

Implementation of Electronic Stamp Duty (E-Stamp) in Online Business Transactions: Micro, Small, and Medium Enterprises (MSMEs) in the Blok M Area

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Abstract

The digitalization of online business transactions has prompted the government to introduce e-stamps as an instrument for legalizing electronic documents. However, its implementation still faces challenges, such as technical constraints, system instability, a lack of user guidelines, and low digital literacy among MSMEs and the public. This study aims to analyze the validity and effectiveness of e-stamps in online business transactions, particularly for MSMEs in the Blok M area, and to identify barriers to their implementation from a civil law and cyber law perspective. The method used is empirical juridical research with a sociological approach to law, legislation, and case studies. Primary data was obtained through interviews with MSMEs, notaries, DJP/Peruri officials, judges, and users; while secondary data came from laws and regulations and legal literature. The results show that, normatively, e-stamps are valid and have equal legal standing to physical stamps. However, their effectiveness is suboptimal due to technical constraints, limited infrastructure, and the unequal adoption of digital legal culture. Furthermore, there is no jurisprudence that specifically defines the position of e-stamps in civil cases. This study concludes that there is a need to strengthen outreach, improve infrastructure, develop uniform technical guidelines, and integrate e-stamps with digital platforms to support legal certainty and efficiency in online transactions.

Keywords: *E-stamps, Electronic Transactions, Legal Effectiveness, MSMEs, Digital Evidence.*



A. INTRODUCTION

The rapid advancement of information technology over the past few decades has brought substantial changes to various aspects of human life, particularly in the realm of business and financial transactions. Ongoing digital transformation has reshaped the ways in which businesses operate, shifting from conventional practices toward more modern, efficient, and technology-driven approaches. One of the most prominent manifestations of this transformation is the emergence of electronic commerce (e-commerce), a trading system that enables the buying and selling of goods and services online through internet-based platforms (Ramli et al., 2020).

The widespread adoption of digital technologies, supported by increasingly robust internet infrastructure, has fostered new behavioral patterns within society (Fista et al., 2023). Many individuals now regard online activities as an integral part of their daily lifestyles, not only to fulfill personal consumption needs but also to engage in various economic pursuits, including entrepreneurial endeavors.

E-commerce has introduced substantial convenience and efficiency for both businesses and consumers. It can be defined as the process of buying and selling goods or services through electronic systems, particularly the internet. This business model is typically facilitated through digital platforms or dedicated websites that enable business actors to conduct economic activities on a national even international scale using a one-click system, in which transactions are executed rapidly and automatically with a single action (Barkatullah, 2019).

Nevertheless, one of the most crucial aspects of transactional activities whether conducted conventionally or digitally is the validity of documents as a form of legal evidence (Rizkianti et al., 20205). Within the Indonesian legal system, one fundamental element of proving the legitimacy of a transaction is the use of a stamp duty (materai). The application of stamp duty is strictly regulated under statutory provisions governing stamp duty charges, which are rooted in legal principles, particularly the principle of legal certainty (Azizah & Silviana, 2024). This principle ensures that every transaction affixed with a stamp duty is deemed valid and possesses evidentiary strength before the law.

In line with ongoing digitalization and the growing demand for legally recognized electronic transactions, the Government of Indonesia introduced an innovative mechanism known as the electronic stamp duty, or e-materai. The e-materai represents a digital form of conventional stamp duty, designed with specific security technologies to ensure its authenticity. It incorporates distinct security features and is officially issued by authorized governmental institutions. The introduction of the e-materai reflects a responsive and adaptive legal development aimed at supporting the legitimacy of transactions in the digital era (Kalesaran, 2022).

The primary function of the e-materai is to provide legal legitimacy to documents or agreements executed electronically (Sirait et al., 2024). In the context of civil law, particularly contract law, the presence of a stamp duty attached to a document serves as one of the important indicators of a contract's validity. The e-materai thus plays a pivotal role in ensuring the legal enforceability of digital agreements and transactions amidst the rapid expansion of technology-based economic systems.

The use of electronic stamp duty (e-materai) in electronic transactions is expected to deliver two essential outcomes: convenience and legal certainty. This is particularly relevant given the rapid expansion of e-commerce, which has become one of the most prevalent methods used by the public to conduct economic activities, especially online buying and selling (Amanda & Rizkianti, 2021). Consequently, the presence of e-materai as a legally recognized electronic document within the Indonesian legal system has become an important instrument in supporting the legitimacy of digital economic activities. Furthermore, the adoption of e-materai is also viewed as a strategic opportunity to enhance broader business development even at the global level because it provides legal assurance that strengthens trust among parties engaging in cross-border transactions (Hasanah et al., 2024).

Within Indonesia's legal and administrative framework, the use of stamp duty has long been an integral component in legitimizing various civil and administrative transactions and agreements. Traditionally, the types of stamp duty commonly used include adhesive stamps and stamped paper. Adhesive stamps circulating in the market have varied nominal values, ranging from Rp 3,000 and Rp 6,000 to the more commonly used Rp 10,000 (Sitorus et al., 2024). Each nominal value carries its own evidentiary function as regulated under the applicable statutory provisions. However, as information and digital technologies continue to advance, Indonesia's taxation system and legal evidentiary mechanisms have likewise undergone transformation with the introduction of digital stamp duty, known as the electronic stamp (e-materai).

The era of digitalization has encouraged society to shift from paper-based processes toward electronic systems, a transformation commonly referred to as the paperless concept. This shift is driven by considerations of time and cost efficiency, as well as the increased flexibility offered by online access and information management. In practice, electronic documents allow parties to enter into agreements or execute transactions without requiring physical presence, which is particularly advantageous in today's high-mobility environment. Therefore, there is a growing need for evidentiary instruments that can accommodate digital document formats while maintaining their legally binding force (Montolalu et al., 2025).

In response to these emerging needs, in 2021 the Government of the Republic of Indonesia enacted Government Regulation No. 86 of 2021 on the Procurement, Management, and Sale of Stamp Duty. Article 1 paragraph (4) of this regulation explicitly states that "Electronic Stamp Duty is a stamp in the form of a label applied to documents through a designated system." This provision establishes a clear legal basis for the use of electronic stamp duty (e-materai) as a legitimate substitute for physical stamp duty in electronic documents.

