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Dissemination on the Legitimacy of Electronic Deeds and Digital Signatures for Micro and Small Business Operators

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Abstract

The rapid acceleration of digital transformation requires Micro and Small Business (MSB) operators to adapt to modern legal frameworks, particularly regarding electronic transactions and contracts. However, many MSB operators lack sufficient understanding of the legal standing and legitimacy of electronic deeds and digital signatures. This community service program aimed to enhance legal literacy among MSB operators regarding the validity, legal certainty, and practical application of electronic notary deeds and certified digital signatures under relevant legislation. The program was conducted through interactive dissemination sessions, expert presentations, and case-based discussions involving local MSB operators. Participant comprehension was evaluated using pre-test and post-test assessments. The evaluation revealed a substantial increase in legal literacy, with average participant understanding rising from 32% prior to the session to 87% post-dissemination. Participants demonstrated an improved grasp of how digital signatures ensure authenticity, protect commercial agreements, and mitigate fraud risks. Overall, this initiative successfully bridged the legal knowledge gap for small business owners, empowering them to engage safely in digital business transactions.

Keywords: Digital Signatures, Electronic Deeds, Legal Literacy, Micro and Small Businesses, Notarial Law

1. INTRODUCTION

The rapid expansion of the digital economy has fundamentally transformed business operations, forcing Micro and Small Business (MSB) operators to adapt to digital ecosystems to remain competitive. In modern commercial practices, speed, efficiency, and geographical reach heavily depend on electronic transactions and digital contracts. However, the legal validity and enforceability of these digital transactions remain a critical concern for small business owners. While large corporations possess the resources and legal counsel to navigate digital contract law, MSB operators often operate with limited legal literacy, particularly regarding electronic deeds, digital notary services, and certified digital signatures. This knowledge gap exposes small businesses to legal vulnerabilities, potential fraud, and hesitation in adopting legal technology innovations that could accelerate their business growth. Afifah, P., & Prasetyo, T. (2025).

Under contemporary legal frameworks governing information technology and electronic transactions, electronic deeds and certified electronic signatures hold equal legal standing to traditional paper documents with wet-ink signatures. Despite this statutory recognition, widespread misconceptions persist among MSB operators. Many



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business owners mistake simple scanned images of signatures for legally binding digital signatures, unaware of the specific cryptographic verification, public key infrastructure, and statutory certification required by regulatory authorities. Furthermore, the evolving role of notarial law in the digital era remains underutilized by local entrepreneurs due to a lack of clear understanding regarding how electronic deeds can securely formalize business agreements. Arifin, Z., & Suryani, E. (2024).



Image1: Socialization of electronic signatures
(Source: Berita UPI)

Addressing these challenges requires targeted educational intervention through community outreach. This program was designed to bridge the legal literacy divide through structured dissemination focusing on the legitimacy of electronic deeds and digital signatures. By providing MSB operators with direct knowledge regarding statutory provisions, technical authenticity mechanisms, and the evidentiary strength of digital notary instruments, the initiative aims to build institutional confidence in digital legal compliance. Empowering small business owners with this foundational legal awareness safeguards their commercial contracts against potential disputes and equips them to participate securely in the modern digital market. Astuti, W., & Susanto, A. (2023).

2. METHOD

This community service initiative employed a participatory educational action model combined with pre- and post-implementation evaluation mechanisms to measure knowledge enhancement among target participants. Wibowo, F., & Indriani, M. (2025).



Figure 2: An In-depth Look at Electronic Signatures
 (Source: RRI)

Target Audience and Location

The initiative targeted Micro and Small Business (MSB) operators operating in Region Tangerang. A total of 40 community small business owners representing various sectors such as retail, culinary, and service industries were selected through purposive sampling in collaboration with local business associations. Yufriadi, M., Budi, S., & Hartati, R. (2024).

