individuals with regard to the processing of personal data [10]. Criminal-law provisions concerning attacks on automated data-processing systems also contribute to the legal response to cybercrime [11]. At the international level, the Budapest Convention provides a major reference framework for cooperation against cybercrime and for addressing offences affecting the confidentiality, integrity and availability of computer data and systems [12].

For notarial organizations, the practical implication is that digital transformation must incorporate security by design. Access rights, backups, continuity plans, incident response, archival integrity and authentication procedures should not be added after deployment; they should form part of the initial design of digital services. The more central the information system becomes to professional activity, the more business continuity becomes a condition of professional continuity.

4.4 4.4. INSTITUTIONAL INTEROPERABILITY CAN IMPROVE EFFICIENCY AND TRACEABILITY

The fourth finding concerns the institutional environment. Digital notarial practice depends on the capacity of different public and professional systems to communicate securely. The development of digital public administration creates opportunities to connect notarial workflows with registration, land, tax and administrative services. The Moroccan Agency for Digital Development has been assigned a broad role in promoting digital public services, digital inclusion and the structuring of the national digital ecosystem [13], [14].

This institutional dimension is decisive because isolated digitization produces limited value. A notary may maintain an internal electronic archive, but the efficiency gains remain partial if external procedures still require repetitive physical submission. Conversely, interoperable systems can reduce duplication and create more reliable audit trails. The digitalization of notarial practice therefore depends on coordinated modernization across the wider public-service ecosystem.

4.5 4.5. TECHNOLOGICAL DEPENDENCE CAN THREATEN PROFESSIONAL AUTONOMY

The fifth finding introduces a less visible but strategically important risk: digital transformation can create forms of technological dependency. When drafting software, certification services, archival systems or authentication tools are supplied by private providers, the continuity and cost of professional activity may become dependent on commercial infrastructures. Updates required by legal reform, changes in certification standards or service interruptions may then affect the notary's ability to perform essential functions.

This risk does not justify rejecting digitalization. It instead calls for a governance model that protects professional independence. Critical systems should be selected according to transparent requirements concerning interoperability, portability, security, continuity and control over professional data. Technology should strengthen the notary's capacity to authenticate and advise; it should not transfer the substance of professional authority to software suppliers or certification intermediaries.

Tableau 1. *Table 1. Main dimensions of the digital transformation of Moroccan notarial practice*

Dimension	Main digital/legal mechanism	Potential contribution	Main condition or risk
Document processing	Electronic document management and digital archiving	Faster access, traceability and reduced paper dependence	Integrity, long-term preservation and controlled access
Authentication	Electronic signatures and trust services	Secure identification and evidentiary support	Legal coherence with notarial authenticity requirements
Administrative interaction	Interoperable public digital services	Reduced duplication and shorter processing cycles	Institutional coordination and system compatibility
Cybersecurity	Cybersecurity and cybercrime frameworks	Protection of systems and continuity of service	Evolving threats, incident response and resilience
Personal data	Data-protection rules and access controls	Confidentiality and responsible information processing	Unauthorized disclosure and excessive data circulation
Professional governance	Software, certification and service providers	Operational efficiency and specialized technical support	Vendor dependence and potential erosion of professional autonomy

5 5. DISCUSSION

5.1 5.1. DIGITALIZATION CHANGES THE FORM OF TRUST RATHER THAN ELIMINATING THE NEED FOR IT

The findings show that the central issue is not whether digitalization is compatible with the notarial profession, but how the profession can translate its traditional trust functions into a digital environment. Authenticity, confidentiality and legal advice remain necessary; what changes are the mechanisms through which they are delivered. The transition therefore requires continuity of legal purpose combined with innovation in technical means.

This perspective also clarifies why a purely technological approach is insufficient. An electronic platform can accelerate a transaction, but it cannot by itself determine whether the parties understood the legal consequences of the act, whether

consent was valid or whether the transaction complies with mandatory rules. The notary's professional judgment remains the element that connects digital processing to legal responsibility.

5.2 5.2. THE LEGAL FRAMEWORK MUST EVOLVE AS AN INTEGRATED SYSTEM

The coexistence of several bodies of law is both a strength and a challenge. Rules on electronic exchanges and trust services provide the technical-legal basis for digital transactions; cybersecurity and personal-data rules protect information systems and individual rights; professional legislation defines the notary's mission and obligations. Effective digital notarial practice depends on the consistency of these layers. Legal reform should therefore avoid treating them as isolated fields.

A coherent approach would clarify the legal conditions for electronic authentic instruments, the standards applicable to identification and signatures, the requirements for digital archives, the allocation of responsibility in case of technical failure, and the conditions under which remote procedures may be used. Such clarification would reduce uncertainty for professionals and users while preserving the protective function of authentic instruments.

5.3 5.3. INSTITUTIONAL INTEROPERABILITY SHOULD BE ACCOMPANIED BY ACCOUNTABILITY

Interoperability can substantially improve the user experience of legal and administrative services. Yet connected systems also increase the number of actors involved in data circulation. The governance of access, responsibility and traceability therefore becomes more important as interconnection increases. Each digital exchange should be designed around necessity, proportionality, authentication and auditable responsibility.

The establishment of professional structures dedicated to training, electronic archiving and notarial documentation, mentioned in the professional initiatives launched from 2016 onward, points in this direction. Digital transformation requires not only infrastructure but also specialized competencies, continuing education and institutional memory. In this sense, professional training is a cybersecurity and legal-quality measure as much as a technological one.

5.4 5.4. PROFESSIONAL AUTONOMY SHOULD REMAIN A DESIGN PRINCIPLE

The original debate on digitalization also raises a broader question about the relationship between regulated professions and private technology. Efficiency gains can be significant, but the profession should retain control over the core functions that define its public-service role. Software can support drafting, archiving and verification; it should not determine legal judgment or become the sole point of failure for authenticating activity.

This calls for procurement and governance principles that preserve data portability, interoperability, continuity and exit options. It also supports the development of professional or institutionally supervised infrastructures for functions that are especially sensitive. Professional autonomy in the digital era should not be understood as resistance to technology, but as the capacity to adopt technology without losing control over legal responsibility.

6 6. CONCLUSION

The digital transformation of Moroccan notarial practice represents a structural change in the way legal certainty is produced and maintained. Dematerialization, electronic signatures, trust services, digital archives and interoperable public services can reduce administrative friction, improve traceability and facilitate access to notarial procedures. These advantages are particularly valuable in an environment in which economic transactions increasingly depend on rapid and reliable digital exchanges.

At the same time, the analysis shows that the transition cannot be assessed only in terms of speed or paper reduction. Digital notarial practice creates new dependencies and new vulnerabilities. Cybersecurity, personal-data protection, continuity of service, archival integrity and technological governance become essential components of legal security. The profession must therefore modernize without transferring its fundamental responsibilities to technical systems or external providers.

The most sustainable model is one in which legal reform, institutional interoperability, professional training and secure technological infrastructure advance together. Digital tools should extend the notary's capacity to authenticate, advise and preserve evidence, while human professional judgment remains responsible for the legal meaning and validity of the act. In this framework, modernization is not a retreat from traditional notarial values; it is a reconfiguration of the means used to protect them.

Finally, we are developing and disseminating this research in several languages in order to reach the widest possible academic and professional readership. This multilingual approach is intended to facilitate access to the analysis across different

research communities, encourage dialogue beyond linguistic boundaries, and ensure a broader circulation and sharing of ideas concerning the digital transformation of notarial practice.

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