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Original Article

Smart Technologies: Innovation for an Efficient Legal System

Tecnologías inteligentes: Innovación para un sistema legal eficiente

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Abstract

The topic of smart technologies as a mechanism of innovation for an efficient legal system has gained relevant importance in recent years, particularly as a result of the spread of COVID-19, which accelerated digital interaction among the actors using the legal system. Since that date, there has been significant research information on the subject, mainly in the most developed countries in the world, such as China and the United States. For this reason, the purpose of this research is to examine the impact and repercussions of intelligent technologies on the efficiency of the legal system, considering studies carried out in the last six years. Forty reliable articles were analyzed, all referring to the subject under review. The theory of Masbernat & Pasquino (2023) in the sense that we are facing a paradigm shift is highlighted, as well as the studies of Papagianneas & Junius (2023) and Shi et al. (2021). The literature was analyzed in detail using articles from Scopus, Web of Science, EBSCO, vLex, ScienceDirect, in the time interval from 2018 to November 2023, in order to analyze the scientific production in relation to smart legal technologies.

Keywords: Legal technologies, artificial intelligence, legal system.

Resumen

La temática referida a tecnologías inteligentes como mecanismo de innovación para un sistema legal eficiente ha cobrado relevante importancia en los últimos años, particularmente, a raíz de la propagación del COVID-19, lo que aceleró la interacción digital entre los actores usuarios del sistema legal, encontrándose a partir de dicha fecha importante información investigativa al respecto, principalmente en los países más desarrollados del planeta, tales como China y Estados Unidos, de ahí que el propósito de esta investigación es examinar el impacto y las repercusiones de las tecnologías inteligentes en la eficiencia del sistema legal, considerando estudios realizados en los últimos seis años. Se analizaron 40 confiables artículos, todos referidos al tema objeto de revisión; se destaca la teoría de Masbernat & Pasquino (2023) en el sentido que nos encontramos frente a un cambio de paradigma; así como los estudios de Papagianneas & Junius (2023) y Shi *et al*. (2021). Se analizó pormenorizadamente la literatura utilizando artículos de Scopus, Web of Science, EBSCO, vLex, ScienceDirect, en el intervalo de tiempo que abarca desde el año 2018 hasta noviembre de 2023, para analizar la producción científica en relación a tecnologías legales inteligentes.

Palabras clave: tecnologías legales, inteligencia artificial, sistema legal.

INTRODUCCIÓN

January 1st, 2001 marked the beginning of the 21st century, which will end on December 31st, 2100. At the beginning of this century, the interconnection of the nations of the world at the cultural, political, economic and, above all, technological levels, has been strengthened exponentially, which, although it began to grow stronger in the latter part of the twentieth century, has been enhanced in the present century.

Technological advances have revolutionized the various fields of knowledge and legal systems have not been oblivious to the dizzying paradigm shifts that have shaped scientific activity (Gómez-Diago, 2022). Thus, since 2017 it has been stated that the debate on the application of artificial intelligence within the legal field has become increasingly active (Ma, 2022), suggesting that cognitive computing is increasingly present in the legal field, offering the necessary tools in order to achieve the effectiveness and efficiency of the legal system in different countries. In short, what is sought is the optimization of the judicial system by seeking the optimization of the decision making algorithm (Zhang *et al*., 2022a).

One of the innovations generated by the technological progress in the legal field, in the most developed countries, is undoubtedly the implementation of electronic justice platforms, which allow procedural decisions and processes to be codified in the digital judicial work environment (Reiling & Contini, 2022). Even in more developed countries such as the People's Republic of China, the government of Xi Jinping has introduced various reforms to the justice system, seeking to integrate information technology into the judicial system, with the aim of making the system "fairer", favoring impartiality (Papagianneas & Junius, 2023). This has improved access to justice, cost savings and faster resolution of conflicts (Wei *et al*., 2022).

However, it is not only the Chinese government that is engaged in the innovative development of its legal system by leveraging smart technologies; this is also a major issue in the United States, formalized through an executive order endorsing artificial intelligence, issued in 2019 by former President Donald Trump (Mania, 2023). On the other hand, mandatory social isolation imposed in several countries as a consequence of COVID-19 also played an important role in the innovation of the legal system. This period of health emergency has highlighted the potential in order to consolidate transparency in the administration of justice forcing us to look for digital identity tools (Townend & Magrath, 2021).

Therefore, smart technologies play an important role in judicial litigation (Barysė & Sarel, 2023). However, it is necessary to specify that such technologies impose great challenges, since not everyone can access them on equal terms, given the technological limitations, distrust or lack of knowledge. Hence, some researchers of the subject under study ask themselves the question of whether intelligent technologies can be considered as "privileged legal advice" (Stockdale & Mitchell, 2022), which is still not entirely clear, because although intelligent technologies have been able to optimize the process in terms of time and costs, there are people who oppose automation.