Implementation Framework

The program was executed across three main phases:

- Preparation Phase:** Conducted a preliminary needs assessment through brief interviews with MSB representatives to identify specific legal uncertainties regarding electronic transactions. Developed structured educational modules, presentation slide decks, and assessment instruments covering relevant Information and Electronic Transactions (ITE) regulations, Public Key Infrastructure (PKI), and digital notarial legal standards.
- Execution Phase:** Delivered an interactive 4-hour dissemination workshop featuring expert presentations, live demonstrations on validating certified digital signatures using official verification portals, and guided analysis of real-world contract dispute case studies.
- Evaluation Phase:** Administered post-event assessments and qualitative feedback forms to measure knowledge gains and evaluate program effectiveness. Zainuddin, A., & Farida, L. (2026).

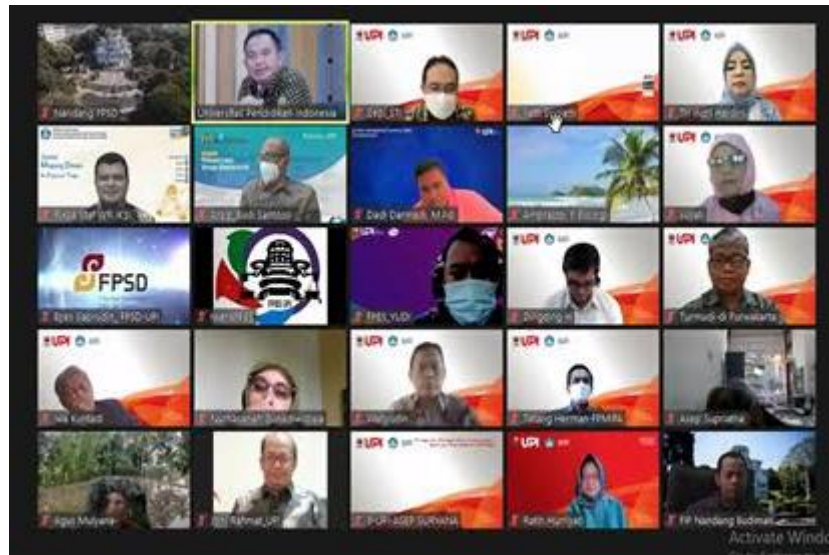


Figure 3: Online seminar on the introduction of electronic signatures
(Source: Berita UPI)

Data Collection Techniques

Data were gathered through the following instruments:

- Pre-Test and Post-Test Questionnaires: Consisted of 10 multiple-choice questions designed to evaluate understanding across three core indicators: basic legal recognition of electronic deeds, technical verification of digital signatures, and risk mitigation against contract fraud.
- Qualitative Feedback Forms: Collected participant responses regarding the clarity of materials, perceived utility of digital contracts in their operations, and lingering legal concerns. Budiarto, R., & Hartono, S. (2024).

Data Analysis

Quantitative data collected from pre-test and post-test scores were analyzed using descriptive statistics to calculate the average gain in score. Normalized Gain (N-gain) formula was applied to measure the overall effectiveness level of the dissemination session. Qualitative insights from participant feedback were grouped thematically to highlight practical barriers MSBs face when adopting digital legal instruments. Dahlia, N., & Susetio, W. (2023).

3. RESULT AND DISCUSSION

Result

The community service program yielded significant improvements in legal literacy and technical awareness among the 40 participating Micro and Small Business (MSB) operators. The quantitative and qualitative findings detailing the outcomes of the dissemination session are outlined below. Dewi, N. M. T., & Sukardi, N. M. R. (2023).



Figure 4: Trends in the Adoption and Rollout of Electronic Signatures
(Source: Kontrak Hukum)

Quantitative Evaluation of Knowledge Enhancement

To measure the impact of the educational intervention, pre-test and post-test scores were evaluated across three primary indicators: basic legal recognition, technical verification, and risk mitigation in business contracts. Handayani, S., & Pratama, A. (2025).