However, in practice, the implementation of electronic stamp duty continues to face several complex challenges. One of the primary issues is the absence of comprehensive guidelines regarding the technical application of e-materai across various types of documents, including its legal position within the evidentiary structure of Indonesian law (Prakoso, 2021). Although Government Regulation No. 86 of 2021 provides a foundational definition, it does not offer detailed provisions on its scope of use, procedures for validation, or the legal consequences associated with its application in different forms of legal agreements. This regulatory gap has led to ambiguity and uncertainty among users, including government institutions, private-sector actors, and the general public. Therefore, further regulations are needed to provide more specific guidance, not only on technical aspects but also on clarifying the legal standing of e-materai within the Indonesian legal framework, in order to ensure legal certainty and prevent potential disputes in the future.

The implementation of e-materai also encounters several other challenges, particularly in the areas of regulation, digital security, and public acceptance. On the regulatory side, a more comprehensive legal framework is required to align with the rapid development of information technology. Digital security is another fundamental

concern, as electronic transactions are inherently vulnerable to risks of misuse and forgery (Pandora & Makarim, 2022). Additionally, public and business acceptance of e-meterai remains limited, necessitating more extensive socialization and education efforts. Within the broader context of cyber law, the existence of e-meterai represents a critical topic that requires continuous examination, particularly with respect to its effectiveness and its alignment with the principles of information and communication technology law (Rumpuin & Sigit, 2022).

Moreover, in September 2024, the registration process for Civil Servant Candidates (CPNS) in Indonesia experienced significant disruption due to technical issues within the system responsible for purchasing and affixing electronic stamp duty (e-meterai). Perum Peruri, the state-owned corporation serving as the official provider of e-meterai, faced a substantial surge in user traffic that caused its official website, meterai-elektronik.com, to become inaccessible for many applicants. This disruption directly hindered the registration process, considering that the use of an e-meterai is a mandatory administrative requirement for CPNS applicants.

In response to the situation, Peruri stated that the service interruption resulted from the extraordinary increase in website traffic. As a mitigation measure, the institution implemented a queueing system to stabilize service performance. Nonetheless, numerous applicants continued to experience difficulties accessing the e-meterai platform, even after the queueing mechanism was introduced.

The impact of this disruption extended beyond individual applicants and triggered responses from multiple parties. Peruri's official social media accounts were flooded with complaints from frustrated CPNS candidates who were unable to complete their registration. Several applicants also reported that despite successfully making payments, their e-meterai quotas did not increase, preventing them from affixing the required electronic stamp duty to their documents.

This incident underscores the critical importance of reliable digital infrastructure in the implementation of public services, particularly those related to essential administrative processes such as CPNS registration. The challenges that emerged illustrate that although digitalization can enhance efficiency, insufficient infrastructure may instead generate new barriers. Consequently, a comprehensive evaluation of the e-meterai system and the readiness of Indonesia's digital infrastructure is necessary to ensure that public services operate smoothly and effectively meet societal needs.

This study aims to analyze the legal validity and effectiveness of electronic stamp duty in digital economic activities. Specifically, the research seeks to examine how e-meterai functions as a legally binding evidentiary instrument within Indonesia's civil law framework, evaluate its conformity with cyber law principles and digital security requirements, and assess the extent to which its implementation supports certainty, legitimacy, and enforceability in online business transactions. Additionally, the study intends to identify regulatory gaps, technical challenges, and societal acceptance issues that influence the overall effectiveness of e-meterai in practice.

B. LITERATURE REVIEW

Previous studies on the application of electronic stamp duty (e-materai) in Indonesia predominantly focus on its legal validity, evidentiary strength, and normative framework, with limited attention to its practical effectiveness in digital economic activities. Rumpuin (2022), using a normative juridical approach, concludes that e-stamp duty may serve as valid legal evidence in court as long as its formal requirements are fulfilled. However, her study concentrates solely on its evidentiary function within judicial proceedings and does not explore its relevance or application in digital commercial transactions.

Similarly, Kalesaran (2021), employing a normative legal method, finds that e-stamp duty holds the same legal standing as conventional adhesive stamps, while noting that its technical implementation and regulatory scope still require refinement. Nevertheless, this study does not examine the operational impact of e-stamp duty within online business practices nor how digital consumers and business actors respond to its use.

In another study, Prakoso (2020) adopts a normative juridical method to assess the legal force of e-stamp duty. His findings suggest that e-materai can provide legal protection in digital transactions, but its effectiveness remains constrained by low digital literacy and inadequate digital infrastructure. Although this research acknowledges social and technological challenges, it does not incorporate empirical measurements or field observations regarding system implementation.

Further research by Azizah and Silviana (2021) applies a normative juridical approach to analyze the effectiveness of e-stamp duty in notarial deeds. The study reveals that its implementation is not yet fully effective due to technical barriers, limited dissemination, and persisting legal uncertainties surrounding evidentiary strength in electronic notarial documents. However, the research focuses exclusively on the notarial profession and does not address broader digital transaction ecosystems.

Among the existing literature, Tanjung (2023) provides a closer link to empirical perspectives by combining normative analysis with interviews involving relevant stakeholders. Her research concludes that e-stamp duty is legally valid under the Stamp Duty Law and its implementing regulations, though practical implementation remains suboptimal due to limited public awareness. Nevertheless, the study does not introduce measurable indicators of effectiveness such as transaction speed, efficiency, or user trust.

Overall, these studies remain largely dominated by normative juridical approaches, prioritizing regulatory interpretation and theoretical analysis. There is a notable research gap concerning empirical evaluations of e-materai implementation, including user perceptions, operational effectiveness in digital transactions, and its practical evidentiary value in modern judicial processes. This gap underscores the

need for research that integrates legal analysis with empirical inquiry to understand how e-stamp duty operates within the realities of Indonesia's digital society.

The present study offers significant novelty by integrating normative juridical methods with an empirical legal approach. Unlike previous literature that relies predominantly on statutory analysis, this research supplements normative findings with primary data collected through interviews with business actors, users, and legal practitioners who directly engage with electronic transactions involving e-materai. This dual approach provides a more comprehensive and grounded understanding of the effectiveness, challenges, and evidentiary strength of e-stamp duty. Consequently, the study contributes both theoretically and practically to the development of digital law and electronic evidence in Indonesia, while also offering actionable insights for policymakers, regulators, and digital economy stakeholders in enhancing legal certainty in the era of digital transactions.