A prominent theory on the potential impact of intelligent technologies on the administration of justice is the theory of weak AI and strong AI, which explores the theoretical difference between weak AI, efficient in specific tasks such as machine learning and neural networks, and strong AI, which could surpass human capacity. It is stressed that the implementation of AI in the system would facilitate fundamental values such as speed and legal certainty, but could also pose threats to privacy, equity, and freedom of individuals, especially in societies with deep structural disparities such as those in Latin America (Segura, 2023).

Another theory relevant to the variables under study is the Theory of Automation of Mental Functions. This theory argues that machines can perform almost any human task through the mechanization of mental functions, which enhances their capabilities. As a consequence, the value of human intellectual work decreases, and humans no longer have a monopoly on knowledge (Valentini, 2017).

The rationale for this study lies in the need to understand the impact of smart technologies in the legal field, as it is necessary to closely examine their positive and negative effects, as well as to provide information to the legal professional and other actors about the incorporation of smart technologies within the legal context. It also

seeks to contribute to the development and continuous improvement of legal systems that are more efficient, equitable and adapted to the demands of the technological era.

Our overall goal is to analyze the impact and repercussions of smart technologies on the efficiency of the legal system, considering studies conducted in the last six years.

One of the specific objectives is to evaluate the impact of intelligent technologies on the efficiency of the judicial system. To this end, we will analyze how the implementation of these technologies has improved the speed and accuracy of judicial decision-making, and examine case studies from developed countries such as China and the United States in order to identify good practices and lessons learned.

Another specific objective is to identify and analyze the challenges and limitations of the adoption of smart technologies in the legal system. Technological, social and ethical barriers that may impede the equitable adoption of these technologies will be investigated, and privacy, security and accessibility concerns will be assessed, proposing possible solutions to mitigate these challenges.

The anticipated contribution of this study will facilitate decision making by consolidating a wide range of research on the subject, offering guidance toward possible solutions to uncertainties that have not been addressed in individual papers. It will also allow evaluation of the effect or impact of a global approach to the topic of interest.

METHOD

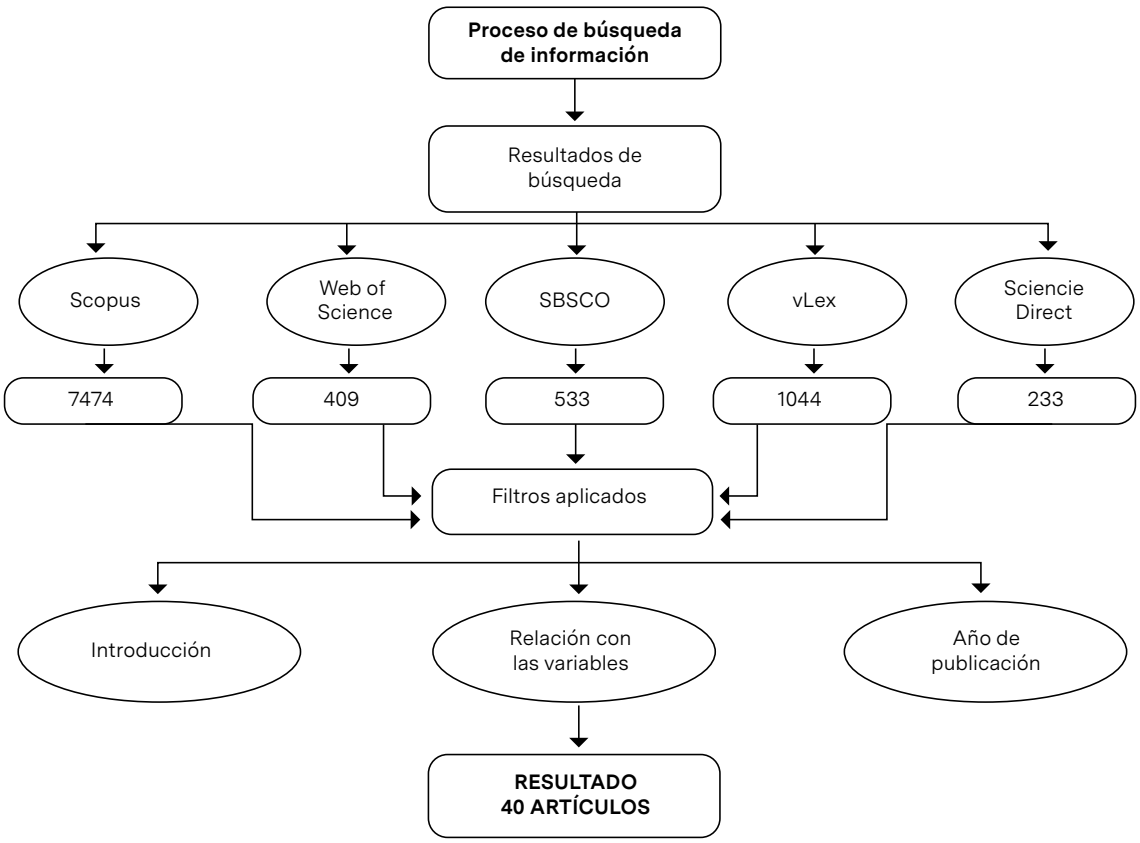
Literature reviews play a crucial role by judiciously merging both recent and previous knowledge. They are also valuable in providing historical context, identifying gaps in current knowledge, and proposing future directions for research (de Oliveira Vidal & Fukushima, 2021). Hence, the importance of the literature review lies in the fact that, without being original, it gathers the most significant data on a particular topic (Guirao-Goris *et al.*, 2008).

