

Strategic SaaS Legal Tech Alignment and Shadow AI Mitigation: A Systematic Review

Rama Rivansyah¹, Antonius Wahyu Sudrajat²

¹Master's Program in Information Systems, Faculty of Computer Science and Engineering,
Universitas Multi Data Palembang, Palembang, Indonesia

²Master's Program in Information Systems, Faculty of Computer Science and Engineering,
Universitas Multi Data Palembang, Palembang, Indonesia

Corresponding Author: wahyu.sudrajat@mdp.ac.id

ABSTRACT

Indonesian law firms face a governance duality: manual filing persists while junior lawyers covertly use public generative artificial intelligence, Shadow AI, threatening client confidentiality. This study synthesizes evidence on centralized Software as a Service Legal Tech adoption and identifies alignment mechanisms that mitigate Shadow AI under Indonesia's Personal Data Protection Law Number Twenty Seven of Two Thousand Twenty Two and the Two Thousand Twenty Six AI Guidelines for Advocates of the Indonesian Advocates Association. A systematic literature review following the Kitchenham guidelines and the PRISMA Two Thousand Twenty statement searched five databases for studies published from Two Thousand Twenty Two to Two Thousand Twenty Six. Of Two Hundred Forty Five records, seventeen primary studies met the inclusion and quality criteria and were coded thematically using the Technology Organization Environment framework and the Strategic Alignment Model. Efficiency is the most consistent technological driver, whereas hallucination, data security, and liability are the dominant barriers. Change capacity, staff skills, and partner consensus matter more than capital. Shadow AI reflects functional misalignment between work demands and firm provided information technology, so sanctioned tools mitigate it better than bans. Corporate firms face strategic fit challenges, whereas litigation firms are more exposed to hallucination and Shadow AI risks. The study integrates both theories into a framework with six propositions, positions strategic alignment as a moderator, and identifies five research gaps for partnership structured organizations. Managing partners gain a four stage roadmap: inventory and policy, sanctioned tools selected through vendor due diligence, workflow integration with output verification, and continuous monitoring. To the authors' knowledge, this is the first review to connect Software as a Service Legal Tech adoption, Shadow AI, and Indonesia's post transition data protection regime in a single integrated framework, reframing Shadow AI as an alignment failure rather than merely a disciplinary problem.

Keywords: Legal Tech, Shadow AI, Personal Data Protection, TOE Framework, Strategic Alignment Model

1. INTRODUCTION

The legal services industry is shifting from isolated on-premise applications toward cloud-based vertical Software-as-a-Service (SaaS) platforms integrated with artificial intelligence (AI), driven by growing transaction volumes and corporate clients' demands for efficiency and cost transparency (Brooks et al., 2020; Kronblad, 2020; Rodgers et al., 2023). In Indonesian law firms, however, a pacing problem persists between market technology and internal readiness, and the main barriers are cultural and structural rather than technical (Armour et al., 2022; Brooks et al., 2020). Preliminary observations suggest that physical filing and unintegrated applications remain common in Indonesian advocate offices, although this has not been documented empirically. Managing partners often view technology as a cost center rather than a value enabler (Brooks et al., 2020), raising the risk of lost case records and missed court deadlines.

Public generative AI (GenAI) has simultaneously created a sharp behavioral dichotomy within professional organizations (Dwivedi et al., 2023). Firm leaders experience adoption paralysis over accuracy, reliability, and data security (Calaguas, 2025), while staff facing deadlines use public AI without authorization, a practice known as Shadow AI (Waters-Lynch et al., 2025). In the UK, 59% of legal professionals use unapproved AI for client work (Resultsense, 2026). Since the transition period of Indonesia's Personal Data Protection (PDP) Law No. 27 of 2022 ended in October 2024 (Republic of Indonesia, 2022), such behavior carries legal as well as ethical consequences. Prior studies examine adoption or AI governance separately, and Indonesian research remains largely juridical-normative (Kusnadi & Hariati, 2026; Saragih et al., 2025); adoption, strategic alignment, and Shadow AI have not been examined together in partnership-structured firms.