C. METHODS

This study employed an empirical juridical approach, which examines law not only as written norms (*law in books*) but also as a social phenomenon practiced within society (*law in action*) (Bachtiar, 2018). The research was conducted in the Blok M area, a location selected due to its high level of digital economic activity and its relevance to the use of electronic stamp duty (e-materai) in various online transactions. To enrich the analysis, the study incorporated perspectives from the sociology of law and a descriptive qualitative method, enabling the researcher to explore user experiences, societal perceptions, and the practical realities of e-materai implementation in daily digital interactions (Muhaimin, 2020).

The data consisted of primary and secondary sources. Primary data were obtained through in-depth interviews with business actors and e-commerce users who apply e-materai, notaries or land deed officials (PPAT), representatives from the Directorate General of Taxes or PERURI, legal practitioners such as judges or lawyers, and general users of digital services. Secondary data were sourced from literature reviews, including statutory regulations such as Law No. 10 of 2020 on Stamp Duty, Minister of Finance Regulation No. 134/2021, the Electronic Information and Transactions Law, academic journals, legal literature, and official government publications (Sugiyono, 2017).

Data collection methods included interviews, documentation, document examination, and literature review to obtain a comprehensive understanding of the legal framework, technical procedures, and practical conditions of e-materai implementation in electronic agreements and judicial evidentiary processes (Muhammad, 2003). All data were analyzed qualitatively using descriptive-analytical techniques as outlined by Moleong (2002), which involved data reduction, data presentation, and the drawing and verification of conclusions by comparing field findings with relevant legal theories and regulatory frameworks. Through this method, the study aims to provide a holistic understanding of legal effectiveness,

public acceptance, and practical challenges in the implementation of electronic stamp duty in Indonesia.

D. RESULTS AND DISCUSSION

1. Overview of the Research Location

This research was conducted in the Blok M area, located in Kebayoran Baru District, South Jakarta Administrative City. The selection of this location was based on empirical and practical considerations: Blok M is one of the commercial hubs that continues to accommodate micro, small, and medium enterprises (MSMEs), including retail traders, culinary businesses, and service providers who combine offline operations with online marketing and sales activities. The presence of various commercial centers, culinary clusters, and office complexes surrounding Blok M makes the area representative for observing digital transactional practices among urban MSMEs, particularly in relation to the adoption of digital payment systems and digital administrative tools (BPS, 2025).

Sociodemographically and economically, South Jakarta, one of the regions within the Special Capital Region of Jakarta (DKI Jakarta) has a significant concentration of micro and small enterprises, along with a relatively high level of business digitalization compared to other urban areas. The Micro and Small Industry Profile Report of DKI Jakarta indicates that business actors in this region increasingly utilize internet access and online platforms for product marketing and distribution. This trend positions South Jakarta as a relevant area for studying the integration of digital legal instruments, such as electronic stamp duty (e-materai), into the daily business practices of MSMEs. In addition, various capacity-building and facilitation programs implemented by local government bodies and community stakeholders contribute to a dynamic and observable business ecosystem (Badan Pusat Statistik Provinsi DKI Jakarta, 2024).

Indonesia's digital economy has experienced rapid growth in recent years. Regional and national reports identify e-commerce as a core component of both the Indonesian and ASEAN digital economies. This development is reflected in the rising number of business actors engaging in transactions through online marketplaces, the increasing use of electronic payment systems, and the adoption of digital administrative tools that streamline contractual and operational processes. E-materai has emerged as one of the regulatory innovations designed to address the need for legal legitimacy for electronic documents generated by digital business actors, including MSMEs operating in urban commercial areas such as Blok M.

In addition to the availability of digital business actors, another factor underlying the selection of Blok M as the research site is its accessibility to legal and administrative institutions involved in the implementation of electronic stamp duty (e-materai). As the capital city, Jakarta hosts numerous governmental offices, central and regional taxation offices, and institutions directly associated with the administration of electronic stamp duty, such as Perum Peruri, which is responsible for the production and distribution of e-materai. This proximity greatly facilitates the

research process, particularly in conducting interviews with institutional informants and verifying field practices. The geographical closeness and communication networks among MSME actors, notaries, taxation offices, and courts enable effective observation of legal interactions and digital administrative practices, which form the core of this study (Peruri, 2023).

Regarding the characteristics of the research subjects, this study identifies five groups of informants as primary sources of data: (1) e-commerce actors/MSMEs operating in or conducting marketing activities around the Blok M area; (2) notaries/PPAT who provide deed services and legal consultations for electronic documents; (3) officials from the Directorate General of Taxes (DGT) and/or representatives of Perum Peruri involved in policy-making and the implementation mechanisms of e-materai; (4) law enforcement authorities, particularly judges (or representatives of district courts) who handle cases involving electronic evidence; and (5) end-users who actively engage in transactions through online marketplaces.

A purposive sampling technique was used to select informants with direct experience and involvement in the use of e-materai or those who are representative within the digital transaction chain. The selection of research subjects was based on criteria of practical involvement and their ability to provide in-depth information regarding processes, challenges, and perceptions surrounding the use of e-materai in online transactions (Peruri, 2023).

Empirical observations in the Blok M area also reveal varying levels of digitalization among MSME actors. Some businesses have fully integrated marketplace platforms, payment gateways, and PDF-based or electronic administrative systems; however, many traditional micro-enterprises are still undergoing a gradual transition toward online transactions. This variation is analytically relevant as it reflects differing needs and adoption barriers related to e-materai, ranging from issues of digital literacy and limited technological resources to concerns regarding cost perceptions and the legal benefits of its use. This heterogeneity aligns with national-level findings, which indicate a rapid acceleration of MSME digitalization that continues to be accompanied by structural and cultural challenges in technology adoption (Peruri, 2023).

