

Judicial Efficiency in Indonesia's Digital Courts: A Quantitative Study

Budi Santosa^{1*}, Rina Kusumaningrum², Ratna Wulandari³, Rizky Aditya Nugraha⁴, Fitri Handayani Putri⁵,
Indah Permata Sari⁶, Diah Kartika Sari⁷, Niken Larasati Putri⁸, Anisa Dwi Maharani⁹

^{1,2,7,8,9}Universitas Gadjah Mada, Indonesia

^{3,4,5,6}Universitas Diponegoro, Indonesia

*Corresponding author: santososlemen2024@gmail.com

Received: August 7, 2026 | Revised: September 2, 2026 | Accepted: September 5, 2026 | Published: September 30, 2026

Article DOI: <https://doi.org/10.60153/ijolares.v4i2.371>

ABSTRACT

The digital transformation of judicial institutions has become an important strategy for improving court performance and access to justice. However, empirical evidence on the effectiveness of digital courts in improving judicial efficiency remains limited, especially in developing legal systems. This study examines the relationship between digital court implementation and perceived judicial efficiency in Indonesia using a quantitative empirical legal research approach. Data were collected through a structured questionnaire from 220 respondents, including judges, court clerks, advocates, and court users who had experience using the Supreme Court's e-Court and e-Litigation systems. The research instrument consisted of 24 Likert-scale items measuring digital court implementation and perceived judicial efficiency. Data were analyzed using descriptive statistics, validity and reliability tests, classical assumption tests, Pearson correlation, and multiple linear regression. The results show a significant positive relationship between digital court implementation and perceived judicial efficiency ($R = 0.804$; $R^2 = 0.647$; $F = 66.742$; $p < 0.001$). The model explains 64.7% of the variance in perceived judicial efficiency. Among the dimensions examined, Electronic Filing ($\beta = 0.281$; $p < 0.001$) and Information Accessibility ($\beta = 0.247$; $p < 0.001$) were the strongest predictors. These findings indicate that easier electronic case registration and better access to judicial information are associated with higher perceptions of court efficiency. The study provides empirical evidence supporting the continued development of Indonesia's digital justice system. Improvements should focus on technological infrastructure, integrated information systems, cybersecurity, and continuous capacity building for judicial personnel.

Keywords: Digital Courts; Judicial Efficiency; e-Court; Digital Justice; Empirical Legal Research.

1. INTRODUCTION

The increasing digitalization of judicial institutions has transformed court administration, yet the extent to which digital court systems produce measurable improvements in judicial efficiency remains an unresolved empirical and institutional issue. Across various jurisdictions, courts have increasingly adopted information and communication technologies to streamline judicial procedures, minimize administrative complexity, strengthen transparency, and broaden public access to justice (Ahmed et al., 2021). Modern judicial systems are no longer limited to electronic case filing but have expanded to include virtual hearings, electronic evidence management, online dispute resolution mechanisms, and integrated digital case

management systems (Amarini et al., 2023). Despite the expansion of digital court services, empirical evidence remains insufficient regarding whether specific components of digital court implementation, including electronic filing, electronic payment, electronic summons, electronic litigation, document management, and information accessibility, are systematically associated with measurable improvements in judicial efficiency. Consequently, empirical assessment of judicial efficiency has become an increasingly important topic within contemporary legal scholarship.

Indonesia has undertaken an extensive judicial modernization program through the introduction of the electronic court (e-Court) and electronic litigation (e-Litigation) systems under the authority of the Supreme Court. These

digital initiatives represent a strategic effort to reform judicial administration by simplifying litigation procedures, reducing procedural costs, accelerating case management, and increasing public confidence in the judiciary (Ruzayana et al., 2025). The implementation of electronic case registration, online payment of court fees, electronic summons, digital document submission, and virtual hearings has gradually transformed conventional court administration into a technology-based judicial service. Although the COVID-19 pandemic accelerated the adoption of electronic judicial services in Indonesia, the sustained institutional effects of these systems on judicial efficiency after their wider implementation remain insufficiently established through quantitative empirical evidence.