This systematic literature review (SLR) addresses four research questions. **RQ1:** What are the drivers and barriers of centralized SaaS Legal Tech adoption in law firms from a Technology-Organization-Environment (TOE) perspective? **RQ2:** How can Strategic Alignment Model (SAM) mechanisms mitigate Shadow AI and ensure compliance with the PDP Law and the 2026 AI Guidelines of the Indonesian Advocates Association (PERADI)? **RQ3:** How do organizational readiness and strategic alignment differ between corporate and litigation law firms? **RQ4:** What research gaps can be developed into a novelty contribution for Master's-level research in Information Systems? The objective is to integrate TOE and SAM into a practical information technology (IT) governance framework that helps Indonesian managing partners mitigate Shadow AI and ensure regulatory compliance.

2. LITERATURE REVIEW / THEORETICAL FRAMEWORK

Law firms have historically relied on a human-capital-intensive advisory model billed by the hour, in which efficiency may paradoxically threaten billable time (Brooks et al., 2020; von Nordenflycht, 2010). Alternative Legal Service Providers (ALSPs) and client pressure push firms toward a platform model built on non-human capital, multidisciplinary teams, and productized services such as workflow automation, AI-based contract risk analysis, and fixed-fee billing (Armour et al., 2022; Kronblad, 2020; Rodgers et al., 2023), yet partnership governance slows IT investment because decisions require consensus among equity partners with different risk perceptions (Armour et al., 2022; Greenwood et al., 1990). Typical modules include case management, AI-assisted document review, e-billing, and compliance management (Singh et al., 2025).

The PDP Law requires notification of data protection failures within 3×24 hours (Article 46), sets administrative fines of up to 2% of annual revenue (Article 57), and adds criminal penalties (Republic of Indonesia, 2022). As Personal Data Controllers, law firms now hold confidentiality as a legal obligation (Kusnadi & Hariati, 2026; Mipon & Putra, 2023). On 6 August 2026, the National Board of PERADI launched the Guidelines on the Use of AI for Advocates (Hukumonline, 2026), which prohibit uploading confidential client documents to public AI without a non-retention guarantee (Section II.C), require vendor due diligence including ISO/IEC 27001 certification (Sections V.C and

XI), forbid fully delegating core legal analysis to AI (Sections II.I and VII.B), and require periodic evaluation of trainee advocates to prevent cognitive debt (Section XIV) (DPN PERADI, 2026). They complement Circular Letter No. 9 of 2023 of the Minister of Communication and Informatics on AI Ethics (Ministry of Communication and Informatics of the Republic of Indonesia, 2023) and American Bar Association (ABA) Formal Opinion 512 (American Bar Association Standing Committee on Ethics and Professional Responsibility, 2024). The need for verification is illustrated by *Mata v. Avianca*, in which lawyers were sanctioned for citing fictitious cases generated by ChatGPT (*Mata v. Avianca, Inc.*, 2023).

To explain adoption and alignment, this review integrates the TOE framework (Tornatzky & Fleischer, 1990; Baker, 2012), widely tested in cloud computing adoption (Low et al., 2011; Oliveira et al., 2014), with SAM (Henderson & Venkatraman, 1993), which distinguishes strategic fit between external and internal domains from functional integration between business and IT domains (Chan & Reich, 2007). Alignment is a dynamic process linked to performance (Coltman et al., 2015) whose maturity can be measured (Luftman, 2000). In law firms, strategic fit aligns the fee model with SaaS licensing investment, whereas functional integration embeds case procedures and AI use policies into digital workflows, suppressing Shadow AI.

3. RESEARCH METHOD

This review follows the SLR guidelines of Kitchenham and Charters (2007) and the PRISMA 2020 reporting guideline (Page et al., 2021) in five phases from question formulation to synthesis. Five databases were searched for publications from 2022 to 2026: Scopus (84 records), Web of Science (52), IEEE Xplore/ACM Digital Library (38), HeinOnline/ProQuest Legal (41), and Sinta (S1–S3) validated through Google Scholar (30), yielding 245 records. The final search was run on 7 October 2026. The Boolean string combined three domains: ("Legal Tech" OR "Lawtech" OR "Legal SaaS" OR "Practice Management System" OR "law firm*") AND ("TOE Framework" OR "Strategic Alignment" OR "IT Governance" OR "Cloud Adoption" OR "AI adoption") AND ("Shadow AI" OR "Shadow IT" OR "Data Privacy" OR "PDP Law" OR "PERADI" OR "Compliance" OR "hallucination"). Strings were adapted to each database's syntax, with Indonesian equivalents ("teknologi hukum", "kantoor advokat", "pelindungan data pribadi") in Sinta.