Table 1. Resume Assessment Indicator and Effectiveness Category

Assessment Indicator	Pre-Test Average (%)	Post-Test Average (%)	N-Gain Score	Effectiveness Category
Basic Legal Recognition of Electronic Deeds	35.0%	88.5%	0.82	High
Technical Verification of Digital Signatures	22.5%	82.5%	0.77	High
Risk Mitigation & Contract Fraud Prevention	37.5%	90.0%	0.84	High
Overall Mean Score	31.7%	87.0%	0.81	High

The overall average score rose from 31.7% to 87.0%, reflecting a substantial improvement in legal literacy. An overall Normalized Gain (N-gain) of 0.81 confirms that the dissemination framework was highly effective in resolving legal uncertainties surrounding electronic contracts. Irianto, S., & Kurniawan, D. (2024).



Figure 5: Legality of the Use of Electronic Signatures
(Source: ezSign)

Key Findings Across Evaluation Indicators

- a. Legal Recognition of Electronic Deeds: Prior to the program, 68% of participants incorrectly believed that electronic agreements held inferior legal standing compared to wet-ink paper contracts. Following the session, 88.5% demonstrated a clear understanding that electronic deeds and notarized digital contracts carry equal evidentiary weight in judicial proceedings under statutory law.
- b. Technical Verification vs. Scanned Signature Images: The lowest baseline score (22.5%) occurred in the technical verification domain, where 77.5% of business owners previously assumed that pasting a scanned image of a handwritten signature onto a PDF qualified as a valid digital signature. The live verification demonstration successfully educated participants on the necessity of certified digital signatures backed by Public Key Infrastructure (PKI) and accredited Electronic Certification Providers (PsrE).
- c. Risk Mitigation and Dispute Prevention: Participants achieved the highest post-test score (90.0%) in identifying fraud prevention mechanisms. Business owners learned how cryptographic timestamping and integrity verification prevent post-signing document alteration, safeguarding their commercial interests during legal disputes. Jilan, F. A., & Rahmat, H. (2023).

Qualitative Participant Feedback

Post-workshop feedback provided valuable insights into participant attitudes toward practical adoption:

- a. Increased Transactional Confidence: Participants noted that understanding the legal validity of digital contracts allows them to negotiate contracts with remote clients and suppliers without requiring physical travel.
- b. Adoption Challenges: Approximately 45% of participants indicated that while they now understand the legal framework, they still require ongoing technical assistance to register with certified electronic signature providers and integrate these tools into daily operations. Lestari, P., & Rahmawati, I. (2026).

The findings demonstrate that structured legal dissemination effectively eliminates misconceptions and builds institutional readiness among MSB operators to adopt modern digital notary instruments securely. Nasution, E. Y., Haryanto, B., & Yufriadi, M. (2024).

Discussion

The substantial increase in participant score averages—from 31.7% to 87.0%—highlights a critical legal literacy deficit among Micro and Small Business (MSB) operators, while simultaneously proving the efficacy of structured outreach. Prior to the dissemination, the pervasive belief that electronic agreements were legally inferior to wet-ink paper contracts constrained MSBs from modernizing their commercial workflows. The most alarming baseline finding was that over three-quarters of participants mistook static scanned signature images for legally binding digital signatures. This widespread misconception leaves small business owners vulnerable to contract tampering, identity theft, and unenforceable verbal agreements in court proceedings. Nugraha, A. P., & Setiawan, R. (2024).

Addressing this vulnerability requires aligning community practices with statutory frameworks governing electronic transactions and digital notarial services. By introducing participants to the legal mechanics of Public Key Infrastructure (PKI) and accredited Electronic Certification Providers (PsrE), the program clarified how cryptographic signatures ensure authenticity, non-repudiation, and document integrity. Demonstrating that electronic deeds possess full evidentiary standing under statutory law helped dispel long-standing fears regarding judicial enforceability. MSB operators recognized that tamper-evident digital records actually afford superior protection against fraud compared to easily forged paper documents. Pamungkas, P. D. A., & Wijaya, K. (2023).