Despite considerable progress in implementing digital judicial services, uncertainty persists regarding the extent to which these reforms have actually improved judicial efficiency. Judicial efficiency generally refers to the capacity of courts to resolve disputes within reasonable timeframes while maintaining fairness, minimizing unnecessary procedural costs, and optimizing available institutional resources (Djamaludin et al., 2023). Although digital technologies are frequently promoted as instruments capable of reducing delays and increasing organizational productivity, improvements in efficiency cannot be presumed solely from technological adoption. Variations in institutional capacity, technological infrastructure, regional disparities, digital literacy, judicial workload, and human resource competence may substantially affect the effectiveness of digital court implementation. Therefore, systematic empirical evaluation is required to determine whether Indonesia's digital court system has successfully achieved its intended institutional objectives.

Previous studies have established important legal, regulatory, and governance dimensions of digital justice, particularly concerning procedural compatibility, transparency, cybersecurity, and access to

justice; however, this literature provides limited quantitative evidence on whether the implementation of specific digital court functions translates into measurable improvements in judicial efficiency (Lahilote et al., 2025; Sourdin, 2021). Previous studies have primarily examined the legal basis of electronic litigation, procedural compatibility between digital mechanisms and existing procedural law, judicial transparency, cybersecurity issues, access to justice, and the legal implications of conducting virtual hearings (Adeleye et al., 2021). Other scholars have investigated institutional preparedness, public acceptance of electronic judicial services, and comparative experiences of judicial digitalization in different legal systems. Collectively, these studies have enriched academic understanding of the legal, institutional, and governance dimensions associated with judicial digital transformation.

Nevertheless, important gaps remain within the current literature. First, most previous studies rely predominantly on normative legal analysis or qualitative approaches, while relatively few employ quantitative empirical methods capable of objectively measuring judicial performance. Second, existing studies provide limited quantitative evidence based on systematically measured stakeholder perceptions of judicial efficiency across multiple dimensions, including administrative efficiency, cost efficiency, transparency, accessibility, and user satisfaction (Natapatria et al., 2025). Third, there remains limited empirical research that simultaneously examines multiple dimensions of judicial efficiency within a single analytical framework capable of explaining how digital court implementation influences institutional performance. Consequently, existing evidence concerning the effectiveness of judicial digitalization remains fragmented and insufficient to support evidence-based legal policymaking.

To address these limitations, this study adopts a quantitative research approach to evaluate judicial efficiency within Indonesia's digital court system. Instead of emphasizing

normative legal interpretation alone, this research focuses on measurable institutional indicators that allow objective assessment of judicial performance. By analyzing quantitative data derived from court performance statistics and user-based evaluations, this study seeks to determine whether digital court implementation contributes significantly to improving judicial efficiency. Such an approach reflects the growing influence of empirical legal studies, which emphasize the importance of evidence-based analysis in evaluating legal institutions and public sector reforms.

The originality of this study lies in empirically examining the association between multiple dimensions of digital court implementation and perceived judicial efficiency within a unified quantitative framework focused on Indonesia's judicial system. Second, it contributes methodologically to legal scholarship by shifting the emphasis from traditional doctrinal analysis toward empirical evaluation supported by quantitative evidence. Third, the findings are expected to provide practical insights for policymakers, judicial administrators, and legal practitioners in assessing the effectiveness of Indonesia's digital justice reforms while identifying institutional areas requiring further improvement. These contributions are particularly relevant given the ongoing expansion of digital governance initiatives within judicial systems worldwide.

The study draws on digital governance and institutional performance perspectives to explain how digital court implementation may be associated with judicial efficiency. From a digital governance perspective, electronic filing, payment, summons, litigation, document management, and information accessibility can reduce administrative complexity and improve information flows. From an institutional performance perspective, these technological capabilities may strengthen administrative processes and service delivery, thereby contributing to higher perceived judicial efficiency (Zhang & Chen., 2020). Accordingly, the study conceptualizes digital court

implementation as a multidimensional explanatory construct and judicial efficiency as the outcome construct to be empirically examined through stakeholder-based survey data. Judicial efficiency theory argues that an effective judiciary should resolve disputes promptly, fairly, and economically without compromising procedural justice or legal certainty (Katsh & Rabinovich, 2017; Heeks, 2021). Institutional performance theory explains that organizational effectiveness depends on administrative capability, technological readiness, managerial quality, and resource allocation. Meanwhile, digital governance theory emphasizes that technological innovation enhances public sector performance by improving service quality, accountability, transparency, and administrative effectiveness. Together, these theoretical perspectives provide an integrated conceptual foundation for examining the relationship between judicial digitalization and institutional performance in Indonesia.