The review topic addressed was "Smart Technologies: Innovation for an Efficient Legal System." From this theme, a general objective and specific objectives were developed to guide the literature review. This process included the formulation of strategic keywords, resulting in the creation of search strings designed to effectively retrieve articles relevant to the topic of interest. In addition, specific filters were implemented to refine the information obtained, allowing for more effective management of the volume of results and ensuring that the review focused on sources directly relevant to the stated objectives.

To illustrate the striking difference achieved by applying filters, the first search in the specialized journal Scopus using the expression "intelligent technologies" in Spanish identified 13 articles, of which only 3 were open access. However, when reviewing these documents, none of them were related to the central theme of the study. Subsequently, a search was performed in English, using the expression "smart AND technologies", obtaining a total of 53,973 results, of which 38,636 were open access. However, upon examining some of them, it was verified that they addressed various topics related to artificial intelligence, but none of those that were downloaded were specifically linked to the legal field, which was the focus of our research.

Subsequently, in order to achieve optimal precision, a search was performed with the expression "legal technology" in Spanish. However, this search did not yield any relevant document, except in the journal vLex. Therefore, we proceeded to search in English ("Legal technology"), obtaining significant results: 7,474 open access papers in Scopus, 409 in Web of Science, 533 in EBSCO, 1044 in vLex and 233 in ScienceDirect. After applying more rigorous filtering criteria, which included a thorough review of each paper's introduction, relationship to the study variable and year of publication, the selection was refined to a total of 40 relevant papers.

Figure 1.
Diagram regarding the search for information:



It is relevant to note that most of the texts found date from 2017 onwards, a trend that is explained by the growing interest among scientists towards ICT since 2014 (Mania, 2023a), as well as in artificial intelligence; mainly in nations with greater technological advancement in the world, such as China and the United States.

For the translation of the texts identified in order to obtain their summaries, the Google translation service was used. This resource was used strategically to ensure consistency and fidelity in the interpretation of the contents, allowing us to evaluate the integrity of the texts. This methodology was essential to discard documents that were unrelated to the subject matter or addressed issues that, while potentially interesting, did not directly support the research rationale or meet the stated objectives. This meticulous approach ensured the relevance and pertinence of the information selected for the research.

It is essential to emphasize that, in order to guarantee an optimal standard of academic excellence, a selection procedure was implemented that implied discarding those documents with less than ten citations. Priority was given to the inclusion of articles from highly specialized scientific journals, with a particular focus on the sources available in Scopus. Access to this platform was facilitated through the MyLOFT application, which was accessed through the Virtual Library of the Universidad César Vallejo (UCV) in Peru. After applying specific filtering criteria in the Scopus journal, a total of 40 scientific articles directly related to the subject of the study were obtained, thus guaranteeing the rigor and relevance of the selected material.

The exhaustive search for articles, whose publication dates spanned the years 2018 to 2024, occurred during the months of November 2023 to June 2024. This time period allowed for a detailed analysis of the different historical

moments addressed in the debate. Despite having reviewed a total of 50 articles, we chose not to cite all of them, as some were discarded due to their redundancy. It should be noted that approximately 90% of the articles found in Scopus were duplicated in the Web of Science journal. Given this coincidence, the decision was made to discontinue the search, although this step may be perceived as arbitrary. However, this choice was made with the aim of maintaining a manageable number of articles, resulting in a total of 40 selected.

Table 1.
Double-entry table of the methodology described in the review article:

Methodological Phase	Ditailed Description
Literature Review	A thorough search was conducted in various academic databases such as Scopus, SciELO, Web of Science, Renalyc, Ebsco, DOAJ, and Infodir Unirioja, covering from 2017 to November 2023.
Formulation of Keywords	Strategic keywords were formulated in Spanish and English (“tecnologías inteligentes”, “smart AND technologies”, “tecnología legal”, “Legal technology”).
Application of Search strings	Search strings were designed to retrieve articles relevant to the topic of interest.
Initial Filtering	Language (English and Spanish) and open access filters were applied, and introductions were reviewed to ensure relevance to the topic of study.
Selection of Articles	Articles with more than 10 citations and published in specialized journals were prioritized, selecting a total of 40 relevant articles after initial filtering.
Translation and Text Analysis	Translation services were used for the abstracts and the relevance and completeness of the texts were evaluated to discard documents not directly related to the topic.

