ARTIFICIAL INTELLIGENCE AND ACCESS TO JUSTICE: A SYSTEMATIC REVIEW OF THE INTERNATIONAL LITERATURE

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ABSTRACT

The text discusses the relationships between the use of artificial intelligence (AI) in the Judiciary and access to justice, highlighting the lack of in-depth studies on the subject. Relevant investigations and systematic reviews of the literature are identified, showing the urgency of understanding the impacts of AI on justice. The research seeks to explore the gains and risks of this use, questioning whether it can make justice more unfair.

Keywords: Artificial Intelligence. Access to Justice.

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INTRODUCTION

The relationships between the use of artificial intelligence (AI)[3] by the Judiciary and access to justice, in its dimensions of access to jurisdiction and access to a fair legal order[4], are not yet completely delimited.

The presence of few studies that deal specifically with the relationship between AI and access to justice was identified, highlighting the works of Fux, Ávila and Cabral (2021), Mariano Júnior (2023), Rocha et. Al. (2020). Among the doctoral theses, studies by Amorim were identified (2021), Mariano Júnior (220DC), Valentini (2018), Queiroz (2022)Marcato (2022) and Ferrari (2022).

In this context, two systematic reviews of the literature on this relationship are found in Almeida and Pinto (2022) and Siqueira, Lara and Lima (2021). In the first study, "the method used was a systematic review of the quantitative and qualitative literature, carried out on the Web Of Science, Scopus and Theses and Dissertations Databases, with the last five years as a time frame" and the keywords Artificial intelligence OR Machine Learning OR Deep Learning AND Access to justice were used. The second search used "the Boolean search in the EBSCOhost database, using the following domains of the literature: Access to Justice AND Artificial Intelligence".

As can be seen, therefore, these two investigations described above are not to be confused with the present proposal, which has different databases and keywords, so that the present investigation is justified.

Thus, it is urgent and relevant to identify and analyze this relationship between the use of AI, by the Judiciary, in jurisdictional activities, and access to justice, the objective of this investigation, after all, access to justice is a fundamental right[5]. Hence the problem that this research proposes to answer: between gains and risks, can AI make Justice more unfair?

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[3] In a nutshell, based on the lesson of Teixeira and Cheliga (2021), AI can be understood as the "computational system created to rationally simulate the decision-making of human beings, trying to translate the functioning of the human brain into algorithms". Stuart and Norvig (2013) maintain that understanding AI entails: systems that think like humans; systems that act like humans; systems that think rationally; and systems that act rationally. AI aims to create intelligent machines, that is, those that choose the actions that are expected to achieve their goals, but these must be transformed into benefits for humans, as machines do not have the right to pursue their own goals, hence why the most sensible definition of AI should cover machines pursuing the goals of humans (RUSSELL, 2019).

[4] According to Gonzáles (2019), access to justice can be conceived in both a formal and a material sense. In a formal or instrumental sense, it indicates access to jurisdiction, that is, the possibility of consideration of the demand or request by the Judiciary, under the terms of article 5, XXXV, of the Federal Constitution of 1988 (BRAZIL, 1988). In a material or substantial sense, it indicates access to a fair legal order. For the purposes pursued in this investigation, this conception is adopted in such a way that both access to jurisdiction and access to a fair legal order will be considered as access to justice.

[5] In this regard, see Alexy (2008).

Having made the preliminary considerations (1), item 2 addresses the theoretical aspect of the method that involves a systematic review, the procedures observed for the construction of the research protocol, the works found and reviewed, and the abstracts of the selected works, that is, an eminently procedural section is taken care of, for those interested in the methodology used. Next, the discussions and results are presented (3) and, at the end, the final considerations are presented (4).

METHODOLOGY

At this point, the present investigation sought to identify publications in peer-reviewed and open access journals that contain discussions involving the relationship between the use of AI by the Judiciary in jurisdictional activities and access to justice in democratic countries[6], favoring the establishment of networks for exchange and exchange of experiences.

This initiative provides a macro view of the scenario presented and allows the consolidation of works in a structured way, which can be used for new reflections and modification of paradigms in the human and social sciences.

SYSTEMATIC REVIEW OF THE LITERATURE: THE METHOD

At the end of the 1980s, a systematic review of the literature in the area of Health was developed, due to the large number of publications produced without an appropriate scientific methodology. According to Felizardo and Martins (2015), the objective was to synthesize the evidence, producing results from the confrontation/combination of different other results.

Based on the lesson of Chalmers, Hedges and Cooper (2002), the systematic review of the literature can be defined as follows: "the application of strategies that limit bias in the assembly, critical appraisal and synthesis of all relevant studies on a given topic".

Page et. Al. (2021b) list the most relevant functions of the systematic review of the literature: (1) to provide syntheses of the state of knowledge in a field, from which future research priorities can be identified; (2) address questions that otherwise could not be answered by individual studies; (3) identify primary research problems that should be corrected in future studies; (4) to generate or evaluate theories about how or why phenomena occur.

[6] For the purposes of this investigation, the 2021 Democracy Index, released by The Economist magazine, was adopted, which classifies 167 countries into full democracies, imperfect democracies, hybrid regimes (but considered democratic), and authoritarian regimes. Available in https://www.eiu.com/n/campaigns/democracy-index-2021/?utm_source=teg-website&utm_medium=press_release&utm_campaign=democracy-index-2021

The systematic review of the literature, according to Sampaio and Mancini (2007), "requires a clear question, the definition of a search strategy, the establishment of inclusion and exclusion criteria for articles and, above all, a careful analysis of the quality of the selected literature".

According to Galvão and Ricarte (2019), the systematic review of the literature includes "the selection of databases, the elaboration of the search strategy, the selection of documents and the systematization of the results".

One can see, in Torgerson, Hall and Light (2017), that the systematic review of the literature is designed to be explicit, transparent, and replicable, which gives it objectivity and scientific rigor. According to the authors, the use of explicit predefined methods of location, quality assessment and synthesis of research results minimizes the possibility of bias.

In this context, Torgerson, Hall, and Light (2017) present the main characteristics of systematic reviews: (1) a transparent and comprehensive search strategy; (2) clear pre-specified inclusion/exclusion criteria; (3) explicit methods of coding, quality assessment and synthesis of the included studies.

The authors also described the steps or stages of a systematic review that are well established in the area of health, education, and social science research: (1) research question: development of a well-focused and clear research question, which can be addressed by a systematic review; establishing the review team and review parameters; (2) Protocol: development of a protocol or plan for the review, including an a priori statement of the project. and methods for each stage of the review; (3) information retrieval and study selection: development of a search and screening strategy to identify/select the studies included in the review; (4) coding: extraction of data from each of the included studies using a coding form developed for the review; (5) quality assessment: assessment of the risk of bias in each of the included studies; (6) synthesis: the results of all included studies are combined (this may include a meta-analysis); (7) Writing of reports: the systematic review is disseminated through a published report or article.

Torgerson, Hall and Light (2017) state that to ensure the highest quality in design and methods in conducting a systematic review, methodologists have developed a series of guidelines and statements, among which Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) stand out[7].

[7] Page et. Al. (2021a) explain that the PRISMA Declaration was developed in 2009 and called PRISMA 2009, but there was an update in 2020, to ensure relevance and reflect advances in the methodology and terminology of systematic review, when the strategy called PRISMA 2020 was used exclusively.

According to the authors, the goal of the PRISMA Statement is to help investigators improve the reporting of their systematic reviews and meta-analyses, since it focuses on systematic reviews of randomized controlled trials, but can also be used as a basis for reporting systematic reviews of other types of research, particularly evaluations of interventions.

The PRISMA Declaration, as emphasized by Page et. Al. (2021b), although it was designed for systematic reviews of studies that evaluate the effects of health interventions, it can be applicable to systematic reviews that analyze other interventions, such as social or educational interventions.

In this PRISMA 2020 Declaration there is a checklist of 27 items, distributed in seven sections (title, abstract, introduction, methods, results, discussion and funding), as can be seen in the PRISMA 2020 Checklist[8].