Within this conceptual framework, digital court implementation is understood as a multidimensional institutional innovation encompassing electronic case registration, electronic document management, online payment systems, virtual hearings, and integrated case administration. Judicial efficiency is operationalized through measurable indicators including case processing time, disposition rates, backlog reduction, litigation costs, accessibility of judicial services, and user satisfaction. Evaluating the relationship between these variables enables a comprehensive assessment of whether judicial digitalization produces tangible improvements in court performance (Pitaloka, 2025; Susskind, 2019).

Against this background, this study aims to quantitatively examine the level of judicial efficiency achieved through Indonesia's digital court system and to investigate the relationship between digital court implementation and institutional performance. Specifically, the study addresses the following research question: To what extent does the implementation of

Indonesia's digital courts improve judicial efficiency as measured through objective institutional performance indicators? Answering this question is expected to enrich the growing field of empirical legal studies while providing evidence-based recommendations for strengthening judicial reform and improving the effectiveness of digital justice in Indonesia (Pitaloka, 2025).

2. METHOD

This study employed an empirical legal research design using a quantitative approach to examine the influence of digital court implementation on judicial efficiency in Indonesia. Empirical legal research focuses on evaluating the operation of legal institutions through observable and measurable evidence rather than relying exclusively on normative legal analysis. A quantitative design was selected because it enables statistical examination of the relationship between digital court services and judicial performance, thereby providing objective evidence for legal policy evaluation.

The study was conducted in selected Indonesian General Courts that had implemented the Supreme Court's e-Court and e-Litigation systems (Yoesuf et al., 2023). The participating courts were selected according to predefined inclusion criteria, including active implementation of the digital court systems and the availability of judges, court clerks, advocates, and court users with direct experience using these services. The target population comprised judges, court clerks, advocates, and court users who had practical experience using digital judicial services. Respondents were selected using purposive sampling, ensuring that only individuals familiar with the operation of the e-Court system participated in the survey. A total of 220 respondents were included in the study. The adequacy of the sample size was determined through an appropriate sample size calculation.

The research instrument consisted of a structured questionnaire adapted from

previously validated measures of digital court implementation and judicial efficiency. Each item was mapped to the corresponding construct and adapted to the Indonesian judicial context while preserving the conceptual meaning of the original measures. Responses were measured using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) (Djuraev et al., 2025; Piana, 2022). The operationalization of variables is presented in Table 1. The section should also clearly describe the method of legal analysis applied, such as qualitative legal analysis, doctrinal analysis, statutory interpretation, conceptual analysis, comparative analysis, case analysis, or other appropriate analytical techniques. The analysis should be directly aligned with the research objective or question and should demonstrate how the selected legal materials are used to formulate legal arguments, identify legal principles, evaluate inconsistencies, or develop proposed legal solutions.

Table 1. Operational Definition of Research Variables

Variable	Variable	Indicator	Scale
Digital Court Implementation (X)	Electronic Filing	Ease of electronic case registration	Likert (1-5)
	Electronic Payment	Electronic Payment	Likert (1-5)
	Electronic Summons	Electronic Summons	Likert (1-5)
	Electronic Litigation	Electronic Litigation	Likert (1-5)
	Digital Document Management	Digital Document Management	Likert (1-5)
	Information Accessibility	Information Accessibility	Likert (1-5)
Judicial Efficiency (Y)	Case Processing Time	Speed of dispute resolution	Likert (1-5)
	Administrative Efficiency	Simplicity of court administration	Likert (1-5)
	Cost Efficiency	Reduction of litigation costs	Likert (1-5)
	Transparency	Openness of judicial procedures	Likert (1-5)
	Accessibility	Ease of	Likert

		accessing court services	(1–5)
	User Satisfaction	Overall satisfaction with digital courts	Likert (1–5)