Inclusion criteria were (IC1) peer-reviewed journal or proceedings articles published 2022–2026; (IC2) studies of SaaS/AI adoption in law firms or professional services; (IC3) use of TOE, SAM, or IT/AI governance frameworks, or analysis of AI governance risks; and (IC4) Indonesian or English language. Exclusion criteria were (EC1) publication before 2022; (EC2) opinion pieces or non-academic editorials; (EC3) purely normative legal studies without an information systems dimension; and (EC4) unavailable full text. Foundational theories, regulations, and industry reports served as theoretical references and contextual evidence, not as primary studies. Each full text was scored on (QA1) methodological adequacy, (QA2) clarity of data collection, (QA3) explicit use of an information systems (IS) framework, (QA4) relevance to privacy, confidentiality, or compliance, and (QA5) contribution to governance or adoption practice, each rated 1.0, 0.5, or 0.0; only studies scoring ≥ 3.0 of 5.0 were retained. Screening and quality assessment were performed independently by the two authors, and inter-rater agreement was tested to minimize selection bias.

After 42 duplicates were removed, 203 records were screened by title and abstract and 118 were excluded. Of the 85 full texts assessed, 68 were excluded: 32 under EC1 (pre-2022 or

foundational/regulatory works), 21 under EC2 and EC3, 9 under EC4, and 6 for a quality score below 3.0. Thus, 17 primary studies (S1–S17) were included (Figure 1). Data on context, design, framework, TOE constructs, alignment mechanisms, and Shadow AI and compliance findings were extracted into a structured form and synthesized thematically by coding findings into TOE dimensions and SAM perspectives.

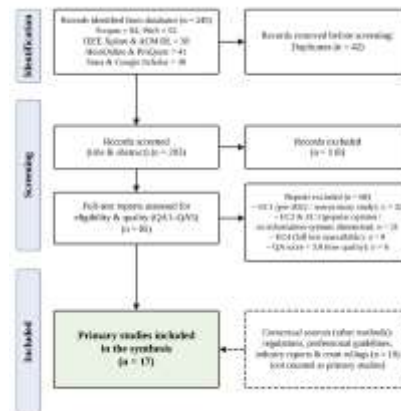


Figure 1. PRISMA 2020 Flow Diagram of the Study Selection Process

4. RESULTS

4.1 Characteristics of the Primary Studies

Most primary studies were published in 2023–2026, reflecting the research surge after public GenAI was launched in late 2022. Empirical evidence on law firms is concentrated in the US and UK (Armour et al., 2022; Calaguas, 2025; Rodgers et al., 2023), whereas Indonesian studies are mainly juridical-normative analyses of the PDP Law (Kusnadi & Hariati, 2026; Mipon & Putra, 2023; Saragih et al., 2025). Designs range from case studies and a controlled experiment to tests of language models, structural equation modeling (SEM) mixed methods, and a systematic review with the analytic hierarchy process (AHP), as summarized in Table 1.

Table 1. Characteristics of the Verified Primary Studies

Code	Study	Design / Context	RQ
S1	Armour et al. (2022)	Case study (interviews) + survey; UK law firms	1, 3
S2	Rodgers et al. (2023)	Literature review; US and UK law firms	1, 3
S3	Dwivedi et al. (2023)	Multidisciplinary perspectives on GenAI	1, 2
S4	Choi et al. (2024)	RCT on legal tasks with GPT-4; US	1
S5	Dahl et al. (2024)	Empirical test of LLM hallucination on legal queries; US	1, 3
S6	Magesh et al. (2025)	Empirical test of commercial RAG legal research tools; US	1, 3
S7	Yang et al. (2024)	TOE-based multiple case study; 3 audit firms	1, 3
S8	Hughes et al. (2026)	Mixed methods; survey of 304 decision-makers; TOE/SEM	1, 4
S9	Kim et al. (2025)	Systematic review + expert AHP; legal domain	1, 2
S10	Waters-Lynch et al. (2025)	Conceptual: GenAI shadow user innovation	2, 4
S11	Mäntymäki et al. (2022)	Conceptual: organizational AI governance	2
S12	Schneider et al. (2023)	AI governance framework for businesses	2
S13	Papagiannidis et al. (2025)	Review and framework for responsible AI governance	2, 4
S14	Mipon & Putra (2023)	Juridical-normative: notaries as Data Controllers; ID	2
S15	Kusnadi & Hariati (2026)	Juridical-normative: PDP Law and legal ethics; ID	2, 4
S16	Saragih et al. (2025)	Comparative law: PDP Law vs. Malaysia's PDPA on AI	1, 4
S17	Singh et al. (2025)	Structured review of Legal Practice 4.0 technologies	1

Note. ID = Indonesia; RCT = randomized controlled trial; LLM = large language model; RAG = retrieval-augmented generation; SEM = structural equation modeling; PDPA = Personal Data Protection Act.