Page et. al. (2021a) report that item 11 of the PRISMA 2020 Statement provides for the specification of the methods used to assess the risk of bias in the included studies. Massignan, Stefani and Canto (2021) They state that bias "is a systematic error that can be introduced at any stage of a study, leading to distortions in its result, and therefore threatening internal validity". The risk of bias, therefore, is configured as the potential for the results of the study to deviate systematically from the truth due to methodological flaws in the design, conduct, or analysis.

The risks of bias, according to Page et. al. (2021a), are of two orders: 1) risk of bias in the results of individual studies included in a systematic review; 2) risk of bias in the result of a synthesis due to studies absent within the investigation, which may result from the absence of publication or exclusion from the investigation due to insignificance.

In this step, it is possible to use tools developed to assess the risk of bias in the included studies, such as Risk of Bias in Systematic Reviews (ROBIS).

ROBIS is a tool structured in three phases, as described in Brazil (2017): (1) relevance assessment (optional); (2) identification of potential risks of bias during the review process; and (3) assessment of the risk of general bias.

In this investigation, the PRISMA 2020 Declaration and ROBIS were chosen as auxiliary tools, whose procedures are explained in the following item.

[8] Available in https://www.prisma-statement.org/PRISMAStatement/Checklist

PROCEDURES USED IN THE SYSTEMATIC REVIEW

In this essay, the systematic review of the literature used the PRISMA 2020 Declaration, with the necessary adaptations for the area of Human Sciences and Applied Social Sciences, and for the identification of risk of bias, the use of ROBIS was chosen.

It was considered unnecessary to perform a sensitivity analysis, used to determine the level of sensitivity of the results of the systematic review (degree of confidence of the results), in situations of uncertain decisions or assumptions about the data and results used, as there was no change in the eligibility assumptions.

Works were consulted in the Ebscohost, ScienceDirect, Springer Link, Dialnet and journals of the Coordination for the Improvement of Higher Education Personnel (CAPES), as it is considered that they are the main indexers of scientific production that provide open access to the full text of peer-reviewed scientific articles.

We chose to search these databases, which are available for access on the Internet, but there was no search for unpublished articles. Eligible papers were limited to peer-reviewed scientific articles with open access, not contemplating, for example, additional methods, such as congress material, which reduced the variety of databases.

As this was a systematic review of the international literature, the titles, abstracts, and full texts of the identified articles were freely translated.

As described in Chart 1, in the case of Ebscohost, the *Discovery Service database was selected* , and in the *TX Full-text* field, the terms *access to justice* and *artificial intelligence* and *Judiciary* (in English, French, Spanish and Italian) were used, and *the expression* justice was added to the SU field. (in English, French, Spanish and Italian) with the operator AND.

Table 1. Words and phrases included in the systematic review: Ebscohost (Discovery Service)

TX Field Full Text			
English	Spanish	French	Italian
Access to Justice	Access to Justice	Accès à la Justice	Accesso alla Giustizia
AND			
Artificial intelligence	Artificial intelligence	Intelligence artificielle	Intelligenza artificiale
AND			
Judiciary	Judicial	Judiciaire	Giudiziario
SU Field Subject Terms			
AND			
Justice	Justicia	Justice	Giustizia

Source: Documentary research carried out by the authors (2023)

On Ebscohost, in *search options* were also marked: expanders *also search the full text of articles* and *apply equivalent subjects;* and the limiter *available in the Library Collection*.

At ScienceDirect, the field of research refers only to the terms that are intended to be sought, in this case, *access to justice* and *artificial intelligence* and *Judiciary* (in English, French, Spanish and Italian), according to Table 2.

Table 2. Words and expressions included in the systematic review: ScienceDirect

Search field			
English	Spanish	French	Italian
Access to Justice	Access to Justice	Accès à la Justice	Accesso alla Giustizia
AND			
Artificial intelligence	Artificial intelligence	Intelligence artificielle	Intelligenza artificiale
AND			
Judiciary	Judicial	Judiciaire	Giudiziario

Source: Documentary research carried out by the authors (2023)

As can be seen in Chart 3, the terms access *and* Justice *and* artificial intelligence *and* Judiciary *(in English, French, Spanish and Italian)* were used in the Springer Link, Dialnet, and CAPES periodicals.

In the Springer Link database, these four terms described in *with all of the words* were searched. In addition, the option *Include Preview-Only content was unchecked,* since the objective was open access to the full texts of scientific articles submitted to peer review.

In Dialnet, the search field only allows *searching for documents,* in which the terms *access* and *Justice* and *artificial intelligence* and *Judiciary* (in English, French, Spanish and Italian) have been inserted.

On the CAPES journal website, once the CAFe access was made, the collection link was located, the *search subject field* was filled in with the terms *access* and *Justice* and *artificial intelligence* and *Judiciary* (in English, French, Spanish and Italian).

In the authors' view, search strategies and restrictions on date, publication format or language, were adequate to obtain the largest possible number of scientific articles, signaling a low level of bias.

Table 3. Words and expressions included in the systematic review: Springer Link, Dialnet and journals of the Coordination for the Improvement of Higher Education Personnel (CAPES)

English	Spanish	French	Italian
Access	Access	Accès	Access
AND			
Justice	Justicia	Justice	Giustizia
AND			

Artificial intelligence	Artificial intelligence	Intelligence artificielle	Intelligenza artificiale
AND			
Judiciary	Judicial	Judiciaire	Giudiziario

Source: Documentary research carried out by the authors (2023)

Next, according to Chart 4, the inclusion and exclusion criteria were established with the objective of obtaining relevant and quality articles for the proposed research.

Table 4. Inclusion and exclusion criteria

INCLUSION	EXCLUSION
Areas of Human Sciences and Applied Social Sciences (C.I.1)[9]	Articles whose country of the journal's affiliation is Brazil (C.E.1)
Articles published between 2018 and 2022 (C.I.2)	Duplicate articles (C.E.2)
Articles submitted to peer review (C.I.3)	Articles that are not available for public access (C.E.3)
	Articles whose abstract did not indicate that they would address artificial intelligence and access to justice (C.E.4)
	Articles excluded after full reading, as they did not address artificial intelligence and access to justice (C.E.5)

Source: Documentary research carried out by the authors (2023)

We opted for the adoption of inclusion criteria (C.I.) related to the areas of Human Sciences and Applied Social Sciences, searches were limited to the years 2018 to 2022, and articles submitted to peer review were searched. The first criterion was justified because there are several essays in the Exact and Earth Sciences, in the Biological Sciences and in the Health Sciences that address the use of AI, but which are not directly related to access to justice. The second inclusion criterion was necessary due to the evolution of the use of technologies by the Judiciary in the last five years. The last inclusion criterion proved to be relevant to ensure the quality of eligible investigations.

The exclusion criteria (C.E.) included essays whose country of affiliation of the scientific journal was Brazil, duplicate articles, those that were not available for public access, and research in which there was no indication in the abstract that they would address artificial intelligence and access to justice. These ineligibility criteria became necessary to: (1) contemplate essays published by scientific journals outside Brazil in order to contemplate the state of the art abroad; (2) avoid bias of sampling higher than that actually investigated; (3) provide for review of the review or replicability of the research; and (4) ensure that eligible articles were aligned with the research objective.

[9] According to the Table of Areas of Knowledge (CAPES) available at http://fisio.icb.usp.br:4882/posgraduacao/bolsas/capesproex_bolsas/tabela_areas.html#grupo6

These eligibility criteria were defined in advance, together with the objective of the investigation, and well specified (unambiguously); are aligned with the research question; and the restrictions applied with reference to the characteristics of the studies and the Databases were clearly described and the reasons for this were provided. Thus, it can be concluded that the risk of bias is low in relation to the specification of the eligibility criteria.

The investigations were identified in the indicated research bases and submitted to the flow diagram, as described in Chart 5.