To improve instrument validity, all questionnaire items were adapted from internationally published studies and subsequently reviewed by experts in procedural law, judicial administration, and quantitative research methodology. Before the main survey, the questionnaire was pilot-tested with 220 respondents who met the study's inclusion criteria. The pilot assessment was used to evaluate item clarity and preliminary validity and reliability, and items that did not meet the predefined criteria were revised or removed before the final data collection. Reliability is recommended to be assessed using Cronbach's Alpha, with coefficients exceeding 0.70 indicating acceptable reliability.

The questionnaire structure is summarized in Table 2.

Table 2. Questionnaire Structure

Variable	Code	Number of Item
Digital Court Implementation	DCI1–DCI12	12
Judicial Efficiency	JE1–JE12	12
Total		24 item

Primary data should be collected through direct distribution of questionnaires, either online or offline, while secondary data may be obtained from official publications of the Supreme Court of Indonesia, annual judicial reports, judicial statistics, and relevant legislation concerning digital court administration.

Data were analyzed using IBM SPSS Statistics version 29. Descriptive statistics were first calculated, followed by item validity and internal consistency assessments. Prior to multiple regression analysis, the data were examined for normality, multicollinearity, and heteroscedasticity using predefined statistical criteria. Pearson correlation and multiple linear regression were subsequently conducted to examine the relationships between the

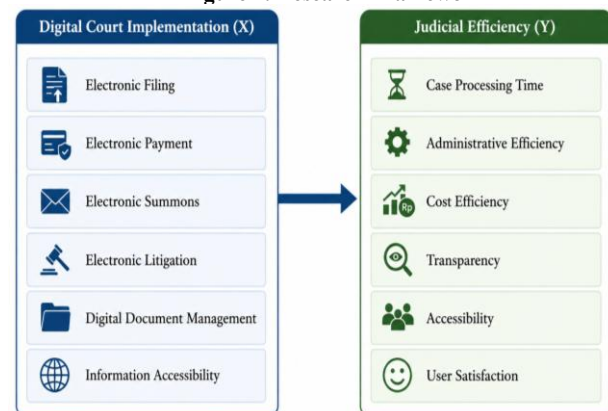
dimensions of digital court implementation and judicial efficiency (Ariwijaya & Samputra, 2021; Oltra, 2021). Descriptive statistics are first employed to summarize respondent characteristics and research variables. Instrument quality is then evaluated through validity and reliability testing. Before hypothesis testing, the data should satisfy the assumptions of normality, multicollinearity, heteroscedasticity, and linearity. The analytical procedures used in this study are presented in Table 3.

Table 3. Statistical Analysis Procedures

Research Objective	Statistical Technique
Describe respondent characteristic	Descriptive Statistics
Test questionnaire validity	Pearson Product Moment
Test questionnaire reliability	Cronbach's Alpha
Test normality	Kolmogorov–Smirnov Test
Test multicollinearity	Variance Inflation Factor (VIF)
Test heteroscedasticity	Glejser Test
Examine variable relationships	Pearson Correlation
Test research hypotheses	Multiple Linear Regression
Determine explanatory power	Coefficient of Determination (R^2)

The conceptual relationship between the variables investigated in this study is illustrated in Figure 1.

Figure 1. Research Framework



All research procedures should comply with accepted principles of research ethics. Participation must be voluntary, informed consent obtained from every respondent,

confidentiality maintained through anonymization of responses, and all collected data used exclusively for academic purposes. These procedures ensure transparency, reproducibility, and integrity throughout the empirical legal research process.

3. RESULTS AND DISCUSSION

A. Results.

1) Respondent Characteristics

A total of 220 respondents participated in this study. The respondents consisted of judges, court clerks, advocates, and court users who had experience using Indonesia's e-Court and e-Litigation systems.