The decision to situate this study in the Blok M area is also motivated by operational incidents related to e-materai that have previously attracted public attention for instance, service disruptions during periods of high demand that affected certain administrative processes. These events highlight that infrastructure readiness and technical governance are critical factors influencing the effectiveness of digital legal instruments. Consequently, this study utilizes Blok M as a “field laboratory,” enabling a simultaneous examination of business practices, interactions with the institutions responsible for issuing e-materai, and the responses of law enforcement authorities to electronic evidence in dispute resolution processes (Peruri, 2023).

2. Description of Research Data

This section presents the results of data collection obtained from two types of sources: primary data and secondary data. Primary data were gathered through in-depth interviews with several informants who are directly involved in, or have relevance to, the implementation of electronic stamp duty (e-materai) in online business transactions. Secondary data were obtained from literature reviews, statutory regulations, and previous studies relevant to the topic of this research.

The primary data in this study were collected through interviews with five categories of informants, including e-commerce actors/MSMEs and general users. Each informant provided insights from their respective perspectives regarding the implementation, effectiveness, and challenges associated with the use of e-materai in Indonesia. The interviews were conducted online using a set of guiding questions developed based on the research focus. These questions addressed several key aspects: the implementation of e-materai in online transactions; its effectiveness and technical constraints; issues of legality and evidentiary strength; perspectives on public outreach and digital literacy; as well as expectations and policy recommendations.

Digital business actors indicated that the use of e-materai provides significant convenience in the legalization of online transactions. According to one online store owner operating in the Blok M area, e-materai helps streamline administrative processes and enhances trust among business partners. However, technical obstacles such as system disruptions during the affixation process, and limited public outreach remain major challenges. This suggests that although the legal foundation for e-materai is clearly established under Law No. 10 of 2020 on Stamp Duty, improvements in digital literacy and digital infrastructure are still required at the practical level.

In terms of effectiveness, MSME actors observed that e-materai accelerates transactions by eliminating the need for sending physical documents. Nevertheless, for smaller business owners with limited access to technology, the cost and procedural complexity involved in purchasing e-materai remain significant barriers. Therefore, adaptive policies are needed to encourage wider adoption of e-materai among MSMEs (BPS, 2024).

Notaries emphasized that e-materai represents an adaptation of legal instruments to the digital era. They noted that, from a legal standpoint, e-materai is formally recognized as a valid substitute for physical stamp duty, as stipulated in Article 1 point 4 of Government Regulation No. 86 of 2021 on the Procurement, Management, and Sale of Stamp Duty. However, from a technical perspective, the affixation of e-materai on electronic deeds has not yet been fully effective, as Indonesia's digital notarial system remains limited and is not yet fully integrated with Peruri's system.

Additionally, several notaries reported that technical guidelines for applying e-materai to electronic deeds are still insufficient. According to the study conducted by Azizah & Silviana (2024), the effectiveness of e-materai in notarial deeds is heavily dependent on system synchronization and the extent to which public officials understand digital legality.

From the perspective of evidentiary strength, notaries emphasized that e-materai serves to complement rather than replace certified electronic signatures. Both instruments collectively establish the legal validity of a digital document. This aligns with the principle of non-repudiation as stipulated in Article 11 paragraph (1) of the Electronic Information and Transactions Law (ITE Law), which affirms that electronic signatures possess legally binding force and effect.

Officials from the Directorate General of Taxes and Perum Peruri explained that the implementation of e-materai is part of the national strategy for digital transformation within public administration. Pursuant to Minister of Finance Regulation No. 134/PMK.03/2021, Peruri is authorized as the provider and operator of the e-materai system, equipped with cryptographic security features (cryptographic seals) and unique identification codes (unique ID codes). These technological mechanisms ensure the authenticity of e-materai and prevent the possibility of forgery in electronic documents.

Peruri officials further stated that since 2023, the e-materai service system has been integrated with several government platforms and private institutions through an Application Programming Interface (API) mechanism. However, the most significant challenge lies in server capacity and infrastructure readiness during periods of high demand such as the 2024 Civil Servant Candidate (CPNS) registration, when the *meterai-elektronik.com* website became temporarily inaccessible to the public (Peruri, 2023).

From the users' perspective, most respondents acknowledged that e-materai offers convenience in handling electronic documents, particularly for administrative purposes such as employment agreements or online transactions. However, some members of the public still perceive the process of purchasing e-materai as rather complicated and requiring a certain level of technical knowledge. In addition, several complaints relate to the instability of the official website and the limited availability of accessible user guidelines.

Users also indicated a need for stronger security assurances and clearer legal certainty regarding documents that utilize e-materai. This suggests that there is a pressing need for improved public outreach and education on the functions and procedures of e-materai to avoid misunderstandings in practical usage.

In addition to primary data, this research is also supported by secondary data derived from statutory regulations, policy documents, legal literature, and recent scholarly journals. The purpose of utilizing secondary data is to strengthen the normative analysis and provide a theoretical foundation for the field findings.

This research refers to several regulations that constitute the legal basis for the implementation of electronic stamp duty (e-materai) in Indonesia, including:

- a. Law No. 10 of 2020 on Stamp Duty, which replaces previous regulations and governs stamp duty in both physical and electronic formats. This law serves as the primary legal framework for the use of e-materai as valid legal evidence in electronic transactions.

- b. Government Regulation No. 86 of 2021 on the Procurement, Management, and Sale of Stamp Duty, which clarifies the definition and procedures for the use of e-materai through a designated electronic system.
- c. Minister of Finance Regulation No. 134/PMK.03/2021, which establishes the procedures for affixation, use, and supervision of e-materai, including technical provisions related to system security and distribution mechanisms.
- d. Peruri Regulation No. 1 of 2021 on the Electronic Stamp Duty System and Services, which sets out the technical mechanisms for issuing and validating e-materai by Peruri as the official issuing authority.
- e. Law No. 11 of 2008 on Electronic Information and Transactions (ITE) as amended by Law No. 19 of 2016, which provides legal legitimacy for electronic signatures and digital documents as valid legal evidence.
- f. Supreme Court Regulation No. 3 of 2018 on Electronic Court Administration, which strengthens the acceptance of electronic documents in judicial proceedings.