Table 5. Flow diagram: filtering scheme of essays on the relationship between the use of artificial intelligence by the Judiciary of democratic countries and access to justice

Identification of scientific articles Files identified in databases = 784 Ebscohost = 399 ScienceDirect = 177 Springer Link = 177 Dialnet = 16 CAPES = 15
Articles selected after the application of C.I.1: works that were in the area of Human Sciences = 772 Ebscohost = 399 ScienceDirect = 174 Springer Link = 168 Dialnet = 16 CAPES = 15
Articles included after the incidence of C.I.2: articles published between 2018 and 2022 = 567 Ebscohost = 311 ScienceDirect = 79 Springer Link = 152 Dialnet = 14 CAPES = 11
Articles that remained after application of the C.I.3: submitted to peer review = 367 Ebscohost = 228 ScienceDirect = 65 Springer Link = 58 Dialnet = 4 CAPES = 11
Articles that remained after the incidence of C.E.1: Articles whose country of the journal's link is Brazil = 358 Ebscohost = 223 ScienceDirect = 65 Springer Link = 58 Dialnet = 4 CAPES = 7
Articles that remained after the application of C.E.2: duplicate articles = 257 Ebscohost = 122 ScienceDirect = 65 Springer Link = 58 Dialnet = 4 CAPES = 7

Articles selected after the application of C.E.3: articles without free access = 166 Ebscohost = 100 ScienceDirect = 18 Springer Link = 37 Dialnet = 3 CAPES = 7
Articles that remained after application of C.E.4: articles that in the abstract content analysis did not indicate that they met the theme = 27 Ebscohost = 21 ScienceDirect = 1 Springer Link = 3 Dialnet = 1 CAPES = 1
Articles kept after C.E.5 application: eligibility confirmed by reading the articles in full = 25 Ebscohost = 19 ScienceDirect = 1 Springer Link = 3 Dialnet = 1 CAPES = 1
Total number of studies remaining for the systematic review of the literature = 25 Ebscohost = 19 ScienceDirect = 1 Springer Link = 3 Dialnet = 1 CAPES = 1

Source: Documentary research carried out by the authors (2023)

Chart 5 shows the process of filtering the publications, whose inclusion began with 784 studies. After applying the inclusion criteria (C.I.1 and C.I.2), 567 articles remained. Finally, the exclusion criteria (C.E.1, C.E.2, C.E.3 and C.E.4) were used, so that the research signaled the permanence of 25 publications, eligible for the objective of this investigation. In this selection phase, the titles and abstracts of the essays found were reviewed and inconsistencies were discussed until a consensus was reached and the works were declared eligible.

Chart 6 describes the studies that remained in the proposed systematic literature review.

Table 6. Scientific articles suitable for systematic review

Item	Year	Title	Authorship	Country of Connection	Language	Keywords	Publication	Database
1.	2018	Technological opacity & procedural injustice	Seth Katsuya Endo	USA	English		Boston College Law Review	Ebscohost
2.	2021	The rise of synthetic judges: If we dehumanize the Judiciary, Whose Hand Will Hold the Gavel?	Marie-Claire Aarts	USA	English		Washburn Law Jorunal	Ebscohost
3.	2020	A framework for the efficient and ethical use of artificial intelligence in the criminal justice system	Dan Hunter Mirko Bagaric Nigel Stobbs	USA	English		Florida State University Law Review	Ebscohost

4.	2021	Seeking compatibility in preventing crime with artificial intelligence and ensuring a fair Trial	Kelly Blount	Czech Republic	English	Artificial Intelligence Fair Trial European Convention on Human Rights Predictive Policing	Masaryk University Journal of Law & Technology	Ebscohost
5.	2020	Courts and Artificial Intelligence	A.D. Reiling	USA	English	Courts Artificial intelligence OUCH Justice Information technology	International Journal for Court Administration	Ebscohost
6.	2019	Erasing the BIAS against using artificial intelligence to predict future criminality: algorithms are color blind and never tire	Mirko Bagaric Dan Hunter Nigel Stobbs	USA	English		University of Cincinnati Law Review	Ebscohost
7.	2022	E-justice in Switzerland and Brazil: Paths and Experiences	Marcos Sousa Daniel Kettiger Andreas Lienhard	USA	English	Court management Court Innovation Innovation adoption E-government Comparative research	International Journal for Court Administration	Ebscohost
8.	2019	Re-engineering justice? Robot judges, computerised courts and (semi) automated legal decision-making	John Morison Adam Harkens	United Kingdom	English	Cyberlaw Practice Profession and ethics Algorithmic justice Judging New Technology and Law	Legal Studies	Ebscohost
9.	2022	Artificially Intelligente Class Actions	Peter N. Salib	USA	English		Texas Law Review	EBSCOhost
10.	2019	Implementation of the European ethical charter on the use of artificial intelligence in the judicial system and their environment	Irina Moroianu Zlatescu Petru Emanuel Zlatescu	Romania	English	European Commission for the Efficiency of Justice (CEPEJ) Artificial intelligence (AI) European Ethical Charter on the use of artificial intelligence in judicial systems	Law Review: Judicial Doctrine & Case-Law	Ebscohost
11.	2020	Artificial Intelligence in the Courtroom: Increasing or Decreasing Access to Justice?	Analyzes Morrison	Holland	English	Artificial intelligence Robojudge Separation of powers Algorithm Due process	International Journal of Online Dispute Resolution	Ebscohost
12.	2021	Setting up an ethical framework as a first step to comprehensive regulation of artificial intelligence tools in the justice system	João Arsénio de Oliveira	Turkey	English		Turkish Policy Quarterly	Ebscohost
13.	2019	The role, benefits, and concerns of digital technology in the family justice system	David Hodson	USA	English	Access to Justice OUCH Digital Technology Divorce Online E-Bundles E-Filing Electronic Judges Family Courts Family Law iFLG International Family Law International Family Law Group Judges Law Firms Innovation Online Courts Online Filing	Family Court Review	Ebscohost
14.	2019	Just, quick and cheap? Civil dispute resolution and technology	Tania Sourdin Bin Li Tony Burke	Australia	English		Macquarie Law Journal	Ebscohost

15.	2021	Technological Tethereds: Potential Impact f untrutworthy Artificial Intelligence in Criminal Justice Risk Assessment Instruments	Sonia M. Gipson Rankin	USA	English		Washington & Lee Law Review	Ebscohost
16.	2018	Artificial Intelligence can make our jail system more efficient, equitable, and just	Arthur Rizer Caleb Watney	USA	English		Texas Review of Law & Politics	Ebscohost
17.	2022	Artificial Intelligence and Robotics Led Technological Tremors: A Seismic Shift towards Digitizing the Legal Ecosystem	Hitesh Bhatt Rajesh Bahuguna Rajesh Singh Anita Gehlot Shaik Vaseem Akram Neeraj Priyadarshi Bhekisipho Twala	Switzerland	English	Artificial intelligence (AI) Robotics Legal ecosystem Infrastructure Digitalization Modernization Administration of justice	Applied Sciences	Ebscohost
18.	2018	Judge v Robot? Artificial Intelligence and judicial decision-making	Tania Sourdin	Australia	English		University of New South Wales Law Journal	Ebscohost
19.	2019	Digital Transformation in Justice: Discussion of Challenges and a Conceptual Model for e-Justice Success	Maroun Jneid Imad Saleh Rania Fakhoury	USA	English	E-justice success factors E-justice challenges Evaluation of e-justice Judicial digital transformation Justice modernization Citizen satisfaction Judicial information quality	Proceedings 19th the European Conference on Digital Government	Ebscohost
20.	2021	AI in judicial application of Law and the right to a court	Pawel Marcin Nowotko	USA	English	Informatization Court Application of the Law Judgment	Procedia Computer Science	ScienceDirect
21.	2021	Responsible innovation, anticipation and responsiveness: case studies of algorithms in decision support in justice and security, and an exploration of potential, unintended, undesirable, higher-order effects	Marc Steen Tjerk Timan Ibo van de Poel	Germany	English	Responsible innovation Algorithms Decision support Justice and security Higher-order effects	AI and Ethics	Springer Link
22.	2022	Preserving the rule of Law in the era of artificial intelligence (AI)	Stanley Greenstein	Germany	English	Artificial Intelligence (AI) Machine Learning (ML) Rule of Law Judicial decision-making systems Explainability	Artificial Intelligence and Law	Springer Link
23.	2020	Criminal Justice, artificial intelligence systems and human rights	Aleš Završnik	Germany	English	Criminal justice Human rights Automation Algorithms Artificial intelligence Fair Trial.	ERA Forum	Springer Link
24.	2020	La incidência de las nuevas tecnologias en el derecho al debido proceso	Miguel de Asis Pulido	Spain	Spanish	Dedudo proceso Artificial intelligence Judicial protection New technologies Cyberjustice.	Ius et scientia	Dialnet
25.	2022	The use of artificial intelligence in the Judiciary and its complicance with the Right to a Fair Trial	Kalliopi Terzidou	Australia	English		Journal of Judicial Administration	CAPES

Source: Documentary research carried out by the authors (2023)

Once the selection stage has been overcome, the process of extracting the information contained in the papers should begin, which occurred after their complete reading, a procedure that favored the development of the analysis of the scientific articles described above, in the synthesis phase of the results and discussions, as per the following item.