Identification of Gaps and trends	Gaps in current knowledge were identified and important trends in the recent literature about smart technologies applied to the legal system were highlighted.
Final Review and Consolidation	A total of 50 articles were reviewed and consolidated, of which only 40 were cited due to redundancy, to provide clear guidance and solutions to identified uncertainties.

RESULTS

Whalen (2022), se centra en el impacto Whalen (2022) focuses on the impact of technological advances on the legal system, classifying technologies according to their appropriateness and involvement in legal activities. He proposes a reflection on whether these technologies represent a threat or a benefit to justice. Whereas, Mareschal *et al*. (2021) discuss the convergence of smart technologies and their impact on the digital revolution, highlighting the need for effective integration of hardware, software, networks and physical processes for smart systems to function properly. In that sense, while Whalen analyzes the effects and appropriateness of technology in the legal context, Mareschal *et al*. address the integration and effectiveness of technology in a broader sense, without focusing specifically on the legal field.

On the other hand, Rehder *et al*. (2021) explore how digitization affects labor law and industrial relations, highlighting the growing role of legal technologies. However, Gowder (2018) examines how the promotion of the rule of law can empower ordinary citizens against the powerful, arguing that technology must be transformative to facilitate collective action. This evidences that Rehder et al. focus on the impact of digitization on a specific area of law (labor), whereas Gowder discusses a broader approach, advocating for technology as a tool to balance power in justice.

Also, De of City (2019) discusses the gap between legal rights and exercised rights, suggesting that legal technology does not automatically guarantee better access to justice. But, Wang (2020), compares legal technology models in the United States and China, highlighting how both countries use AI in different ways due to their political and judicial contexts. In that sense, while De of City criticizes legal technology for not fully closing the gap in access to justice, Wang compares the implementation of legal technology in different judicial systems, focusing on cultural and political differences.

In addition, Soukupová (2021) examines the use of artificial intelligence in legal technology, highlighting risks such as technical opacity and algorithmic biases. Whereas Pashentsev (2020) highlights how digitization is transforming social relations and the perception of law, with significant implications for legislation. This implies that Soukupová focuses on the specific risks of AI in legal technology, whereas Pashentsev examines the broader impact of digitization on legislation and social perception.

Likewise, Barnett & Treleaven (2018) analyzed how disruptive technologies such as AI and blockchain are transforming legal services, especially in dispute resolution. In turn, Ma (2022) discussed the progressive introduction of AI in the legal field, highlighting its potential to improve efficiency and standardization in legal processes. That is, both studies highlight the influence of technology on legality, but Barnett & Treleaven focus on the transformation of legal services through disruptive technologies, while Ma emphasizes the efficiency and standardization that AI can bring to the legal system. In addition, , Rowden & Wallace (2018)

analyzed the impact of videoconferencing in courts, suggesting adjustments to maintain the authority and perception of judges and studied a specific aspect (videoconferencing) and its impact on court dynamics.

The compared citations show diverse perspectives on the impact of technology in the legal field, from the appropriateness and risks of AI to the benefits in case management and the influence on labor relations. While all address the intersection between technology and law, they differ in their focus and scope, ranging from broad analyses of digitization to specific studies on the implementation of disruptive technologies in judicial processes.

In reference to the Impact of Technology and AI on the Judicial System we have Reiling & Contini (2022) and Heath (2019) who explore the need to improve the efficiency and quality of the judicial system through technology. Reiling & Contini focus on a three-dimensional judicial performance scale, while Heath highlights the digitization of judicial processes to improve access to justice. Likewise, Segura (2023) and Chaudhary (2024) focus on the ethical challenges of AI in the judicial field. Segura stresses the importance of considering human dignity in the adoption of AI in regions with inequalities, whereas Chaudhary addresses the need for explainability in AI to ensure transparency and responsibility in judicial decisions. Also, Münch & Ferraz (2024) and Lopes (2024) discuss how AI can both improve and perpetuate problems in the judicial system. Münch & Ferraz discuss how AI artifacts in Brazil have perpetuated patterns of litigiousness, and Lopes focuses on reducing judicial bias through AI, although cautioning against transparency problems.

Regarding digital transformation and judicial efficiency, Townend & Magrath (2021) and Papagianneas & Junius (2023) discuss digital transformation in specific judicial contexts. Townend & Magrath look at changes in courts in England and Wales due to the pandemic, suggesting that technology can improve transparency and accountability, but also presents challenges in privacy. Papagianneas & Junius analyze the digitization of the judicial system in China, highlighting the difference in how the West and China perceive automation in terms of fairness and justice. Similarly, Wei *et al*. (2022) introduce an intelligent trial system designed to handle the entire judicial process, highlighting the efficiency and fairness it can provide, albeit with limitations in complex cases.