4.2 RQ1: Drivers and Barriers of Adoption Based on TOE

Adoption is shaped by the interaction of all three TOE contexts rather than by a single factor (Table 2). **Technology:** time efficiency is the most consistent driver; GPT-4 access sped up legal tasks substantially, although quality gains were small and inconsistent (Choi et al., 2024), and lawyers ranked time savings (54.4%) as the main benefit (Calaguas, 2025). Accuracy is the main barrier: general large language models (LLMs) hallucinate on most specific legal queries (Dahl et al., 2024), and even retrieval-augmented generation (RAG) tools hallucinate on 17–33% of queries (Magesh et al., 2025), while complexity (Hughes et al., 2026) and cloud security (Low et al., 2011; Oliveira et al., 2014) add barriers. **Organization:** the main barrier is human rather than financial capital, namely strategic decision-making, multidisciplinary coordination, and redrawing professional boundaries (Armour et al., 2022). Change capacity moderates the effect of complexity (Hughes et al., 2026), and only 22% of professional organizations have a visible AI strategy, although these are twice as likely to gain revenue from AI (Thomson Reuters Institute, 2025). **Environment:** client demands and competition drive transformation (Brooks et al., 2020; Yang et al., 2024), whereas regulatory uncertainty, liability, and data quality slow it (Kim et al., 2025; Yang et al., 2024). The PDP Law extends professional responsibilities, including privacy by design (Kusnadi & Hariati, 2026; Republic of Indonesia, 2022), and is more progressive than Malaysian law on automated processing and breach notification (Saragih et al., 2025).

Table 2. Matrix of Adoption Drivers and Barriers Based on TOE

TOE Context	Drivers	Barriers
Technology	Time efficiency; automated document review; centralized cloud-based access	Hallucination and accuracy; complexity; data security and third-party retention
Organization	Leadership support and explicit AI strategy; multidisciplinary teams; change capacity	Slow partnership consensus; skills gaps; low AI readiness in small firms
Environment	Corporate clients' efficiency demands; competition and ALSPs; PDP Law compliance duties	Regulatory uncertainty; liability and sanction risks; no AI implementing regulations

4.3 RQ2: SAM Mechanisms for Mitigating Shadow AI and Ensuring Compliance

Table 3. Mapping of SAM Perspectives to Shadow AI Mitigation and Compliance

SAM Perspective (Logic)	Shadow AI Mitigation Mechanism	PDP Law / PERADI Compliance Link
Strategy Execution (BS → OI → ITI)	Written AI use policy; data classification (what AI may/may not process); AI system owner roles	Processing basis, Controller accountability, output verification (DPN PERADI, 2026; Mäntymäki et al., 2022)
Technology Transformation (BS → ITS → ITI)	Sanctioned private SaaS/AI (encryption, zero data retention, audit trail) replacing public tools	Processing security; agreements with Processors (vendors) (Schneider et al., 2023)
Competitive Potential (ITS → BS → OI)	Treating covert use as an innovation signal; controlled sandbox trials and a tool-request channel	Impact assessment before adopting new technology (Waters-Lynch et al., 2025)
Service Level (ITS → ITI → OI)	Training, helpdesk, usage monitoring, periodic audits; closing leaders' visibility gap	3 × 24-hour notification readiness; compliance evidence (Papagiannidis et al., 2025; Resultsense, 2026)

Note. BS = business strategy; ITS = IT strategy; OI = organizational infrastructure; ITI = IT infrastructure.