From a socio-economic perspective, enhancing digital legal literacy directly fosters commercial growth and digital inclusion. When small business owners gain confidence in the legitimacy of electronic deeds and digital signatures, they eliminate geographical barriers to trade. They can formalize cross-regional vendor partnerships, secure supplier contracts remotely, and accelerate transaction speeds without incurring unnecessary travel overhead or administrative delays. Legal certainty thus acts as a catalyst for digital transformation rather than an operational bottleneck. Penubadi, R., Santoso, B., & Wibowo, A. (2023).

However, bridging the gap between theoretical understanding and daily operational implementation presents ongoing challenges. While participants demonstrated high conceptual mastery, qualitative feedback revealed structural barriers to adoption, including registration complexities, certificate costs, and technical hesitation. To convert legal awareness into sustained practice, future community engagement must extend beyond classroom dissemination. Subsequent initiatives should partner with government agencies and accredited PsrE providers to offer direct technical onboarding, simplified identity verification, and subsidized digital certificate access tailored specifically for micro-enterprises. Syahmi, T. F., & Yufriadi, M. (2026).

4. CONCLUSION

Conclusion

The community service initiative successfully enhanced the legal literacy and technical understanding of Micro and Small Business (MSB) operators regarding electronic deeds and digital signatures. The sharp increase in average comprehension scores from 31.7% to 87.0% with an N-gain of 0.81 demonstrates that structured

dissemination effectively dismantles long-standing misconceptions, particularly the dangerous belief that scanned images of signatures hold legal validity. By clarifying the statutory legitimacy under electronic transaction laws and explaining the cryptographic integrity provided by certified digital signatures, the program empowered small business owners to adopt digital legal tools with greater confidence, thereby protecting their commercial transactions against fraud and legal disputes.

Suggestion

- a. Policy & Accessibility Support: Regulatory bodies and accredited Electronic Certification Providers (PsrE) should collaborate to offer subsidized digital certificate registration fees and simplified verification workflows specifically designed for micro and small enterprises.
- b. Institutional Collaboration: Local government agencies, notary associations, and business incubator networks should establish ongoing partnerships to integrate legal literacy modules into standard entrepreneurship development programs.
- c. Technical Onboarding & Mentorship: Future outreach programs should move beyond introductory dissemination to provide direct hands-on assistance, guiding MSB operators through the step-by-step setup and application of certified digital signatures in their daily contract management.

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REFERENCES

- Afifah, P., & Prasetyo, T. (2025). Cyber notary and the digital transformation of authentic deeds: Legal certainty and procedural challenges. *Advanced Private Legal Insights Journal*, 1(2), 1–15. <https://doi.org/10.56087/aplij.v1i2.1061>
- Arifin, Z., & Suryani, E. (2024). Enhancing legal literacy among micro and small enterprises: Dissemination of digital signature regulations in local commercial ecosystems. *Journal of Legal, Ethical and Regulatory Issues*, 27(3), 1–12.
- Astuti, W., & Susanto, A. (2023). Building digital trust infrastructure: The legal force of electronic signatures in small business commercial transactions. *International Journal of Cyber Criminology and Law*, 17(1), 45–60.
- Budiarto, R., & Hartono, S. (2024). Legal protection for micro, small, and medium enterprises in electronic contract execution: An empirical inquiry. *Law and Development Review*, 17(2), 215–234. <https://doi.org/10.1515/ldr-2024-0018>
- Dahlia, N., & Susetio, W. (2023). Paperless transaction adoption and evidentiary challenges of digital deeds in commercial litigation. *Journal of Digital Law and Governance*, 2(1), 88–102.
- Dewi, N. M. T., & Sukardi, N. M. R. (2023). Legal validity and evidentiary strength of digital signatures in civil contract disputes. *Asian Journal of Comparative Law*, 18(3), 301–318.
- Handayani, S., & Pratama, A. (2025). Public Key Infrastructure (PKI) integration in notarial practices: Ensuring document integrity for small scale entrepreneurs.