RESULTS AND DISCUSSION

Once the steps described above have been completed, all instruments and materials are ready to start the subsequent phases that integrate the stages of evaluation of the results and discussions.

In the first moment, the bibliometric analysis of the international scientific production object of the systematic review was presented, highlighting the country of link of the journal, the frequency of publication by Database, the languages used in the texts, the periods of publication, according to the chosen time lapse, the keywords of the texts, the branch of Law and the category of framing (3.1).

The methods used to synthesize the results are described (3.2)

Next, the relationships between the use of AI by the Judiciary, in jurisdictional activities, in democratic countries, and access to justice are presented, based on scientific articles from the systematic review of the literature (3.3), especially in the face of access to jurisdiction (3.3.1) and access to a fair legal order (3.3.2).

At the end, the partial conclusions are presented (4).

BIBLIOMETRIC ANALYSIS OF INTERNATIONAL SCIENTIFIC PRODUCTION

According to Guimarães, Moreira and Bezerra (2021), "Bibliometrics is an area of information science research that, through a quantitative approach, analyzes bibliographic data such as year of publication, performance of countries, periods, authors", for example.

According to Merigó et. Al. (2018), the objective of bibliometric analysis is to identify the most significant aspects of scientific journals in terms of most cited articles, authors, institutions and countries.

Yoshida (2010) states that the focus of bibliometric analysis is the number of times in which the respective terms appear in publications or the number of publications containing the tracked terms.

Pepper et. Al. (2017) They add that bibliometrics is intended for the understanding and evaluation of scientific production activities, provides the recognition of writers and

scholars, through existing literature, and contributes to the development of new forms of knowledge.

Table 2 shows the predominance of publications in scientific journals whose country of affiliation is the United States (12), followed by Germany and Australia, with three publications, and Spain, the Netherlands, the United Kingdom, the Czech Republic, Romania, Switzerland and Turkey, with one publication each.

Table 1. Nationality of the authors' institutional ties (country of affiliation of the scientific journal)

Country of link of the journal	Number of jobs
USA	12
Germany	3
Australia	3
Spain	1
Holland	1
United Kingdom	1
Czech Republic	1
Romania	1
Switzerland	1
Turkey	1
Total	25

Source: Documentary research carried out by the authors (2023)

Regarding the frequency of scientific production by Database, described in Table 2, Ebscohost stood out in the number of scientific publications that deal with AI and access to justice, with 19 of the 25 trials. Springer Link has published 3 articles and with one scientific article ScienceDirect, Dialnet and CAPES appeared.

Table 2. Frequency of scientific production by Database

Database	Number of Jobs	Percentage
Ebscohost	19	76%
Springer Link	3	12%
ScienceDirect	1	4%
Dialnet	1	4%
CAPES	1	4%
Total	25	100%

Source: Documentary research carried out by the authors (2023)

In addition, Table 3 shows the predominance of English in the selected publications: 24 of the 25 publications. Only one of the trials used Spanish.

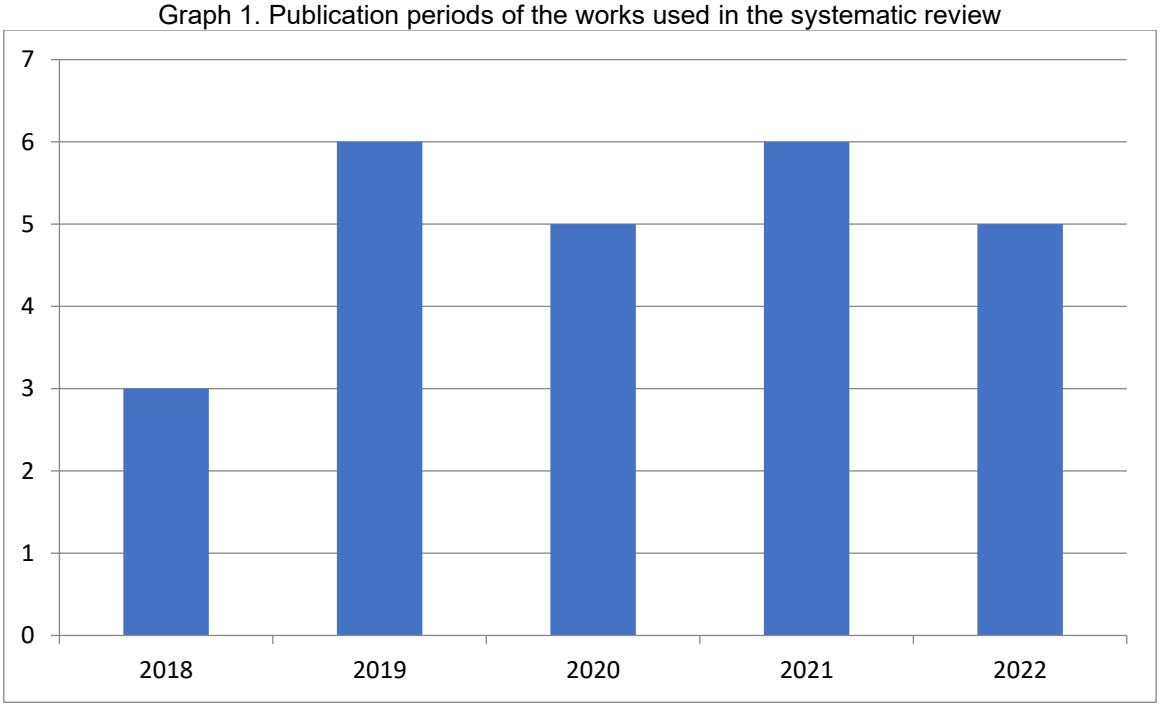
Table 3. Languages of the studies found in the systematic review

Language	Number of Jobs	Percentage
English	24	96%
Spanish	1	4%
Total	25	100%

Source: Documentary research carried out by the authors (2023)

As for the dates of publications, it is reiterated that the search covered the period from 2018 to 2022, and there was a balance in the dissemination of scientific articles, as shown in Graph 1. In 2018, 3 articles were published; in 2019 there were 6 publications; In 2020 and 2022, there were 5 publications and in 2021 there were 6 essays made available.

Graph 1. Publication periods of the works used in the systematic review



Source: Documentary research carried out by the authors (2023)

Figure 1 shows the predominance of keywords used in scientific articles. 81 keywords were found in 16 scientific articles, which represents an average of 5.37 words per article, and 9 studies did not present keywords, which is equivalent to 40% of the total number of studies. The main keywords found in the essays were *Artificial Intelligence* which appeared in 7 opportunities (26%). *AI* was mentioned on 5 occasions (31%). *Algorithms* and *Fair Trial* stood out in 2 texts each (12%). All other keywords were marked once.

Figure 1. Word cloud: Keywords cited in scientific articles

Source: Documentary research carried out by the authors (2023)

The existence of variety about the area or branch of law affected by FI was identified in the analyzed trials, as described in Table 4. It was observed that two texts referred to the Civil area, one to Family Law and two others to Ethics. In 6 essays, the focus was on Criminal Justice. The Administration of Justice was developed in 10 opportunities. Two of the scientific papers addressed issues involving Ethics and four others focused on the Theory of Judicial Decision.

Table 4. Areas or Branches of Law dealt with in scientific articles

Law Area	Number of Jobs	Percentage
Civil	2	8%
Criminal Justice	6	24%
Family Law	1	4%
Ethics	2	8%
Administration of Justice	10	40%
Theory of judicial decision	4	16%
Total	25	100%

Source: Documentary research carried out by the authors (2023)

Two specific categories addressed in the analyzed essays related to the use of AI by the Judiciary were referenced: access to jurisdiction and access to the fair legal order. Table

5 shows that 10 papers analyzed the impacts of AI on access to jurisdiction and that 15 articles worked on the links between AI and access to a fair legal order.