A number of scholarly works and previous studies were used to reinforce the analysis in this research. Some of the key references include:

- a. Rumpuin & Sigit (2022), who assert that e-materai may serve as valid legal evidence as long as formal affixation requirements are met and verification is conducted through Peruri's official system.
- b. Kalesaran (2022), who explains that e-materai has the same legal standing as adhesive stamps, but its technical regulatory framework still requires refinement to better adapt to the dynamics of digital transactions.
- c. Azizah & Silviana (2024), who highlight the effectiveness of e-materai in notarial deeds, showing that its effectiveness is influenced by public officials' understanding and the readiness of digital infrastructure.
- d. Sirait et al. (2024), who examine e-materai from a cyber law perspective, emphasizing the importance of system security and data integrity in digital legal evidence.
- e. Prakoso (2021), who outlines that e-materai is legally valid and provides protection for parties in online transactions; however, its implementation remains suboptimal due to public limitations in digital literacy.

3. Analysis of the Implementation of E-Materai in Online Business Transactions

The findings indicate that the implementation of e-materai within online business transactions has begun to take place, although it has not yet reached full optimality. Based on interviews with e-commerce actors, the adoption of e-materai became more widespread during 2023–2024, especially for cooperation contracts with partners or vendors. Upi, the owner of an online shop operating in the Blok M area, stated: *"I started using e-materai when signing a cooperation agreement with a supplier in 2024. At first it was quite complicated because I didn't understand the process, but once I figured it out, it turned out to be practical. No need to send physical documents anymore. Just*

upload the PDF contract, buy the official e-materai from PERURI's website, and attach it digitally. The only issues are limited understanding of e-materai and sometimes the process is slow".

Technically, the affixation of e-materai involves several stages: purchasing, validation, and digital embedding. Users are required to register on the official website, <https://meterai-elektronik.com>, administered by Perum Peruri. After successful purchase, the e-materai, containing a unique ID is delivered in digital format (emtr) and can be affixed to electronic documents such as cooperation agreements in PDF format. The document affixed with e-materai is then automatically validated by the system through a cryptographic seal.

According to PERURI official, Dimas Wicaksono, this security mechanism ensures the integrity of documents: "Every e-materai has a unique ID, a cryptographic seal, and is connected to a central database. So, if there is a fake one, the system can immediately reject it."

However, field implementation has not been entirely smooth. MSME actors often experience technical disruptions such as server downtime or invalid embedding errors, especially during periods of high traffic. A major incident occurred during the 2024 Civil Servant Candidate (CPNS) registration process, when the e-materai system became inaccessible due to a traffic surge. PERURI acknowledged the issue and subsequently improved server capacity and developed an automated queueing system (CNN Indonesia, 2024).

The use of e-materai in digital notarial practice also presents challenges. Dr. Rudi Santosa, S.H., M.Kn., explained: "Legally, it is already valid under the Stamp Duty Law and Government Regulation No. 86/2021. But in practice, we face technical dilemmas, especially regarding synchronization between digital notary applications and PERURI's e-materai system".

The absence of standardized technical guidelines has led to inconsistent practices: some notaries affix e-materai before the electronic signature, while others do so afterwards. As a result, the formal validity of documents becomes vulnerable to legal disputes should litigation arise. This situation reflects an implementation gap between the normative framework and actual execution in the field.

Normatively, the legal basis for implementing e-materai is unequivocally clear. Law No. 10 of 2020 establishes that stamp duty may be imposed on both physical and electronic documents. This provision is further clarified in Government Regulation No. 86 of 2021, particularly Article 1 point 4, which defines electronic stamp duty as a digital stamp featuring specific characteristics and a unique code issued through an official electronic system. Meanwhile, Minister of Finance Regulation (PMK) No. 134/PMK.03/2021 governs the procedures for affixation, use, and supervision of e-materai, including the responsibilities of Perum Peruri as the system provider.

Most business actors have complied with these provisions, although several implementation challenges persist. Based on interview findings, the majority of e-commerce actors stated that the e-materai system has not been fully integrated into the digital business ecosystem. Upi, a digital MSME entrepreneur, emphasized:

“Integrate e-materai directly into the marketplace so it becomes automatic. That way, small sellers won’t have to jump between different websites.”

This statement illustrates the need for further regulation supporting interoperability between the e-materai system and e-commerce platforms. As of 2025, PMK 134/2021 has not explicitly regulated API integration mechanisms between Peruri and digital platforms, resulting in many business actors having to complete the process manually through Peruri’s official website.

Another gap is evident in public outreach efforts. According to the Katadata Insight Center (2023) survey, Indonesia’s digital literacy rate stands at only 63.9%, with the largest deficit occurring in areas of digital legal literacy and online transaction literacy. This condition explains why many MSME actors are still unaware of the legal basis and procedural steps required for affixing e-materai, despite their active participation in digital transactions.

Furthermore, the absence of uniform Standard Operating Procedures (SOPs) among institutions has resulted in inconsistencies regarding the application of e-materai in both public and private sectors.

The implementation of e-materai is inseparable from the roles of several institutions and actors that interact within the national digital legal system.

a. Perum Peruri

As a state-owned enterprise officially designated for this function, Peruri is responsible for the issuance, validation, and storage of electronic stamp duty data. Under Peruri Regulation No. 1 of 2021, each e-materai contains a unique identification code and an encrypted digital seal that is connected to the core verification system.

b. Directorate General of Taxes (DGT)

The Directorate General of Taxes serves as the supervisory authority and enforcer of stamp duty regulations. Through its collaboration with Peruri, DGT ensures that electronic transactions affixed with e-materai are recorded and legally compliant with fiscal requirements. Based on interview findings, DGT has also been actively conducting national educational campaigns in partnership with major online marketplaces and universities to raise public awareness regarding the importance of affixing e-materai to electronic documents.

c. Business Actors and E-Commerce Platforms

E-commerce actors and MSMEs are the primary stakeholders who experience the direct benefits of e-materai, particularly in terms of administrative efficiency and enhanced customer trust. However, they are also the group most affected by system limitations. Integration between e-commerce platforms and Peruri’s system remains limited, resulting in many business actors having to perform the affixation process manually.

Furthermore, based on interview responses, MSME actors expressed a strong expectation for the availability of an auto-stamping mechanism within marketplace platforms. This expectation aligns with the direction of the National Digital Economy

Framework 2025, which emphasizes system interoperability between public and private sectors to strengthen the national digital transaction ecosystem (Kementerian Komunikasi dan Informatika RI, 2023).