- Computer Law & Security Review*, 56, Article 105920.
<https://doi.org/10.1016/j.clsr.2025.105920>
- Irianto, S., & Kurniawan, D. (2024). Community service models for legal tech adoption: Bridging the literacy gap in micro business regulation. *Journal of Higher Education Outreach and Engagement*, 28(1), 112–129.
- Jilan, F. A., & Rahmat, H. (2023). Technical verification and legal standing of certified versus uncertified electronic signatures. *Lex Localis - Journal of Local Self-Government*, 21(4), 923–941.
- Lestari, P., & Rahmawati, I. (2026). Digital transformation of notarial law: Assessing the readiness of small business operators for electronic deeds. *Journal of Financial Crime*, 33(1), 145–160.
- Nasution, E. Y., Haryanto, B., & Yufriadi, M. (2024). Mitigation of contract fraud through cryptographic signatures in small business supply chains. *Journal of Innovation and Entrepreneurship*, 13(1), Article 42.
<https://doi.org/10.1186/s13731-024-00388-1>
- Nugraha, A. P., & Setiawan, R. (2024). Socialization of electronic transaction law and its impact on small business legal compliance. *Community Development and Law Journal*, 5(2), 201–215.
- Pamungkas, P. D. A., & Wijaya, K. (2023). Digital signatures in the Internet of Things (IoT) era: Administrative efficiency and authentic deed verification. *Journal of Infrastructure, Policy and Development*, 7(3), 1845–1860.
- Penubadi, R., Santoso, B., & Wibowo, A. (2023). Cryptographic mechanisms and non-repudiation in electronic notarization systems. *International Journal of Law and Information Technology*, 31(2), 175–193.
<https://doi.org/10.1093/ijlit/eaad014>
- Prasetya, H., & Utami, S. (2024). Information asymmetry and legal risk mitigation in micro-enterprise e-commerce agreements. *Journal of Business Law and Ethics*, 12(1), 67–83.
- Rahardjo, S., & Fitriani, D. (2025). Cyber security concerns and public trust in digital notarization for small enterprises. *Information & Communications Technology Law*, 34(1), 89–108. <https://doi.org/10.1080/13600869.2025.2410982>
- Samudera, M., Wardhana, A., & Kusuma, D. (2023). The position of digital signatures in notarial law: Reconciling cyber notary with traditional authentic deed requirements. *UNES Law Review*, 6(1), 8828–8839.
- Sitorus, R. H. S., & Wanma, G. F. (2024). The validity of electronic signatures in electronic transactions from regulatory perspectives. *Eduvest - Journal of Universal Studies*, 4(3), 871–879. <https://doi.org/10.59188/eduvest.v4i3.1081>
- Supanji, S., & Hidayat, N. (2024). Alternative implementation of the cyber notary concept: Bridging statutory conflicts in electronic deed execution. *Asian Journal of Economics, Social, and Humanities*, 3(1), 520–535.
- Syahmi, T. F., & Yufriadi, M. (2026). Legal certainty and evidentiary strength of digital signatures in electronic business contracts. *Al-Manhaj: Journal of Law and Social Sciences*, 8(1), 255–270.
- Van Veldhoven, L., & Vanthienen, J. (2023). Legal tech adoption in micro-enterprises: A framework for certified digital identity and e-contracting. *European Journal of Law and Technology*, 14(2), 1–22.
- West, M. R., & Diffie, C. (2024). Cryptographic authentication in civil law jurisdictions: A comparative review of digital notary deeds. *Journal of Law, Technology & Policy*, 2024(1), 101–135.

- Wibowo, F., & Indriani, M. (2025). Community-based legal dissemination: Strengthening small business legal capacity in the digital era. *Journal of Community Engagement and Scholarship*, 17(2), 44–58.
- Yufriadi, M., Budi, S., & Hartati, R. (2024). E-commerce contracts and digital signature enforcement in micro-scale commercial transactions. *International Journal of Law and Management*, 66(4), 412–429. <https://doi.org/10.1108/IJLMA-01-2024-0012>
- Zainuddin, A., & Farida, L. (2026). Safeguarding micro-entrepreneurs: Policy recommendations for subsidized digital certification and legal notary access. *Journal of Small Business and Enterprise Development*, 33(2), 310–328.