Also, in reference to perspectives on AI and human rights, Corvalán (2018) and Masbernat & Pasquino (2023) address the interaction between AI and human rights in the context of justice. Corvalán highlights the importance of preserving human rights in the face of the impacts of the fourth industrial revolution, while Masbernat & Pasquino discuss how AI challenges established legal categories, suggesting the need for a thorough revision of legal concepts. Likewise, Fine & Marsh (2024) examine people's trust in the application of AI in the judicial system, emphasizing that trust in this technology is influenced by the perception of judges and the need for ethical guidelines.

Concerning the perception and acceptance of technology, we have Barysė (2022) and Barysė & Sarel (2024) who explored attitudes towards technology in the courts, noting that perceived usefulness and trust in technology are key factors for its acceptance. In addition, they discuss how automation may be seen as fairer at some stages of the judicial process, but less so at others, especially by legal professionals.

Finally, in relation to access to justice and equity, Rostain (2019) and Hagan (2019) stand out, both of whom stress the importance of designing technologies that truly empower the disadvantaged, emphasizing that technological tools must be complemented with human assistance and designed with the participation of end users to be effective and equitable. In summary, comparative studies address the impact of technology and AI from various perspectives: improving judicial efficiency and quality, ethical challenges, digital transformation, preservation of human rights, and the perception and acceptance of the technology. While some studies focus on the potential benefits, others warn about the risks and the need for careful and ethical approaches in implementing these technologies in the judicial system.

On the other hand, in the overview on the technological revolution in Justice, Daño & Prato (2019) highlight the importance that the true technological revolution in justice will only be achieved when people are recognized as active users of technology. They propose participatory and democratic mechanisms to evaluate new technologies, suggesting that

the adoption of these tools should be inclusive and focused on the needs of users. Likewise, Tolou-Shams *et al*. (2022) offer an empirical view on the use of videoconferencing in juvenile courts and detention centers, proposing the expansion of services such as family television and telepsychiatry. Their recommendations are aimed at improving the infrastructure and implementation of these technologies to support juvenile justice, highlighting a practical and welfare-oriented approach. However, Shi *et al*. (2021) describe the implementation of a smart court system in China, using AI, big data, and blockchain to deliver fast and fair justice. Although these technologies have improved access and agility in resolving cases, concerns about automation, the digital gap, judicial independence, and privacy persist, highlighting the challenges of a technological revolution that does not adequately take into account human and ethical aspects.

In the use of smart technologies in the judicial context, Sichelman & Smith (2024) applied the complexity theory and graphs to show how smart technologies can improve the efficiency of the judicial system by reducing information costs and managing interactions through autonomous modules. This approach focuses on system optimization and efficiency through advanced modeling and data analysis tools. Also, Zhang *et al*. (2022b) and Zheng *et al*. (2022) focus on how advanced technologies, such as neural networks and legal recommendation models, can improve accuracy and relevance in the administration of justice. Zhang *et al*. highlight the positive impact of these technologies on criminal case classification and law recommendation, while Zheng *et al*. show how a model based on BERT and Skip-RNN outperforms traditional approaches in accuracy and relevance by integrating additional legal knowledge.

Regarding the adoption and application of technology in different contexts, Mania (2022) and Barysė (2022) focus on the adoption of technologies in legal and judicial contexts, where the perception of usefulness and trust are essential for their acceptance. Stockdale & Mitchell (2022), for their part, discuss the need to adapt the legal framework to make modern corporate practices fairer and more consistent, suggesting a similarity in the idea that both technology and legal frameworks must evolve to remain relevant and effective.

Another important aspect found is the interdisciplinarity and expansion of technology, where, Mania (2023) highlights the growing interest in legal technology since 2014, highlighting its interdisciplinary nature and the need to further investigate the economic and social impact of digitization on legal services. This study advocates a broader approach that includes analysis of industry reports to get a complete picture of the digital legal sector. Similarly, Leng *et al*. (2023) explore how artificial intelligence (AI) is creating a new paradigm in scientific research, especially in materials science. This work also highlights the interdisciplinary nature of AI and the increasing demand for data, reflecting the need for deeper collaboration among different fields of knowledge.

Concerning clarity and transparency in judicial AI, Chaudhary (2024) discusses the importance of explainable artificial intelligence (xAI) in forensics. The analysis focuses on the lack of clarity of algorithms and its impact on transparency and responsibility in judicial processes. It is argued that the adoption of xAI can significantly improve the understanding of algorithm-based decisions, which would contribute to more informed and responsible decision making. Also, in this same approach, Chaudhary aligns in part with the concerns expressed by Tamošiūnienė *et al*. (2024) about the role of AI in justice, as both studies stress the need for clarity, understanding, and the preservation of human intervention in critical processes such as judicial decision making.