Based on field findings and regulatory analysis, three main categories of constraints in the implementation of e-materai were identified:

a. Technical Constraints

System disruptions are the most frequently reported obstacles encountered by business actors and users. The server outage incident in 2024 demonstrates that the e-materai infrastructure is not yet fully optimized to handle sudden spikes in user traffic. In addition, not all business actors possess adequate devices or stable internet connections to reliably access the e-materai system (Katadata, 2024).

b. Social Constraints

Low levels of digital and legal literacy among the public remain a major barrier. Many small business owners are still unaware that e-materai carries the same legal force as physical stamp duty. Government outreach and educational efforts are perceived as insufficient, particularly in reaching MSME actors in regional and suburban areas.

c. Legal Constraints

Although e-materai is normatively recognized as valid, in practice there is still no strong jurisprudence affirming its legal standing in concrete court cases. The absence of solid judicial precedent creates potential uncertainty in future legal disputes, especially when electronic documents affixed with e-materai are submitted outside the official system.

4. Analysis of the Effectiveness of E-Materai in Legal Evidence and Dispute Resolution

Normatively, the status of e-materai as a legal evidentiary instrument has been recognized within Indonesia's regulatory framework. Article 5 paragraph (1) of Law No. 11 of 2008 on Electronic Information and Transactions (ITE Law) affirms that electronic documents constitute valid legal evidence. This provision is reinforced by the Supreme Court Regulation (Perma) No. 3 of 2018 on Electronic Court Administration, which explicitly acknowledges the validity of digital documents as long as their authenticity can be verified.

Nevertheless, limitations persist in judicial practice. Judge Lilik Rahmawati noted that there is still no strong jurisprudence specifically addressing e-materai as a principal piece of evidence in digital contract disputes. This situation indicates that the effectiveness of e-materai remains in a transitional phase positioned between administrative innovation and full judicial acceptance (Mahkamah Agung RI, 2024).

Interviews with e-commerce actors and general users demonstrate that the use of e-materai significantly enhances efficiency, speed, and trust in online transactions. Upi, the owner of a shop in the Blok M area, stated: "It's faster and more efficient. No

need to send physical documents anymore. Clients also trust us more because there is an official digital proof”.

This statement reflects one of the key dimensions of legal effectiveness according to Soekanto (1983), namely the utility aspect, which assesses the extent to which a legal norm provides convenience, efficiency, and certainty for the community in its practical application. E-materai fulfills the element of substantive legal effectiveness because it shortens transaction processes, reduces costs, and strengthens trust within the digital economy sector.

In addition to improving time and cost efficiency, e-materai also contributes to enhancing digital trust. Dewi, a private-sector employee and active user, explained: “I feel safer because the interface looks official and the unique code can be verified on the PERURI website”.

The presence of a unique identification code and an online verification system generates a sense of security regarding the authenticity of digital documents, which is a fundamental factor in the success of electronic transactions. According to the Katadata Digital Trust Index (2023), public trust in the security of digital transactions increased from 56% in 2021 to 69% in 2023, partly due to the implementation of legal authentication mechanisms such as e-materai (Katadata, 2023).

However, the social effectiveness of e-stamps remains limited to the upper-middle class and digitally savvy businesses. For some traditional MSMEs, the e-stamp affixing procedure is still considered complicated. This indicates that the e-stamp law's effectiveness has not fully reached all levels of society, due to a low legal culture (Ministry of Communication and Informatics of the Republic of Indonesia, 2023).

Thus, based on Soerjono Soekanto's theory of legal effectiveness, it can be concluded that e-materai has proven effective in terms of substance (regulatory framework and technological infrastructure) and legal structure (the institutional roles of Peruri and the Directorate General of Taxes). However, it has not yet achieved full effectiveness in the dimension of legal culture, particularly regarding the awareness and behavioral patterns of its users.

Based on the research findings, three main factors hinder the effectiveness of e-materai in legal evidence and dispute resolution, namely:

a. Technical Factors

System stability remains the primary obstacle. The system disruption that occurred during the peak period of the 2024 CPNS registration indicates that Peruri's server capacity is not yet fully capable of handling high user volumes (CNN Indonesia, 2024). In addition, not all courts and legal institutions possess adequate digital tools to verify the authenticity of e-materai quickly, resulting in delays in the evidentiary process.

b. Legal Factors

The absence of jurisprudence and standardized technical guidelines for examining electronic evidence leads to inconsistencies in legal application.

This indicates the existence of a technical regulatory gap in governing the procedures for affixing and verifying e-materai, which may result in divergent interpretations in judicial proceedings.

c. Social Factors

Low levels of digital legal literacy among the public remain a major challenge. A significant number of MSME actors still do not understand that electronically stamped documents possess the same legal force as physical documents. Government outreach efforts remain limited and have not reached wider segments of society.

Dewi explained: "Many ordinary people still don't understand how to use e-materai. There should be clearer guidelines that can be accessed via mobile apps". Thus, the social effectiveness of e-materai has not yet reached its full potential due to limited public participation and inadequate understanding of digital legal technologies.

According to Soekanto (1983), the effectiveness of law is determined by five key elements: (1) the law itself (substance); (2) law enforcement agencies (legal structure); (3) supporting facilities and infrastructure; (4) the community; and (5) the surrounding legal culture. A legal norm is considered effective when these five components function harmoniously and mutually reinforce one another in its implementation (Soekanto, 2020).

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Second, regarding legal structure, institutions involved in the implementation of e-materai such as the Directorate General of Taxes (DGT) and Perum Peruri have performed their functions actively. Peruri, as the system provider and issuer of digital stamp duty, has implemented advanced security mechanisms based on cryptographic technology and a unique identification code system that enables online document verification (Peruri, 2024). DGT also plays a critical role in monitoring stamp duty compliance and controlling distribution through digital platforms. Nonetheless, the role of the judiciary as part of the legal structure still requires strengthening, particularly with respect to the procedures for verifying and assessing the evidentiary value of electronically stamped documents.