Table 5. Categories of scientific articles

Categories	Number of Jobs	Percentage
Access to jurisdiction	10	40%
Access to the fair legal order	15	60%
Total	25	100%

Source: Documentary research carried out by the authors (2023)

The characteristics available in the study were sufficient for the review authors to be able to interpret the results.

Once the data described above has been collected, it is necessary to identify the methods used to synthesize the results, which will be the subject of the next item.

METHODS USED TO SYNTHESIZE THE RESULTS

The PRISMA 2020 Checklist describes the synthesis methods that must be presented by the authors of the systematic review of the literature, including in the case of the use of meta-analysis.

In Brazil (2014) The following definition is found for meta-analysis: "statistical analysis that summarizes the measures of association of two or more independent studies, generating a single measure of association". Page et. al. (2021a) define meta-analysis as the statistical technique used to synthesize the results when estimates of the study's effect and its variations are available, producing a quantitative summary of the results, something that facilitates its interpretation. For Sampaio and Mancini (2007), meta-analysis is the "analysis of analysis", as it is a literature review study in which the results of the various independent studies are combined and synthesized through statistical procedures, to produce a new estimate or index. According to Figueiredo Filho et. Al. (2014), meta-analysis "is a methodological procedure that synthesizes a certain number of conclusions in a specific field of research".

In this study, however, it was concluded that it was not possible to use meta-analysis, because the samples that became eligible for this systematic review have the characteristic of qualitative studies, due to the incipience of the use of AI by the Judiciary, which implies the inexistence of numerical results suitable for verification, also in variation of the results of the remaining researches. In this step, the use of meta-analysis is not recommended, due to the impossibility of presenting results in aggregate form, as described in Brasil (2014), and due to the lack of homogeneity, according to Brasil (2021).

In addition, in the wake of Brei, Vieira, and Matos (2014), meta-analysis is a method of synthesis of results that applies only to empirical research, so it cannot be applied to synthesize theoretical research, that is, it applies only to research with quantitative results that employ measurement of variables and present plausible statistics.

It was then decided to use the qualitative synthesis of the studies that are the subject of this systematic literature review, in which "the results are usually interpreted subjectively, without there being any justification for the emphasis that is given to certain results", as emphasized in Brazil (2021).

Using ROBIS, the overall risk of bias in the systematic review was assessed and the analysis was reviewed. No divergence was identified. It was concluded that the overall risk of bias in the systematic review is low.

After analyzing the methods used to synthesize the results, it is possible to synthesize and analyze the relationships between the use of AI and access to justice from the basis selected in this systematic review, which will be the subject of the following item.

RELATIONS BETWEEN THE USE OF AI BY THE JUDICIARY, IN JURISDICTIONAL ACTIVITIES, IN DEMOCRATIC COUNTRIES, AND ACCESS TO JUSTICE BASED ON SCIENTIFIC ARTICLES FROM THE SYSTEMATIC REVIEW OF THE LITERATURE

As already stated, it was decided to adopt a restricted notion of *access to justice* in such a way that it is only of interest to evaluate access to jurisdiction and access to a fair legal order. In this part of the investigation, the systematic review was also limited to technologies developed or acquired, free of charge or for a fee, by the Judiciary, which involve the use of AI (machine learning or deep learning).

The synthesis of the results included all pertinent studies that collected data relevant to the research question.

On the one hand, the selected essays ratified the premise presented that the use of AI, by the Judiciary, in jurisdictional activities, implies gains and risks[10], confirmed or potential.

Table 6 shows that in the analyzed essays, it was found that there are many more risks (34) than gains (17) with the use of AI by the Judiciary in jurisdictional activities. This finding is in line with two justifications in particular: the absence of regulation of AI, which

[10] For the purposes of this investigation, in order to avoid risks of bias in the synthesis of the findings, we chose to consider *gains* and *risks* that which were expressly considered as such by the authors of the trials. However, *benefits, opportunities, potential* were inserted as gains and *challenges, obstacles, criticisms, concerns, damages, dangers, questions,* as risks. *Positive impacts, positive results, positive factors, positive effects, positive influences, positive implications* were considered gains and *negative impacts, negative results, negative factors, negative effects, negative influences, negative implications, issues of concern,* risks.

leads to uncertainties about its development and use; and the incipience of technology, which contributes to the mismatch between the objectives of use and the true results obtained or expected.

Table 6. Gains and risks with the use of AI by the Judiciary in jurisdictional activities[11]

Item	Essay	Winnings	Risks
1.	Hunter, Bagaric, and Stobbs (2019)	Improved crime detection Discovery of discrimination and unfair treatment Parity of treatment Improving the administration of justice	Violation of human rights Violation of fundamental rights Undermining the rule of law Negative predictive policing Prediction of negative recidivism Party politics of interests Lack of understanding of technology Systematic bias Lack of transparency of algorithms Algorithms biased against minority groups
2.	Bhatt et. al. (2022)	Facilitating access to justice	
3.	Rizer and Watney (2018)	Improving the efficiency of the prison system Speed Combating human prejudice Advice from magistrates Reduction of prison populations	
4.	Morrison (2020)		Deficiency in the interpretation of the rules Lack of regulation
5.	Salib (2021)	Rapid and accurate resolution of collective claims Absence of discrimination Absence of the black box	
6.	Reiling (2020)	Reducing the complexities of legal proceedings	
7.	Jneid, Saleh and Fakhoury (2019)	Improving efficiency, effectiveness, accountability, integrity, reliability and encouraging citizen participation and involvement Clearer and more organized case management	
8.	Bagaric, Hunter and Stobbs (2019)	Predictive justice: predicting the occurrence of crimes	Lack of transparency for algorithms Algorithms' prejudice and racism Lack of trust in algorithms Algorithmic aversion
9.	Zlătescu and Zlătescu (2019)		Discrimination in data-driven decision-making
10.	Sourdin (2018)		Limitation of human activity
11.	Sourdin, Burke and Li (2019)	Quick resolutions Cost reduction	Relationship: use of technology x fair resolution Lack of transparency in decision-making Algorithmic bias
12.	Morison and Harkens (2019)	Saving time and money Accessibility Reach Speed Better information management	

[11] From the work of SOUSA; KETTIGER; LIENHARD (2022) no gains or risks were extracted, which is why it was not mentioned in this opportunity.

13.	Blount (2021)		Breach of the principle of equality Infringement of the principle of the presumption of innocence
14.	Oliveira (2022)		Lack of AI regulation Absence of human intervention Possibility of human rights violations
15.	Endo (2018)		Lack of precision and fairness Lack of transparency (black box) Lack of equality
16.	Gipson Rankin (2021)	Increased justice	Illegal and unfair outcomes for people of color Lack of technical transparency No legal liability Faulty recommendations Extinction of freedoms
17.	Aarts (2020)		Lack of transparency (black box)
18.	Hodson (2019)		Forum Closures
19.	Nowotko (2021)		Limitation of the applicability of AI Binding decisions without ratification by the judge
20.	Steen, Timan and Van de Poel (2021)	Use of algorithms to support judicial decision	Algorithms that employ biases, inequalities, or injustices Partiality Discrimination
21.	Greenstein (2022)		Threat to the rule of law (decrease) Lack of transparency (black box) Decreased ability to understand
22.	Završnik (2020)	Access to the courts	Lack of transparency (black box) Violation of fundamental rights Violation of constitutional principles: presumption of innocence; the right to a fair trial; equality of arms in judicial proceedings, the right to cross-examine witnesses; the right to an independent and impartial tribunal (including the right to a randomly selected judge); the principle of non-discrimination and equality; and the principle of legality Opacity Violation of the rule of law
23.	Asis Pulido (2020)	Reduction of deadlines Better access to justice Resource optimization Facilitating the provision of legal services	Inequality Vulnerability Social exclusion Information leaks Security breaches Lack of transparency
24.	Terzidou (2022)	Improving access to justice Improving the efficiency and quality of judicial administration	Influence on independence and impartiality in trials Lack of advertising Opacity Partiality Unfair prejudices Technical vulnerabilities

Source: Documentary research carried out by the authors (2023)

The gains were identified in the studies related to the areas of Law described in Table 4, with a predominance of the Administration of Justice and Criminal Justice.