Table 4. Respondent Characteristics

Characteristics	Frequency	Percentage
Gender		
Male	132	60.0
Female	88	40.0
Profession		
Judges	48	21.8
Court Clerks	52	23.6
Advocates	63	28.6
Court Users	57	25.9
Experience Using e-Court		
Less than 1 year	34	15.5
1–3 years	96	43.6
More than 3 years	90	40.9

The respondent profile reflects participation from four stakeholder groups directly involved in or exposed to Indonesia's digital court system, namely judges, court clerks, advocates, and court users.

2) Descriptive Statistics

Table 5. Descriptive Statistics

Variable	Mean	SD	Category
Electronic Filing	4.42	0.53	Very High
Electronic Payment	4.36	0.59	High

Electronic Summons	4.18	0.66	High
Electronic Litigation	4.24	0.61	High
Digital Document Management	4.11	0.70	High
Information Accessibility	4.39	0.56	Very High
Judicial Efficiency	4.31	0.51	High

The descriptive analysis indicates that respondents generally perceived the implementation of digital courts positively. Electronic Filing obtained the highest mean score ($M = 4.42$), indicating that respondents perceived electronic case registration as the most favorably implemented dimension of the digital court system.

3) Validity Test

All questionnaire items produced Pearson correlation coefficients ranging from 0.543 to 0.882, exceeding the critical value ($r\text{-table} = 0.132$; $n = 220$; $\alpha = 0.05$).

Table 6. Validity Test

Variable	Number of Item	Valid Item
Digital Court Implementation	12	12
Judicial Efficiency	12	12

All questionnaire items met the predefined item-level correlation criterion and were therefore retained for subsequent analysis; however, these results should be interpreted as evidence of item-level validity rather than comprehensive construct validity.

4) Reliability Test

Table 7. Reliability Test

Variable	Cronbach's Alpha
Digital Court Implementation	0.926
Judicial Efficiency	0.913

5) Classical Assumption Tests

Normality

Kolmogorov–Smirnov

Sig. = 0.187

The Kolmogorov–Smirnov test was not statistically significant ($p = 0.187$), indicating insufficient evidence to reject the assumption of normally distributed residuals.

Table 8. Multicollinearity

Variable	Tolerance	VIF
Electronic Filing	0.562	1.78
Electronic Payment	0.601	1.66
Electronic Summons	0.648	1.54
Electronic Litigation	0.590	1.69
Digital Document Management	0.676	1.48
Information Accessibility	0.613	1.36

The VIF values ranged from 1.36 to 1.78 and the corresponding tolerance values exceeded 0.50, indicating no substantial multicollinearity among the predictors.

Heteroscedasticity

Glejser Test

All significance values ranged between 0.163–0.731, indicating no heteroscedasticity.

6) Correlation Analysis

Table 9. Pearson Correlation

Variables	R	Sig.
Digital Court Implementation – Judicial Efficiency	0.781	0.000

The Pearson correlation indicates a strong positive association between the measured dimensions of digital court implementation and judicial efficiency ($r = 0.781$, $p < 0.001$), although the possibility of common-method and construct-overlap effects should be considered when interpreting this relationship.

7) Multiple Linear Regression

Table 10. Model Summary

R	R ²	Adjusted R ²
---	----------------	-------------------------

0.804	0.647	0.637
-------	-------	-------

Tabel 11. ANOVA

F	Sig.
66.742	0.000

The regression model was statistically significant.

Table 11. Coefficient Test

Variable	B	T	Sign
Constant	0.912	2.861	0.005
Electronic Filing	0.281	4.882	0.000
Electronic Payment	0.163	4.882	0.004
Electronic Summons	0.121	2.214	0.028
Electronic Litigation	0.184	3.295	0.001
Digital Document Management	0.109	2.006	0.046
Information Accessibility	0.247	4.346	0.000

Electronic Filing produced the strongest standardized coefficient.

B. Discussion

The empirical findings indicate that Indonesia's digital court implementation significantly improves judicial efficiency. The regression model accounted for 64.7% of the variance in the measured judicial efficiency score, indicating substantial explanatory power within the sampled respondents; however, this result should not be interpreted as evidence of a causal determination of institutional judicial performance.