4.4 RQ3: Corporate versus Litigation Law Firms

Table 4. Comparison of Adoption Dynamics in Corporate and Litigation Firms

Aspect	Corporate Firms	Litigation Firms
Dominant tasks / driver	High-volume due diligence and contracts; client pressure for efficiency and cost transparency	Case-law research, pleadings, hearing deadlines; time pressure

Aspect	Corporate Firms	Litigation Firms
AI risk profile	Large-scale leakage of transaction secrets and personal data	Hallucinated case citations leading to court sanctions
Organizational readiness	Relatively higher; multidisciplinary coordination challenges	Relatively lower; limited IT budget and skills
SAM focus	Strategic fit: fee model ↔ platform investment	Functional integration: sanctioned tools within case workflows
Shadow AI tendency	Suppressed by policies and enterprise tools, yet present	Higher when no affordable official alternative exists

4.5 RQ4: Research Gaps

The synthesis of RQ1–RQ3 reveals five gaps (Table 5): US/UK-dominated evidence (G1), no model testing alignment as a moderator in partnerships (G2), no validated Shadow AI instrument (G3), untested effects of the PDP Law and PERADI Guidelines (G4), and no direct comparison of corporate and litigation firms (G5).

Table 5. Research Gaps and Directions for Novelty

Gap	Novelty Opportunity	Suggested Method
G1 Contextual	First empirical evidence on SaaS Legal Tech adoption in Indonesian law firms	Surveys and interviews in advocate offices (e.g., Palembang/Jakarta)
G2 Theoretical	TOE–SAM model with alignment as a moderator in partnership organizations	PLS-SEM with moderation analysis
G3 Measurement	Validated Shadow AI instrument; test of adoption paralysis → Shadow AI	Scale development, CFA, reliability/validity tests
G4 Regulatory	Regulatory pressure as a measurable environmental antecedent	Survey + analysis of firm policy documents
G5 Segmentation	Multigroup analysis by practice specialization	PLS-MGA or comparative case study

Note. PLS-SEM = partial least squares structural equation modeling; CFA = confirmatory factor analysis; PLS-MGA = PLS multigroup analysis.

5. DISCUSSION

Shadow AI is a response to leadership's adoption paralysis rather than isolated misconduct. Leaders hesitate over accuracy (74.7%), reliability (56.3%), and data privacy and security (47.2%) (Calaguas, 2025), yet 78% of AI users bring their own AI tools to work (Microsoft & LinkedIn, 2024). Waters-Lynch et al. (2025) call this shadow user innovation, a signal of needs that should be governed rather than suppressed, consistent with Shadow IT research (Haag & Eckhardt, 2017; Silic & Back, 2014). The resulting legal risks are confidential documents retained outside the firm's control, leaked trade secrets, and hallucinations in court documents (Dahl et al., 2024; Kim et al., 2025; *Mata v. Avianca, Inc.*, 2023).

Within SAM, Shadow AI signals a failure of functional integration: business strategy demands speed, but IT infrastructure does not provide adequate tools, so users "align" informally (Chan & Reich, 2007; Henderson & Venkatraman, 1993). Mitigation therefore requires alignment across all four SAM perspectives (Table 3), supported by AI governance structures, procedures, and relational mechanisms (Mäntymäki et al., 2022; Papagiannidis et al., 2025; Schneider et al., 2023). Regulation provides the external trigger: as Data Controllers, firms must secure processing and oversee SaaS vendors as Data Processors (Mipon & Putra, 2023; Republic of Indonesia, 2022), so uploading client documents to public AI without a processing basis may be non-compliant (Kusnadi & Hariati, 2026), and the PERADI Guidelines require verified outputs and warn against cognitive offloading (DPN PERADI, 2026; Hukumonline, 2026), echoing ABA Formal Opinion 512 (American Bar Association Standing Committee on Ethics and Professional Responsibility, 2024). These norms demand strategic fit between firm strategy and professional obligations.

Because no primary study compares the two firm types directly, Table 4 was derived inferentially from evidence on firm size, task type, and risk profile. AI adoption rises with firm size,

from 17.7% among solo practitioners to 47.8% in firms with 500+ lawyers (Calaguas, 2025), and large firms are more hindered by regulatory gaps (Yang et al., 2024) and billing-model fit (Armour et al., 2022). Litigation firms, often small Indonesian offices, face deadlines in which hallucinated citations lead directly to sanctions (Dahl et al., 2024; *Mata v. Avianca, Inc.*, 2023), and their lower readiness (Yang et al., 2024) makes Shadow AI a tempting shortcut; half of UK fee earners want AI in case management, yet only 25% of firms provide it (Resultsense, 2026).