Bhatt et. Al. (2022), Reiling (2020), Jneid, Saleh and Fakhoury (2019), Sourdin, Burke and Li (2019) and Terzidou (2022) pointed out gains from the use of AI, by the Judiciary, in jurisdictional issues, which can be related to the administration of Justice.

Bhatt et. al. (2022) cited the facilitation of access to justice, obtained from the technological bases of the digitized and modernized legal ecosystem, with the use of AI, for example, something that is aligned with Sustainable Development Goals (SDGs) 9 (build resilient infrastructure, sustainable industrialization, and foster innovation) and 16 (sustainable development of society, access to justice, and the building of effective and accountable institutions).

Terzidou (2022) signaled the improvement of access to justice and the improvement of the efficiency and quality of judicial administration, but highlighted the slowness of the process of adopting technology within the European Union and emphasized the need to adopt a reform plan, including legislative, to improve the use of technology.

Reiling (2020) argued for the reduction of the complexities of judicial proceedings, notably by the help of judges in organizing information and presenting advice and suggestions.

Jneid, Saleh and Fakhoury (2019) indicated the improvement of efficiency, effectiveness, accountability, integrity, reliability and encouragement of citizen participation and involvement, signaling the possibility of strengthening institutions. The authors also highlighted clearer and more organized case management.

Sourdin, Burke, and Li (2019) pointed out quick resolutions and cost reduction as advantages of the use of AI by the Judiciary, and emphasized that the technology acts on three levels: on the first, it is helping to inform, support, and advise those involved in the Justice system; in the second, it operates in place of human beings, in their functions and activities; in the third, it affects the way judges and legal professionals work.

Hunter, Bagaric and Stobbs (2019), Rizer and Watney (2018), Bagaric, Hunter and Stobbs (2019) and Gipson Rankin (2021) described gains for the Criminal Justice with the application of AI by the Judiciary.

Hunter, Bagaric and Stobbs (2019) pointed to improved crime detection, uncovering discrimination and unfair treatment, parity of treatment and improved administration of Criminal Justice as positive aspects.

In another study, Bagaric, Hunter, and Stobbs (2019) argued that the use of predictive justice, with the possibility of predicting the occurrence of crimes, preventing recidivism and the escape of convicts, is a gain.

Rizer and Watney (2018) indicated the improvement of the efficiency of the prison system, speed, combating human prejudice, advising magistrates, and reducing prison populations as gains.

Gipson Rankin (2021) claimed the increase in justice as a high point of the use of AI, by the Judiciary, as long as there is supervision of the technology, to avoid unfair decisions to the detriment of black, indigenous, and other communities of color.

Morison and Harkens (2019) and Steen, Timan and Van de Poel (2021) related gains to the Theory of Judicial Decision with the use of AI by the Judiciary.

Morison and Harkens (2019) argued that there will be gains such as time and money savings, accessibility, reach, speed, and improved information management.

Steen, Timan, and Van de Poel (2021) adduced that the main positive point is the use of algorithms to support judicial decision-making, provided that the following principles are respected: (a) respect for the autonomy of human beings; (b) prevention of damage; (c) impartiality and (d) explainability.

Salib (2021) identified gains in the Civil area with the adoption of AI by the Judiciary: quick and accurate resolution of collective claims, absence of discrimination and absence of the black box.

At this point, it is necessary to analyze to what extent these findings can effectively be considered as benefits.

The finding of Jneid, Saleh and Fakhoury (2019), when listing integrity and encouragement of citizen participation, does not seem to fit with the other findings, especially in a context of lack of transparency in the development and use of AI.

In addition, the benefits of the use of predictive justice, by the Criminal Justice, require ratification of respect for fundamental rights, especially of blacks, indigenous peoples and other minorities, raising doubts about their integrity and, therefore, about their classification as a gain.

The risk scenario was found especially in the essays framed in the area of Criminal Justice, Administration of Justice and Theory of Judicial Decision.

Hunter, Bagaric and Stobbs (2019), Bagaric, Hunter and Stobbs (2019), Wexler (2021)Blount (2021) and Gipson Rankin (2021) pointed out several risks with the use of AI by Criminal Justice.

Hunter, Bagaric and Stobbs (2019) presented an extensive list of risks: violation of human rights; violation of fundamental rights; shaking of the Rule of Law; negative predictive policing; prediction of negative recidivism; partisan politics of interests; lack of

understanding of technology; systematic bias; lack of transparency of algorithms; biased algorithms against minority groups.

Bagaric, Hunter, and Stobbs (2019) highlighted the following risks: lack of transparency of algorithms; prejudice and racism of algorithms; lack of trust in algorithms; algorithmic aversion.

Blount (2021) argued that there was a risk of breach of the principle of equality and breach of the principle of the presumption of innocence.

Gipson Rankin (2021) listed the following as risks: illegal and unfair outcomes for people of color; lack of technical transparency; absence of legal responsibility; faulty recommendations; extinction of freedoms.

About the Administration of Justice, risks have been identified in Morrison (2020), Sourdin, Burke & Li (2019), Aarts (2020), Nowotko (2021) and Terzidou (2022).

Morrison (2020) pointed out the deficiency in the interpretation of the rules and the absence of regulation as risks to the use of AI by the Judiciary.

Sourdin, Burke and Li (2019) stated that there is a risk of affecting the relationship between the use of technology and the fair resolution of the dispute.

Aarts (2020) highlighted that the great risk of using technology is the absence of transparency (black box).

Nowotko (2021) argued that the risk is related to limiting the applicability of AI and issuing binding decisions without ratification by the judge.

Terzidou (2022) argued that there are risks of influencing independence and impartiality in trials and the absence of publicity.

As for the Theory of Judicial Decision, they identified risks in Sourdin (2018)Greenstein (2022) and Steen, Timan and Van de Poel (2021).

Sourdin (2018) stated that the limitation of human activity is a risk to the use of AI by the Judiciary.

Greenstein (2022) adduced the possibility of negative impacts, highlighting the threat to the rule of law; absence of transparency (black box) and decreased ability to understand.

Steen, Timan, and Van de Poel (2021) pointed out that the risks are related to algorithms that employ prejudices, inequalities, or injustices.

In the Civil area, Endo (2018) He asserted that the risks are the lack of precision and fairness, the absence of transparency (black box) and the absence of equality between the parties.

In Family Law, Hodson (2019) maintained that there is a risk of closing Forums with the use of new technologies by the Judiciary.

In an analysis of these trials, it can be observed that the synthesis of the findings listed above is consistent with the notion of risk.

Another point that deserves to be highlighted is the fact that Salib (2021) has inserted the absence of a black box as a gain, even though authors have been identified who classified the absence of transparency (black box) as a risk. This finding is justified because the study by Salib (2021) refers to the use of AI, by the Judiciary, in the Civil area and not in the Criminal area, which is the subject of the other studies. In addition, the author presented a proposal for the development of a tool using AI, in the Civil area, with open access, that is, there would be no obstacle to the knowledge of the technology, unlike what was evaluated by the other authors in their studies.

Some divergences were also identified in the synthesis of the findings, especially regarding the classification of gains and risks.

Rizer and Watney (2018) related the fight against prejudice as a gain, but Bagaric, Hunter, and Stobbs (2019) understood that the use of AI by the Judiciary reinforces prejudice by algorithms. It is a merely apparent divergence, as it is related to different contexts. In the first case, the authors base their conclusion on the possibility of using AI to reduce the prejudice inherent to human judgment, which is often flawed and which, therefore, could be reduced by the use of AI. Bagaric, Hunter, and Stobbs (2019) mention prejudice arising not from human action, but from the application of algorithms (algorithmic bias).

Hunter, Bagaric, and Stobbs (2019) emphasized parity of treatment as gain, but Blount (2021) flagged violation of the principle of equality. Again an apparent divergence is identified, because in the first case the authors emphasize the possibility of improving impersonality in the analysis of issues objectively with the use of AI.