Third, in terms of supporting legal facilities and infrastructure, the effectiveness of e-materai is highly dependent on the readiness of information technology systems. Several technical challenges, such as the system outage experienced by Peruri during the peak of the 2024 CPNS registration period, demonstrate that digital infrastructure still requires improvement to ensure long-term system stability (CNN Indonesia, 2024).

Fourth, the element of society also plays a crucial role. According to the National Digital Literacy Index 2023, public understanding of digital legal literacy

remains at only 62.7%, with many individuals, particularly in regional areas still unfamiliar with the correct procedures for affixing e-materai. Consequently, the legal effectiveness of e-materai has not been fully achieved, as public participation and understanding of digital legal norms remain limited.

Fifth, the element of legal culture significantly influences the effectiveness of e-materai. A majority of MSME actors continue to perceive digital documents as lacking the same legal force as physical documents. The legal culture in Indonesia, which tends to be formalistic and places greater trust in physically signed and stamped documents, has contributed to the slow acceptance of digital legality.

Thus, from the perspective of Soerjono Soekanto's theory of legal effectiveness, the implementation of e-materai can be categorized as normatively effective but not yet culturally or technologically effective, due to persistent challenges related to public literacy and the readiness of national digital infrastructure. In addition, Lawrence M. Friedman's legal system theory (1975) emphasizes that a legal system comprises three main elements: structure, substance, and legal culture. These components must operate in balance for the legal system to function properly.

The structure element encompasses the institutions responsible for the administration and supervision of the system, such as Perum Peruri, the Directorate General of Taxes (DGT), and the Supreme Court. These institutions have made significant efforts to establish an efficient digital legal administration system. Peruri, as the core structural institution, has implemented robust digital document security through cryptographic seals and online validation mechanisms, while DGT ensures fiscal compliance and the legality of electronic stamp duty. The Supreme Court, through Supreme Court Regulation (Perma) No. 3 of 2018, has created a legal avenue for the acceptance of electronic documents as valid evidence in court.

The substance element of the e-materai legal system is reflected in the existence of a comprehensive and integrated regulatory framework, although technical aspects remain imperfect. The Stamp Duty Law (Law No. 10 of 2020) and Government Regulation No. 86 of 2021 have provided clear legal certainty regarding the validity of e-materai. However, the absence of standardized digital evidence procedures across institutions has resulted in inconsistent implementation practices.

Meanwhile, the legal culture element continues to pose a significant challenge. As noted by Dewi, one of the e-materai users, many individuals still do not understand that e-materai carries the same legal force as physical stamp duty. This lack of awareness highlights that the implementation of digital law requires a broader transformation in social paradigms and legal literacy within society.

An analysis using Friedman's legal system framework illustrates that Indonesia's e-materai system possesses strong structural and substantive components but remains weak in the cultural dimension. For the digital legal system to function effectively, cross-sector synergy is essential—emphasizing public outreach, technological integration, and the development of new legal habits within the digital community.

The findings of this study demonstrate that the implementation of e-materai has significant legal implications for the transformation of administrative systems and legal evidence in Indonesia. From a normative perspective, e-materai reinforces the principle of digital legal validity, consistent with Article 5 of the ITE Law and the principle of legal equivalence between electronic and physical documents. Thus, e-materai serves as concrete proof of the enforceability of legal norms within the cyber domain.

E-materai enhances administrative efficiency and strengthens trust between parties engaging in online transactions. Business actors such as Upi, a store owner, emphasized that the use of e-materai increases client confidence in the legitimacy of digital contracts because they bear an official legal mark issued by the government. This indicates that legal innovation can generate social trust that supports the growth of the digital economy.

However, to achieve long-term effectiveness, several legal reform measures must be undertaken. First, the government needs to formulate a Government Regulation or a Regulation of the Minister of Law and Human Rights specifically governing electronic evidence procedures, including the authentication process of e-materai in court proceedings. Second, the digital systems of relevant institutions, namely Peruri, the Directorate General of Taxes, and the Supreme Court must be integrated through an Application Programming Interface (API) mechanism to enable automatic verification of the authenticity of e-materai. Third, the government needs to expand digital legal literacy programs among MSMEs through collaborations with marketplaces and legal education institutions.

Furthermore, in the context of international law, the use of e-materai also has implications for cross-border transactions. Since Indonesia's e-materai is recognized only domestically, it is necessary to establish bilateral or regional cooperation—such as through the ASEAN Digital Economy Framework (2025), to develop a mechanism for mutual recognition of electronically stamped documents between countries (ASEAN, 2023).

The implementation of e-materai is part of the government's broader strategy toward national digital legal transformation. This innovation not only strengthens administrative systems but also serves as an initial step toward the integration of cyber law in Indonesia. According to Sirait et al. (2024), the success of digital law depends not only on regulatory adequacy but also on the integrity of the system and the trustworthiness of the national digital infrastructure.

E-materai, with its security features such as cryptographic seals and digital verification codes, reflects the application of key principles in cyber law: authentication, integrity, and non-repudiation. In the long term, this innovation may be further advanced through the integration of blockchain or distributed ledger technology, enabling decentralized document traceability and verification—an approach that has been proposed by PERURI in its 2024 digital transformation report.

E-materai is not merely a fiscal instrument but a strategic legal tool in the development of Indonesia's national digital legal system. Its implementation will

serve as a benchmark for the country's success in advancing technology-based bureaucratic reform and strengthening legal legitimacy within the digital economy.

E. CONCLUSION

The study concludes that the implementation of e-meterai in online business transactions in Indonesia is legally valid and increasingly adopted, offering efficiency, authenticity, and enhanced trust in digital agreements. However, its practical application still faces challenges, particularly in technical reliability, system integration, and the absence of standardized guidelines for affixing e-meterai and digital signatures. In judicial processes, e-meterai is recognized as legitimate evidence, but verification procedures remain slow due to the lack of a uniform forensic protocol. Overall, e-meterai has strengthened legal certainty and facilitated digital transactions, yet further regulatory refinement and technical improvement are essential for maximizing its effectiveness.