Electronic Filing emerged as the strongest statistical predictor of judicial efficiency ($\beta = 0.281$, $p < 0.001$). This association may reflect respondents' perception that electronic case registration reduces administrative complexity and facilitates the initiation of court proceedings. The positive association between Electronic Filing and judicial efficiency can be interpreted through the digital governance perspective, particularly the mechanism of administrative

simplification (Rocha et al., 2026). By transferring case-registration processes from manual to electronic procedures, digitalization may reduce transaction costs and procedural complexity. The present findings therefore provide empirical support for the proposition that digital administrative mechanisms can be associated with improved perceptions of public-sector service efficiency, while also indicating that the strength of this association varies across specific digital court functions (Blackham, 2022).

Information Accessibility also demonstrated a significant contribution to judicial efficiency (Donoghue, 2017; Fabri, 2021). Easy access to case information, litigation schedules, electronic documents, and procedural guidance enables litigants to monitor judicial proceedings more effectively while reducing uncertainty regarding court procedures. Increased transparency consequently strengthens public trust and supports accountable judicial administration.

Electronic Litigation and Electronic Payment likewise contributed positively to judicial efficiency. These findings suggest that integrating digital services throughout the litigation process reduces procedural costs, improves communication between litigants and courts, and shortens overall dispute resolution time. The results reinforce Institutional Performance Theory, which emphasizes that organizational effectiveness depends upon the successful integration of technological capability, administrative management, and human resource competence (Chin et al., 2021).

Although all indicators significantly influenced judicial efficiency, Digital Document Management produced the smallest standardized coefficient (Chin, 2021; Velicogna, 2018). This result implies that document management systems still require further institutional development. Several practical challenges remain, including interoperability among judicial information systems, standardization of electronic evidence management, cybersecurity protection, and long-term digital archiving.

Future policy should prioritize strengthening the digital court functions most strongly associated with perceived judicial efficiency, particularly electronic filing and information accessibility, while further research should examine whether these associations translate into measurable improvements in objective court-performance indicators implementation (Jaya et al., 2024). However, digital transformation should not be viewed solely as technological modernization. Sustainable improvements in judicial performance require continuous investment in infrastructure, comprehensive capacity building for judges and court personnel, and ongoing evaluation of institutional readiness (Bhat, 2019). These complementary measures are essential to ensure that digital innovation translates into lasting improvements in judicial quality and access to justice.

4. CONCLUSION

This study aimed to examine the extent to which the implementation of Indonesia's digital court system improves judicial efficiency as measured through institutional performance indicators. The findings demonstrate a significant positive association between digital court implementation and perceived judicial efficiency, with the regression model explaining 64.7% of the variance in the measured judicial efficiency score. However, the findings should be interpreted as evidence of stakeholder perceptions rather than direct evidence of causal improvements in objective court performance. Among the dimensions examined, electronic filing and information accessibility exerted the strongest influence on judicial efficiency, indicating that streamlined case registration procedures and transparent access to judicial information play a central role in enhancing court performance. The findings suggest that digital transformation is associated with perceived improvements in judicial efficiency, with Electronic Filing and Information Accessibility emerging as the strongest statistical predictors among the dimensions examined.

From a legal perspective, the results strengthen the argument that the continued development of Indonesia's digital justice system is consistent with the broader objectives of judicial reform, particularly in promoting access to justice, accountability, procedural efficiency, and public confidence in judicial institutions. Nevertheless, the comparatively lower contribution of digital document management suggests that technological innovation must be accompanied by stronger institutional capacity, integrated information systems, standardized digital procedures, and continuous professional development for judicial personnel. Future policy should therefore prioritize the enhancement of digital infrastructure, cybersecurity, and system interoperability while establishing regular performance evaluations to ensure that ongoing digital reforms generate sustainable improvements in judicial efficiency and the overall quality of justice delivery.

AUTHOR CONTRIBUTIONS

Author 1: Conceptualization, Methodology, Investigation, Formal Analysis, Writing – Original Draft, Project Administration.

Author 2: Methodology, Investigation, Data Curation, Validation, Writing – Review & Editing.

Author 3: Formal Analysis, Visualization, Data Curation, Writing – Review & Editing.