On the other hand, the notion of fair justice implies the fulfillment of two essential premises, concomitantly: access to jurisdiction and access to the fair legal order. In the first case, some tools or strategies enable the citizen's opportunity to have access to jurisdictional provision, for example, through Free Justice, the Public Defender's Office and the Double Degree of Jurisdiction. Access to a fair legal order contemplates a set of principles that should guide judicial activity, such as, *verbi gratia*, administrative morality, impartiality of the magistrate, reasonable duration of the process, adversarial and ample defense.

At this point, it remains, then, to discuss the relationships between the gains and risks of the use of AI, by the Judiciary, in jurisdictional activities, and access to justice, notably its aspects of access to jurisdiction and access to a fair legal order.

AI and access to jurisdiction

Morrison (2020), when analyzing the American justice system, emphasizes the high financial cost and the expenditure of time as major obstacles to access jurisdiction. In this context, the use of AI could lead to: (1) the reduction of costs of the process, as the robot judge would not receive a salary; (2) the reduction of the processing time of the lawsuit, due to the capacity to process large amounts of information in a few minutes and, (3) consequently, the reduction of the procedural collection. This scenario would signal, in theory, access to a cheaper and faster judicial decision, something that would favor access to justice, notably, access to jurisdiction.

However, the author describes a series of questions regarding the legitimacy of the use of technology, highlighting the following: (1) can AI evaluate human values in decision-making? (2) Would AI be more efficient than human judges? (3) to what extent would AI violate the Federal Constitution, in particular, the Rule of Law and the separation of powers? (4) who would be the de facto judge: the AI or its programmers? (5) can the use of AI by the Judiciary give rise to the violation of due process? (6) To what extent would AI be endowed with credibility?

From the perspective of Morrison (2020), therefore, the use of AI by the Judiciary could lead to improved access to jurisdiction, however, the lack of positive answers to these questions raised refers to the lack of legitimacy and credibility of the use of technology.

Reiling (2020), in turn, defends the use of AI by the Judiciary for cases of minor complexity, notably in aid of judges, in the organization of information and with advice and suggestions. According to the author, however, it would be necessary for magistrates to understand how technology works, to make proper use, and for the Courts to constantly monitor their system, which could imply, as a consequence, at first, an increase in the cost of the process, due to the need for qualification of judges and investments in monitoring and improvement of the process.

Reiling's (2020) notion is more consistent with the current moment of the Judiciary. It means that the reduction in costs of the process, described by Morrison (2020), would not occur immediately, as investments would be necessary not only in technology, but also in judge training and monitoring by the Courts, which would not immediately make it possible to improve access to jurisdiction.

In this regard, Jneid, Saleh, and Fakhoury (2019) emphasize the need for governance, resource management, and financing practices so that technology experts can play a key role in supporting decision-making.

In the same direction is the position of Sousa, Kettinger and Lienhard (2022), according to which it is necessary to invest in technology management by the Judiciary.

Sourdin, Burke, and Li (2019) highlight that the use of technology can lead to the replacement of humans by machines and, consequently, reduce public costs for the Judiciary. However, according to the authors, it is still necessary to think about long-term investments in the legal aid sector and in the judicial structure itself, but if the public budget is not sufficient, there may be an even greater reduction in the workforce, something capable of reducing the quality of the judicial service and impairing access to jurisdiction.

Asis Pulido (2020) asserts that the potential benefits of the use of AI by the Judiciary must be accompanied by measures for the access of the entire population to computer systems and the internet, something fundamental to reduce social exclusion and, consequently, access to jurisdiction. In addition, the author highlights the importance of algorithmic transparency in the use of technology by the Judiciary, to avoid unknown premises employed by robot judges, which can mitigate the legitimacy of judicial decisions.

Hodson (2019) indicated that the gains arising from the use of technologies, with the reduction of costs by the Judiciary, do not necessarily mean improved access to jurisdiction. According to the author, the reduction of costs arising from the use of technologies may lead to the closure of Forums, which, consequently, implies a higher cost for the jurisdictional party to access the jurisdictional unit in person, due to the possibility of increasing the distance from the new seat of the Judicial District.

Therefore, on the one hand, it is concluded that there is a need to rethink the notion of immediate reduction of the cost of the process, based on the use of AI, by the Judiciary, due to the obligation of investment first and cost reduction later, something that has a direct impact on access to jurisdiction, after all, even if there is a reduction in the cost of the judicial process, for the Judiciary, it would not imply a reduction in the costs of the process for those under jurisdiction in a short time.

In this context, the possibility of increasing the costs of the process due to the need for investments in technology, public governance and monitoring is questioned, something that was not identified in the trials that were the object of the investigation. As noted, the possibility of increasing the cost of access to jurisdiction is aligned with the risk by Hodson (2019), that is, with the possibility of closing forums.

On the other hand, it is essential that citizens have access to technologies, such as equipment, internet, and digital literacy, and also know the premises employed by AI, so that they can have effective access to jurisdiction in a context of disruptive innovation.

Consequently, the picture evaluated in this systematic review demonstrates that the gains arising from the use of AI by the Judiciary are incipient and insufficient to give rise to the unequivocal identification of improved access to jurisdiction in a short time.

AI and access to a fair legal order

The main findings in the analyzed essays indicated the presence of a multifaceted scenario about access to a fair legal order.

At first, it is possible to perceive the existence of controversies about the cataloguing of gains and risks, as shown in Table 6 above.

Hunter, Bagaric and Stobbs (2019), Rizer and Watney (2018) and Salib (2021) pointed out as gains parity of treatment, the fight against human prejudice and the absence of discrimination, respectively. However, Bagaric, Hunter and Stobbs (2019), in another study, Zlătescu and Zlătescu (2019), Blount (2021), Endo (2018), Gipson Rankin (2021), Steen, Timan and Van de Poel (2021), Završnik (2020), Asis Pulido (2020) and Terzidou (2022), respectively, identified as risks: prejudice and racism of algorithms; discrimination in data-based decision-making; absence of equality; illegal and unfair results for people of color; algorithms that employ prejudices, inequalities or injustices, bias and discrimination; violation of the principle of equality of arms; inequality; partiality and unfair prejudices.

This observation can be explained beyond the subjectivity or preference of each author. The classification of AI technology, as a risk or gain, is directly related to the results that are observed or to projections – optimistic – that signal a positive result. In this way, Oliveira (2022), Zlătescu and Zlătescu (2019) and Gipson Rankin (2021) found that the use of Predictive Justice, by Criminal Justice, with the Correctional Offender Management Profiling for Alternative Sanctions (COMPASS)[12], in the United States, gave rise to the occurrence of discrimination against blacks, indigenous people or other minorities, that is, it takes care of evident and verified damage.

When it is stated that the use of AI by the Judiciary can improve parity of treatment, the fight against human prejudice and the absence of discrimination, it means that these are projections based on the use of objectivity and transparency in the use of technology to reduce – it is intended to eliminate – the possibility of discrimination arising from decisions rendered by human judges, which by nature carry their preferences and perceptions.

In any case, at this point it is questioned whether the gains described in Table 5 are capable of improving access to a fair legal order.

[12] In Portuguese: Criminal Correctional Management Profiles for Alternative Sanctions.

Even though these are optimistic projections, due to the lack of research on the results of the use of technology, even because the stage is still early, it is possible to perceive timid advances and significant setbacks in access to the fair legal order, a perspective that is directed to those under jurisdiction.

Predictive Justice, in the criminal field, has the power to improve the efficiency of the prison system – if algorithmic discrimination is eliminated – which will lead to a reduction in the prison population and, consequently, to an increase in the dignity of convicts, something that will contribute to the respect of their fundamental human rights, a facet of access to a fair legal order.

This tool also has the potential to improve procedural speed and, consequently, the analysis of incidents involving convicted prisoners, avoiding illegal and lengthy arrests, a fundamental aspect for the preservation of fundamental human rights.

The use of algorithms to support judicial decision-making, in turn, can assist magistrates in the analysis of simpler cases, contributing to time savings and improving productivity. This is a key factor in reducing unnecessary arrests.