DISCUSSION

The implementation of intelligent technologies in the legal system has proven to be an effective tool for improving efficiency and accuracy in judicial decision-making. Various studies and international experiences have highlighted the benefits and challenges that these technologies present in the judicial field.

First of all, the adoption of intelligent technologies has significantly improved the speed of judicial processes. In countries such as China and the United States, systems based on artificial intelligence, which have optimized case management and the resolution of legal disputes, have been implemented, reducing waiting times

and speeding up the administration of justice. These systems have proven to be effective in evaluating evidence, predicting outcomes and issuing preliminary verdicts, which has contributed to greater efficiency in the courts.

However, the adoption of these technologies also faces several challenges. One of the main issues is resistance to change on the part of legal professionals, who may be reluctant to rely on automated systems for critical decision-making. In addition, there are concerns about the privacy and security of the data handled by these systems, as well as the possibility of inherent biases in AI algorithms that could affect fairness and justice in the verdicts.

The theory of weak AI and strong AI has also been discussed in the legal context. While weak AI is limited to specific, well-defined tasks, strong AI could have the potential to surpass human capacity in legal decision making, raising significant ethical and legal concerns. The implementation of AI in the judicial system must balance efficiency and speed with the protection of fundamental rights such as privacy and fairness.

In addition, the Theory of Automation of Mental Functions suggests that the mechanization of intellectual tasks could diminish the value of human labor in the legal field. This implies that law professionals will have to adapt to new roles and responsibilities, focusing on tasks that require human judgment and interpersonal skills, while the more routine and repetitive functions could be taken over by machines.

In summary, while smart technologies offer numerous benefits to the efficiency of the legal system, it is essential to address the technological, social and ethical challenges associated with their adoption. Legal professionals, legislators and society at large must collaborate to ensure that the implementation of these technologies is done in an equitable and secure manner, ensuring that all citizens have equal access to justice.

CONCLUSIONS

The implementation of smart technologies has been shown to significantly improve the efficiency of the judicial system in terms of speed and accuracy in decision making. Case studies in first world states, such as China and the United States, reveal that the adoption of these technologies can reduce case processing times and increase the accuracy of verdicts. This positive effect finds support in the theory of weak AI and strong AI (Segura, 2023), since weak AI, efficient in specific tasks, is showing a considerable impact by improving speed and legal certainty in the judicial system. However, the potential evolution towards strong AI, which could surpass human capacity, raises serious questions about people's freedom, privacy and equality, especially in regions with deep structural disparities such as Latin America. It is therefore crucial to consider both the immediate benefits of weak AI and the potential long-term implications of strong AI to ensure an appropriate balance between efficiency and justice.

Although smart technologies improve efficiency, they can also devalue human knowledge and skills in the legal field. This has a correlate in the Theory of Automation of Mental Functions (Valentini, 2017). This automation can lead to an over-reliance on machines, limiting the ability of legal professionals to exercise critical judgment and adaptation in complex situations that are not perfectly encoded in algorithms.

It is essential to develop sound legal and ethical frameworks to guide the implementation of smart technologies in the legal system. This includes creating clear policies on data privacy protection and clarity of the algorithms. It is recommended that ongoing training of legal professionals in the use of these technologies be encouraged, ensuring that they are equipped with the necessary skills to effectively integrate them into their daily practices. In addition, collaboration among technologists, legal practitioners and policy makers is crucial to address the identified challenges and maximize the potential benefits of smart technologies in the legal system.

Contribuciones del autor:
LHFS contributed to the initial conception and design of the project, was responsible for the collection of scientific articles related to the study variables, summarizing them, and also participated in the preliminary analysis, as well as in the drafting and revision of the manuscript.
MCPM contributed to the search for information through the various scientific journals, carrying out a thorough search of the scientific theories related to the study variables, and also participated in the drafting and revision of the manuscript.

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REFERENCES

Agudo, U., Liberal, K. G., Arrese, M., & Matute, H. (2024). The impact of AI errors in a human-in-the-loop process. *Cognitive Research: Principles and Implications*, 9(1), 1–16. https://doi.org/10.1186/s41235-023-00529-3

Barnett, J., & Treleaven, P. (2018). Algorithmic Dispute Resolution-The Automation of Professional Dispute Resolution Using AI and Blockchain Technologies. *Computer Journal*, 61(3), 399–408. https://doi.org/10.1093/comjnl/bxx103

Barysė, D. (2022). People's Attitudes towards Technologies in Courts. *Laws*, 11(5), 1-28. https://doi.org/10.3390/laws11050071