Author 4: Investigation, Resources, Validation, Writing – Review & Editing.

Author 5: Conceptualization, Methodology, Supervision, Writing – Review & Editing.

Author 6: Investigation, Data Curation, Validation, Writing – Review & Editing.

Author 7: Investigation, Resources, Formal Analysis, Writing – Review & Editing.

Author 8: Methodology, Validation, Visualization, Writing – Review & Editing.

Author 9: Supervision, Project Administration, Validation, Writing – Review & Editing.

FUNDING

This research received no external funding.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

- Adeleye, J. T., Ahmed, R. K., Nyman-Metcalf, K., & Draheim, D. (2021). E-Court transition process: Identifying critical factors and recommendations for developing countries. In *International Conference on Electronic Governance and Open Society* (pp. 305–317). Springer. https://doi.org/10.1007/978-3-031-04238-6_23
- Ahmed, R. K., Muhammed, K. H., Pappel, I., & Draheim, D. (2021). Impact of e-Court systems implementation: A case study. *Transforming Government: People, Process and Policy*, 15(1), 108–128. <https://doi.org/10.1108/TG-01-2020-0008>
- Amarini, I., Saefudin, Y., Kartini, I. A., Marsitningsih, M., & Ismail, N. (2023). Digital transformation: Creating an effective and efficient court in Indonesia. *Legality: Jurnal Ilmiah Hukum*, 31(2), 266–284. <https://doi.org/10.22219/ljih.v31i2.28013>
- Ariwijaya, A. R., & Samputra, P. L. (2021). Evaluasi kebijakan peradilan elektronik (e-Court) Mahkamah Agung Republik Indonesia. *Jurnal Hukum & Pembangunan*, 51(4). <https://doi.org/10.21143/jhp.vol51.no4.3303>
- Bhat, P. I. (2019). *Quantitative legal research*. In *Idea and Methods of Legal Research*. Oxford University Press. <https://doi.org/10.1093/oso/9780199493098.003.0013>
- Blackham, A. (2022). When law and data collide: The methodological challenge of conducting mixed methods research in law. *Journal of Law and Society*, 49(S1),

- S87–S104.
<https://doi.org/10.1111/jols.12373>
- Chin, J. M., & Zeiler, K. (2021). *Replicability in empirical legal research*. Annual Review of Law and Social Science, 17, 239–260.
<https://doi.org/10.1146/annurev-lawsocsci-121620-085055>
- Chin, J. M., DeHaven, A. C., Heycke, T., Holcombe, A. O., Mellor, D. T., Pickett, J. T., Steltenpohl, C. N., Vazire, S., & Zeiler, K. (2021). Improving the credibility of empirical legal research: Practical suggestions for researchers, journals and law schools. *Law, Technology and Humans*, 3(2), 107–132.
<https://doi.org/10.5204/lthj.1875>
- Djuraev, I., Baratov, A., Khujayev, S., Yakubova, I., Rakhmonova, M., Mukumov, B., & Abdurakhmanova, N. (2025). The impact of digitization on legal systems in developing countries. *Qubahan Academic Journal*, 5(1), 81–117.
<https://doi.org/10.48161/qaj.v5n1a1246>
- Djamaludin, D., Aziz, M. F., Ar-Rasyid, Y., & As-Sayyis, I. A. (2023). Assessing the impact of electronic court systems on the efficiency of judicial processes in the era of digital transformation. *Volkgeist: Jurnal Ilmu Hukum dan Konstitusi*, 6(1), 85–104.
<https://doi.org/10.24090/volkgeist.v6i1.8082>
- Donoghue, J. (2017). *The rise of digital justice: Courtroom technology, public participation and access to justice*. The Modern Law Review, 80(6), 995–1025.
<https://doi.org/10.1111/1468-2230.12300>
- Fabri, M. (2021). Measuring court performance: From judicial efficiency to the quality of justice. In *Research Handbook on Justice and Court Administration*. Edward Elgar Publishing.
<https://doi.org/10.4337/9781789905151>
- Frade, C., Fernando, P., & Conceição, A. F. (2020). The performance of the courts in the digital era: The case of insolvency and restructuring proceedings. *International Insolvency Review*, 29(3), 346–359.
<https://doi.org/10.1002/iir.1390>
- Heeks, R. (2021). From digital divide to digital justice in the Global South: Conceptualising adverse digital incorporation. *Information Technology for Development*.
<https://doi.org/10.48550/arXiv.2108.09783>
- Jaya, I. B., Tanoto, I., Luthfi, M. A., Hamidah, A. N., Sholihah, A. M., Fadillah, I. S., Irsyad, M. F., Frianka, A., Halimatussyadiah, H., Yasar, M. M., Agustiani, S., Andrian, F. D., & Nuratu, F. S. (2024). Inovasi teknologi peradilan modern (E-Court) Mahkamah Agung Republik Indonesia dalam menjawab tantangan global. *Faedah: Jurnal Hasil Kegiatan Pengabdian Masyarakat Indonesia*, 2(3).
<https://doi.org/10.5902/faedah.v2i3.947>
- Katsh, E., & Rabinovich-Einy, O. (2017). *Digital justice: Technology and the Internet of disputes*. Oxford University Press.
<https://doi.org/10.1093/acprof:oso/9780190464585.001.0001>
- Lahilote, H. S., Soleman, F., Hasan, F., Basri, R., & Lahilote, A. (2025). Judicial digitalization in Central Indonesia: A study of e-Court and e-Litigation implementation in courts. *Syariah: Jurnal Hukum dan Pemikiran*, 24(2).
<https://doi.org/10.18592/sjhp.v24i2.13879>
- Natapatria, G. A. F., Hutomo, I. R., & Suryandari, W. D. (2025). Digitalization of judiciary through e-Court implementation to improve the effectiveness and efficiency of Indonesia's judicial system. *Greenation International Journal of Law and Social Sciences*, 3(3), 1247–1255.
<https://doi.org/10.38035/gijlss.v3i3.616>
- Piana, D. (2022). Digital justice and judicial governance in Europe: Challenges for