REFERENCES

1. Amanda, T. D. R., & Rizkianti, W. (2021). Urgensi Penerapan Sistem Cyber Notary Ditengah Pandemi Covid 19. *Yurispruden: Jurnal Fakultas Hukum Universitas Islam Malang*, 4(2), 144-159. <https://doi.org/10.33474/yur.v4i2.9299>.
2. Azizah, E. S., & Silviana, A. (2024). Efektivitas Penggunaan Meterai Elektronik pada Akta Notaris Berdasarkan UU No. 10 Tahun 2020 Tentang Bea Meterai. *Juris Prudentia: Jurnal Hukum Ekselen*, 6(2).
3. Bachtiar, S. H. (2018). *Metode Penelitian Hukum*. Tangerang Selatan: UNPAM Press.
4. Barkatullah, A. H. (2019), *Hukum Transaksi Elektronik di Indonesia: Sebagai Pedoman dalam Menghadapi Era Digital Bisnis e-Commerce di Indonesia*. Bandung: Nusamedia.
5. Fista, Y. L., Machmud, A., & Suartini, S. (2023). Perlindungan Hukum Konsumen Dalam Transaksi E-commerce Ditinjau dari Perspektif Undang-Undang Perlindungan Konsumen. *Binamulia Hukum*, 12(1), 177-189. <https://doi.org/10.37893/jbh.v12i1.599>.
6. Hasanah, U., Husna, H., & Haris, M. (2024). Keabsahan Meterai Elektronik Pada Akta Otentik Di Notaris. *Sultan Adam: Jurnal Hukum dan Sosial*, 2(1), 108-114.
7. Ishaq, I. (2017). *Metode Penelitian Hukum dan Penulisan Skripsi, Tesis, Serta Disertasi*. Bandung: Alfabeta.
8. Kalesaran, F. (2022). Analisis yuridis terhadap meterai elektronik ditinjau dari undang-undang nomor 10 tahun 2020. *Lex Privatum*, 10(4).
9. Kitab Undang-Undang Hukum Perdata (KUHPerdata)
10. Moleong, L. J. (2002), *Metodologi Penelitian Kualitatif*. Bandung: Remaja Rosdakarya.
11. Montolalu, M. J. (2025). Kedudukan Meterai Elektronik Dalam Sebuah Perjanjian di Tinjau Dari Peraturan Pemerintah Nomor 86 Tahun 2021 Tentang Pengadaan, Pengelolaan dan Penjualan Meterai. *Lex Privatum*, 14(5).
12. Muhaimin, M. (2020). *Metode Penelitian Hukum*. Mataram: UPT Mataram University Press.

13. Muhammad & Kadir, A. (2004), *Hukum Dan Penelitian Hukum*. Bandung: Citra Aditya Bakti.
14. Pandora, F. S., & Makarim, E. (2022). Implications using Electronic Stamp Duty Authentic as Proof of Electronic Documents In Indonesia. *Cepalo*, 6(2), 107-116. <https://doi.org/10.25041/cepalo.v6no2.2722>.
15. Peraturan Mahkamah Agung Nomor 3 Tahun 2018 tentang Administrasi Perkara di Pengadilan Secara Elektronik.
16. Peraturan Pemerintah Republik Indonesia Nomor 71 Tahun 2019 tentang Penyelenggaraan Sistem dan Transaksi Elektronik
17. Peraturan Pemerintah Republik Indonesia Nomor 86 Tahun 2021 tentang Pengadaan, Pengelolaan, dan Peraturan Menteri Keuangan Nomor 134/PMK.03/2021 tentang Tata Cara Pembubuhan, Penggunaan, dan Pengawasan Materai Elektronik Peraturan Direktur Jenderal Pajak Nomor PER-24/PJ/2021 tentang Tata Cara Pembuatan Kode Billing dan Pembayaran Bea Meterai
18. Peraturan Peruri Nomor 1 Tahun 2021 tentang Sistem dan Layanan Materai Elektronik
19. Prakoso, D. W. D. (2021). Kekuatan hukum e-meterai pada dokumen elektronik. *Jurnal Education and development*, 9(1), 558-558. <https://doi.org/10.37081/ed.v9i1.2322>.
20. Ramli, T. S., Ramli, A. M., Permata, R. R., Ramadayanti, E., & Fauzi, R. (2020). Aspek Hukum Platform E-Commerce Dalam Era Transformasi Digital. *Jurnal Studi Komunikasi dan Media*, 24(2), 119-136. <https://doi.org/10.31445/jskm.2020.3295>
21. Rizkianti, W., Deborah Hutabarat, S. M., Adhi Nugroho, A., Firdaus, M. B., & Latri, A. A. (2025). Cyber Notary di Indonesia: Tantangan, Peluang dan Kebutuhan Rekonstruksi Hukum. *Notaire*, 8(1).
22. Rumpuin, J. L., Sigit, A. P. (2022). Penggunaan E-Materai Pada Akta Notaris. *Jurnal Hukum dan Kenotariatan*, 6(2), 1148-1161. <https://doi.org/10.33474/hukeno.v6i2.15634>.
23. Sirait, R. A. M., Nugraha, A., Serah, Y. A., & Marpaung, S. (2024). Electronic Stamp Validity: Cyber Law Perspective on the Effectiveness of E-Stamp Usage in E-Commerce Transactions. *Reformasi Hukum*, 28(1), 70-79.
24. Sitorus, F. C., Naibaho, E. D., Sinaga, K., & Damanik, E. O. P. (2024). Dampak Perubahan bea Materai Rp 6000 Menjadi Rp 10.000: Analisis Terhadap Berbagai Sektor Ekonomi. *Jurnal Ilmiah Kajian Multidisipliner*, 8(6), 1017-1025.
25. Sugiyono. (2017). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta.
26. Surat Edaran Direktur Jenderal Pajak Nomor SE-30/PJ/2021 tentang Petunjuk Teknis Tata Cara Pembubuhan dan Penggunaan Materai Elektronik.
27. Undang-Undang Republik Indonesia Nomor 8 Tahun 1999 tentang Perlindungan Konsumen.
28. Undang-Undang Republik Indonesia Nomor 10 Tahun 2020 tentang Bea Meterai.

29. Undang-Undang Republik Indonesia Nomor 11 Tahun 2008 tentang Informasi dan Transaksi Elektronik (ITE) sebagaimana telah diubah dengan Undang-Undang Nomor 19 Tahun 2016.