Barysė, D., & Sarel, R. (2024). Algorithms in the court: does it matter which part of the judicial decision-making is automated? *Artificial Intelligence and Law*, 32(1), 117–146. https://doi.org/10.1007/s10506-022-09343-6

Chaudhary, G. (2024). Explainable Artificial Intelligence (xAI): Reflections on Judicial System. Kutafin Law Review, 10(4), 872–889. https://doi.org/10.17803/2713-0533.2023.4.26.872-889

Corvalán, J. G. (2018). Inteligencia artificial: Retos, desafíos y oportunidades - Prometea: La primera inteligencia artificial de Latinoamérica al servicio de la Justicia. *In Revista de Investigacoes Constitucionais. 5*(1), 295–316. https://doi.org/10.5380/rinc.v5i1.55334

Daño, N., & Prato, S. (2019). Editorial: The Real Technology Revolution: Technology Justice. In Development (Basingstoke. *Palgrave Macmillan*. 62(1), 1–4. https://doi.org/10.1057/s41301-019-00230-3

De of City, E. (2019). Janus-Faced Justice? The Role of Legal Technology in the Provision of Access to Justice. *Legal Information Management*, 19(01), 63–65. https://doi.org/10.1017/s1472669619000148

De Oliveira Vidal, E. I., & Fukushima, F. B. (2021). The art and science of writing a scientific review article. *In Cadernos de Saude Publica*. 37(4), 1-4. https://doi.org/10.1590/0102-311X00063121

Fine, A., & Marsh, S. (2024). Judicial leadership matters (yet again): the association between judge and public trust for artificial intelligence in courts. *Discover Artificial Intelligence, 4*(1), 1–18. https://doi.org/10.1007/s44163-024-00142-3

Gómez-Diago, G. (2022). Typologies of paradigms in communication research. A classification proposal. *Revista de Comunicacion*, 81(1), 181–194. https://doi.org/10.26441/RC21.1-2022-A9

Gowder, P. (2018). Transformative legal technology and the rule of law. *In University of Toronto Law Journal*. 68, 82–105. https://doi.org/10.3138/utlj.2017-0047

Guirao-Goris, S. J. A., Ferrer Ferrandiz, E., Enfermeria, E., & Fe, L. (2008). *The revision article* http://revista.enfermeriacomunitaria.org/articuloCompleto.php?ID=7.

Hagan, M. (2019). Participatory design for innovation in access to justice. *Daedalus*, 148(1), 120–127. https://doi.org/10.1162/DAED_a_00544

Heath, K. (2019). Digital Justice: Technology and the Internet of Disputes. *IEEE Transactions on Professional Communication, 62*(4), 398–399. https://doi.org/10.1109/TPC.2019.2947000

Leng, C., Tang, Z., Zhou, Y. G., Tian, Z., Huang, W. Q., Liu, J., Li, K., & Li, K. (2023). Fifth Paradigm in Science: A Case Study of an Intelligence-Driven Material Design. *Engineering*, 24, 126–137. https://doi.org/10.1016/j.eng.2022.06.027

Lopes, G. (2024). Artificial intelligence and judicial decision-making: Evaluating the role of AI in debiasing. *Journal for Technology Assessment in Theory and Practice*, 33(1), 28–33. https://doi.org/10.14512/tatup.33.1.28

Ma, W. (2022). Artificial Intelligence-Assisted Decision-Making Method for Legal Judgment Based on Deep Neural Network. *Mobile Information Systems, 2022*, 1–9. https://doi.org/10.1155/2022/4636485

Mania, K. (2022). The Digital Transformation of Legal Industry: Management Challenges and Technological Opportunities. *Danube*, 13(3), 209–225. https://doi.org/10.2478/danb-2022-0013

Mania, K. (2023). Legal Technology: Assessment of the Legal Tech Industry's Potential. *Journal of the Knowledge Economy*, 14(2), 595–619. https://doi.org/10.1007/s13132-022-00924-z

Mareschal, B., Kaur, M., Kharat, V., & Sakhare, S. (2021). Convergence of Smart Technologies for Digital Transformation. *In Tehnicki Glasnik*. 15(1), 1-9. https://doi.org/10.31803/tg-20210225102651

Masbernat, P., & Pasquino, V. (2023. Artificial Intelligence and its problematic impact on the Law. *Revista de Educacion y Derecho*, 28. https://doi.org/10.1344/REYD2023.28.43934

Münch, L. A. C., & Ferraz, T. S. (2024). Exploring Defuturing to Design Artificial-Intelligence Artifacts: A Systemic-Design Approach to Tackle Litigiousness in the Brazilian Judiciary. *Laws, 13*(1), 1–13. https://doi.org/10.3390/laws13010004

Papagianneas, S., & Junius, N. (2023). Fairness and justice through automation in China's smart courts. *Computer Law and Security Review*, 51, 1-13. https://doi.org/10.1016/j.clsr.2023.105897