- accountability and efficiency. In *Research Handbook on Digital Transformations*. Edward Elgar Publishing. <https://doi.org/10.4337/9781800379954>
- Pitaloka, D. (2025). E-court: A digital disruption in law enforcement and its impact on judicial efficiency in Indonesia. *Ex Aequo Et Bono Journal of Law*, 2(2), 82–95. <https://doi.org/10.61511/eaebjol.v2i2.2025.1404>
- Rocha, C., Martins, J., Carvalho, J. Á., Suxberger, A., & Soares, D. (2026). The impact of court case management systems on judicial efficiency. *International Journal for Court Administration*, 16(3). <https://doi.org/10.36745/ijca.637>
- Ruzayana, Z., Salsabila, U., Hidayah, R. N., & Firsha, M. (2025). Judicial system digitalization: The constitutionality of the e-Court system in Southeast Asia. *Hakamain: Journal of Sharia and Law Studies*, 4(1), 127–138. <https://doi.org/10.57255/hakamain.v4i1.1343>
- Sourdin, T. (2021). Judge v. robot? Artificial intelligence and judicial decision-making. *University of New South Wales Law Journal*, 44(4), 1114–1133.
- Susskind, R. (2019). *Online courts and the future of justice*. Oxford University Press. <https://doi.org/10.1093/oso/9780198838364.001.0001>
- Velicogna, M. (2018). Use of information and communication technologies in European judicial systems. *Computer Law & Security Review*, 34(1), 129–142. <https://doi.org/10.1016/j.clsr.2017.05.026>
- Yoesuf, J. P., Al Azhar, F. R., Elviyanti, S., & Salamah, A. (2023). Strengthening the implementation of e-Court-based judiciary as a legal protection in the implementation of e-litigation-based trials. *Jurnal Hukum dan Peradilan*, 12(2), 293–318. <https://doi.org/10.25216/jhp.12.2.2023.293-318>
- Zhang, J., & Chen, Y. (2020). Can online courts promote access to justice? A case study of the Internet Courts in China. *Computer Law & Security Review*, 39, 105461. <https://doi.org/10.1016/j.clsr.2020.105461>