5.1 Integrative TOE–SAM Conceptual Framework

The framework (Figure 2) positions TOE antecedents as determinants of adoption, SAM alignment as a moderator, and compliance, business value, and Shadow AI as outcomes, with six testable propositions. **P1:** Perceived efficiency has a positive effect, and perceived accuracy and security risks a negative effect, on adoption (Choi et al., 2024; Magesh et al., 2025). **P2:** Managing partner support, change capacity, and staff skills positively affect adoption (Armour et al., 2022; Hughes et al., 2026). **P3:** Regulatory pressure (PDP Law, PERADI Guidelines) and corporate client demands positively affect adoption of governed platforms (Brooks et al., 2020; DPN PERADI, 2026; Republic of Indonesia, 2022). **P4:** Adoption positively affects compliance and business value, strengthened by strategic fit and functional integration (Coltman et al., 2015; Henderson & Venkatraman, 1993). **P5:** Adoption of sanctioned AI platforms negatively affects Shadow AI intensity (Silic & Back, 2014; Waters-Lynch et al., 2025). **P6:** Adoption paralysis (bans without an official alternative) positively affects Shadow AI intensity, which in turn reduces compliance (Resultsense, 2026; Waters-Lynch et al., 2025).

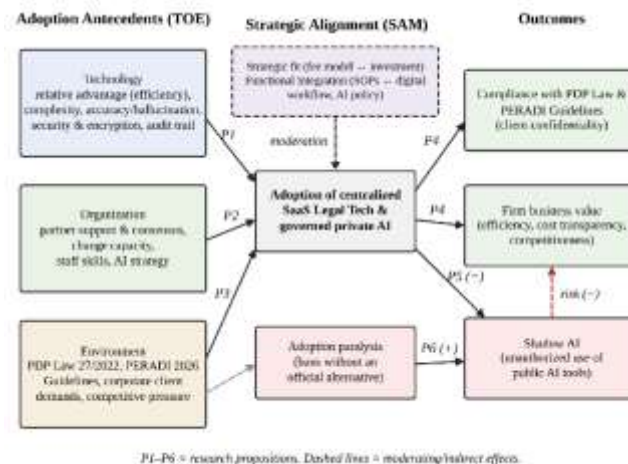


Figure 2. Integrative TOE–SAM Conceptual Framework for SaaS Legal Tech Adoption and Shadow AI Mitigation

5.2 Implications and Research Roadmap

Theoretically, the study extends TOE to governance outcomes (compliance and Shadow AI) (Hughes et al., 2026); reframes Shadow AI as functional misalignment, bridging Shadow IT (Haag & Eckhardt, 2017; Silic & Back, 2014) and AI governance research (Mäntymäki et al., 2022; Papagiannidis et al., 2025); and adds professional partnerships (Greenwood et al., 1990; von Nordenflycht, 2010) as a boundary condition for SAM, mostly tested in hierarchical corporations (Chan & Reich, 2007; Coltman et al., 2015). Practically, managing partners can follow four stages: **(1) inventory and policy**, mapping AI use, classifying client data, and issuing a PDP- and PERADI-aligned policy; **(2) sanctioned tools**, chosen through vendor due diligence (data location, retention, encryption, audit trail); **(3) workflow integration** with mandatory output verification; and **(4) continuous monitoring** through audits, training, and alignment maturity measurement (Luftman, 2000; Papagiannidis et al., 2025; Schneider et al., 2023). For Master's-level research, G1–G5 suggest a sequential exploratory mixed-methods roadmap: interviews, questionnaire development, a partial least squares (PLS-SEM/PLS-MGA) survey testing P1–P6, and Delphi validation.

6. CONCLUSION

For RQ1, efficiency is the most consistent driver; hallucination, data security, and liability are the dominant barriers; and change capacity, staff skills, and partnership consensus outweigh capital. For RQ2, Shadow AI is functional misalignment, so mitigation requires sanctioned tools governed through the four SAM perspectives rather than bans, with the PDP Law and PERADI 2026 Guidelines as external triggers of strategic fit. For RQ3, corporate firms face strategic fit and coordination challenges, whereas litigation firms are more exposed to hallucination and Shadow AI risks. For RQ4, five gaps open opportunities to test the framework's six propositions in Indonesian law firms.

Limitations include the 2022–2026 window, Shadow AI evidence partly drawn from industry surveys (treated as contextual), the recency of the PERADI Guidelines, residual reviewer judgment despite dual screening, and possible publication and language bias. Future research should test the propositions empirically following the roadmap above.

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CONFLICT OF INTEREST

The authors declare no conflict of interest regarding the publication of this manuscript.

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