Pashentsev, D. A. (2020). Features of law enforcement in the conditions of digitalization of social relations. *Vestnik Sankt-Peterburgskogo Universiteta. Pravo*, 11(1), 35–49. https://doi.org/10.21638/spbu14.2020.103

Rehder, B., Apitzsch, B., & Vogel, B. (2021). Legal Technology im Arbeitsrecht. *Arbeit*, 30(4), 357–374. https://doi.org/10.1515/arbeit-2021-0023

Reiling, D., & Contini, F. (2022). E-Justice Platforms: Challenges for Judicial Governance. *International Journal for Court Administration*, 13(1), 1-20. https://doi.org/10.36745/ijca.399

Rostain, T. (2019). Techno-optimism & access to the legal system. *Daedalus*, 148(1), 93–97. https://doi.org/10.1162/DAED_a_00540

Rowden, E., & Wallace, A. (2018). Remote judging: The impact of video links on the image and the role of the judge. *International Journal of Law in Context*, 14(4), 504–524. https://doi.org/10.1017/S1744552318000216

Segura, R. E. (2023). Artificial Intelligence and Justice Administration: Challenges derived from the Latin American context. *Revista de Bioetica y Derecho*, 58, 45–72. https://doi.org/10.1344/rbd2023.58.40601

Shi, C., Sourdin, T., & Li, B. (2021). The Smart Court – A New Pathway to Justice in China? *International Journal for Court Administration*, 12(1), 1–19. https://doi.org/10.36745/ijca.367

Sichelman, T., & Smith, H. E. (2024). A network model of legal relations. P*hilosophical Transactions of the Royal Society A*, 382(2270), 1-26. https://doi.org/10.1098/rsta.2023.0153.

Soukupová, J. (2021). Ai-based legal technology: a critical assessment of the current use of artificial intelligence in legal practice. *Masaryk University Journal of Law and Technology*, 15(2), 279–300. https://doi.org/10.5817/MUJLT2021-2-6

Stockdale, M., & Mitchell, R. (2022). Legal advice privilege: The legacy of Three Rivers (No. 5) and the challenge of providing consistent protection to all client types. *International Journal of Evidence and Proof*, 26(2), 157–177. https://doi.org/10.1177/13657127221077330

Tamošiūnienė, E., Terebeiza, Ž., & Doržinkevič, A. (2024). The Possibility of Applying Artificial Intelligence in the Delivery of Justice By Courts. *Baltic Journal of Law and Politics, 17*(1), 207–222. https://doi.org/10.2478/bjlp-2024-0010

Tolou-Shams, M., Bath, E., McPhee, J., Folk, J. B., Porche, M. V., & Fortuna, L. R. (2022). Juvenile Justice, Technology and Family Separation: A Call to Prioritize Access to Family-Based Telehealth Treatment for Justice-Involved Adolescents' Mental Health and Well-Being. *Frontiers in Digital Health, 4*(May), 1–6. https://doi.org/10.3389/fdgth.2022.867366

Townend, J., & Magrath, P. (2021). Remote trial and error: how COVID-19 changed public access to court proceedings. *Journal of Media Law*, 13(2), 107–121. https://doi.org/10.1080/17577632.2021.1979844

Valentini, R. S. (2017). *Julgamento por computadores? As novas possibilidades da juscibernética no século XXI e suas implicações para o futuro do direito e do trabalho dos juristas*. Tese (doutorado)—Universidade Federal de Minas Gerais, Antônio Álvares da Silva. http://hdl.handle.net/1843/BUOS-B5DPSA

Wei, B., Kuang, K., Sun, C., Feng, J., Zhang, Y., Zhu, X., Zhou, J., Zhai, Y., & Wu, F. (2022). A full-process intelligent trial system for smart court. *Frontiers of Information Technology and Electronic Engineering*, 23(2), 186–206. https://doi.org/10.1631/FITEE.2100041

Wang, R. (2020). Legal technology in contemporary USA and China. *Computer Law & Security Review*, 39, 105459. https://doi.org/10.1016/J.CLSR.2020.105459

Whalen, R. (2022). Defining legal technology and its implications. *International Journal of Law and Information Technology*, 30(1), 47–67. https://doi.org/10.1093/ijlit/eaac005

Zhang, Y., Zhao, Y., & Zhao, Y. (2022). The Application of Artificial Intelligence Decision-Making Algorithm in Crisis Analysis and Optimization of the International Court System. *Mobile Information Systems*, 2022, 1-14. https://doi.org/10.1155/2022/8150122

Zheng, M., Liu, B., & Sun, L. (2022). LawRec: Automatic Recommendation of Legal Provisions Based on Legal Text Analysis. *Computational Intelligence and Neuroscience*, 2022, 1-7. https://doi.org/10.1155/2022/6313161