In addition, it is questioned what are the impacts that the risks and losses described in Table 5 can cause to the fair legal order.

The violation of fundamental human rights is a latent concern in the context of the use of AI by the Judiciary because it is an aspect that signals clear harm to access to a fair legal order.

The use of biased and discriminatory algorithms, in this step, is shown to be an aspect to be considered. In this context, the lack of transparency and publicity, several times cited as a "black box" by the authors, is presented as a relevant factor that should be considered by the Judiciary.

Those under jurisdiction have the right to trial by an impartial judge and also to know the criteria that are used in the analysis of their case, something that is questionable and worrisome, in the case of the use of AI, under penalty of violation of due process. When questioning the absence of transparency, it is also possible to observe the possibility of deficiency in the interpretation of the rules, a sensitive issue for the developers of the technology.

In this context, there may be insurgencies about the violation of the separation of powers, as the Judiciary could use the technology freely, without the existence of previous regulatory norms. It seems very clear that the use of AI by the Judiciary falls within its administrative autonomy, but one cannot ignore the need to regulate issues – especially

ethical ones – that may be sensitive to constitutional principles, such as the Natural Judge, something that does not currently exist.

Therefore, the predominance of risks in relation to gains is observed and, among the risks – and losses – the existence of algorithmic bias, lack of transparency (black box), reduction of the rule of law and violations of due process and fundamental rights capable of mitigating access to a fair legal order stand out.

In short, the use of AI by the Judiciary in jurisdictional activities is obscured in the complex scenario of risks, losses and gains, and it is hasty to conclude that, at this moment, there is an improvement in access to the fair legal order. On the contrary. The comparison between risks, losses and gains signals the presence of violation of access to the fair legal order.

Thus, some essays presented structures, recommendations, solutions, models, examples, and reflections with the objective of overcoming the risks and losses and optimizing the gains from the use of AI by the Judiciary.

Bhatt et. al. (2022) list a series of recommendations that can be employed in this context, highlighting the following: (1) legal infrastructure: according to the authors, the challenges emanating from cutting-edge technological devices justify dedicated efforts on the part of the legal apparatus to bring about adequate legal changes to the legal infrastructure, so that the current infrastructure legislation needs to be renewed to make way for the intervention of technologies to help the apparatus legal; (2) regulatory framework: there is an absence of a legislative framework on how the violation of individual rights through AI-driven action can be compensated, so a regulatory framework is needed; (3) legal education: in order for the digitalization, modernization, and virtualization of legal services to be achieved, legal education would need to be renewed to assimilate AI- and robotics-enabled education to overhaul the legal education ecosystem and engage in law education.

Terzidou (2022) presents a set of suggestions for the development of AI in the judicial sphere, highlighting the development of AI technology by computer scientists who are part of the staff of the Courts' administrations, as it would provide direct communication between magistrates and technicians, facilitating experimentation and redesign processes.

Jneid, Saleh and Fakhoury (2019) presented a list of suggestions for the development of a conceptual model for successful E-Justice projects, relying on information systems on success factors and completing it with specificities and values based on the domain of the judicial sector.

Oliveira (2022) states that there is an urgent need for a binding and comprehensive legal instrument that regulates the use of artificial intelligence in the field of Justice.

Asis Pulido (2020) presents a set of suggestions for the safe use of AI by the Judiciary. According to the author, the necessary measures must be taken to guarantee access to computer systems and the Internet for the entire population, through responsible computerization of society. Advances in cyberjustice, according to Asis Pulido (2020), must be accompanied by the reinforcement of citizens' rights to data protection, so that their information is properly encrypted and secure throughout the process. According to the author, it is necessary to ensure the transparency and publicity of the algorithm that makes the machine work, that is, it is required that the operation of the technologies used in the judicial process be known, in order to guarantee the rights recognized in due process.

These proposals are pertinent and relevant and can contribute to optimizing the use of AI by the Judiciary and reducing risks, however, regulation is the most urgent and delicate aspect, as it is necessary to consider the establishment of standards without removing or limiting the potential for future technological advancement and, also, ensuring the protection of human and fundamental rights and the observance of fundamental ethical aspects. A challenge for the legislator.

In the European context, the first step has been taken: the European Commission for the Efficiency of Justice of the Council of Europe (CEPEJ) adopted the "European Charter on the Use of AI in Judicial Systems" at the end of 2018 to mitigate the above-mentioned risks specifically in the justice sector.

In the United States, the New York City Council was the first to pass a law in 2017 on algorithmic transparency in decision-making by providing for the creation of a task force to monitor the fairness and validity of the algorithms used by municipal agencies[13]. In 2019, the New York City Council approved the creation of another rule, a local law to amend the New York City administrative code, regarding reporting on the algorithmic tools used by city agencies[14].

The Algorithmic Accountability Act of 2019[15] was passed by the U.S. Congress in 2019 and provides for a series of measures against algorithmic bias and discrimination, including determinations for developer companies such as mandatory audits. In addition,

[13] Available in https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=3137815&GUID=437A6A6D-62E1-47E2-9C42-461253F9C6D0
[14] Available at https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=4265421&GUID=FBA29B34-9266-4B52-B438-A772D81B1CB5&Options=Advanced&Search=
[15] Available in https://www.congress.gov/bill/116th-congress/house-bill/2231/text

the proposal for a new Algorithmic *Accountability Act of 2022* is already being discussed in the US Senate[16].

Finally, these findings can be compared with the conclusions of Almeida and Pinto's studies (2022) who carried out a systematic review of the literature in which they investigated the relationships between the use of AI, by the Judiciary, and access to justice.

The authors identified gains that they called "successful initiatives" and highlighted: (1) "reduction in the number of time, resources and personnel allocated to those everyday activities, so that human action can be directed to acting on more complex demands"; (2) smart readers; (3) algorithms that can facilitate the user's understanding of texts characteristic of the legal area; (4) impartiality; (5) objectivity; (6) objective predictability; (7) standardization of jurisprudence; (8) speed; (9) improvement of the management of public resources; (10) preservation of constitutional rights. Regarding the recommendations, the authors understood that it is necessary to: specific regulation that can support the use and scope of AI measures; and follow-up management to verify risk factors and difficulties in the use of technology.

The main findings of this systematic review corroborated, in part, the findings described above by Almeida and Pinto (2022), especially those described in (1), (5), (6), (8), (9). Numbers (2), (3) and (7) identify technologies that can be used by the Judiciary, with the use of AI, something that was not identified in this systematic review. And the findings expressed above in letters (4), (5) and (10) were not fully ratified in this investigation, with divergence among the authors of the selected scientific articles.

Regarding the suggestions presented by Almeida and Pinto (2022), it is observed that they are in line with those described by the authors of the essays in this investigation.

Siqueira, Lara and Lima (2021), on the other hand, when conducting a systematic review of the literature on access to justice and AI, grouped the selected essays into four segments, with the aim of systematizing the searches: (1) efficiency and use of applications; (2) focus on the characteristics of the law and the risks and opportunities for the profession; (3) online dispute resolution systems and interconnection with AI; and (4) challenges for the interconnection between AI, law and access to technology.

As can be seen, segments (1), (2) and (3) do not communicate with the proposal of this research and the challenge foreseen in (4) ended up having repercussions in this systematic review as a suggestion and not a challenge.

[16] Available in https://www.congress.gov/bill/117th-congress/house-bill/6580/text

It is recommended that other systematic reviews of the literature be developed on the following topics: AI in the Public Defender's Office; AI in the Public Prosecutor's Office; and AI in Online Dispute Resolution (ODR) models.

FINAL CONSIDERATIONS

The results of this systematic review indicated that there are gains and risks with the use of AI by the Judiciary in jurisdictional activities. However, far more risks than gains were identified, which is justified by the absence of legal regulation and the presence of underlying ethical issues. This provides important evidence on the impacts of this technology on access to jurisdiction and access to the fair legal order.

No substantial and immediate gains were identified for access to the jurisdiction, in the syntheses of the main findings of the investigated trials, and there are prospects for reducing the costs of the process and improving its processing time. This finding was justified to the extent that the appropriate studies are contextualized in the reality of democratic countries whose AI development is predominantly focused on the Administration of Justice, Criminal Justice and the Theory of Judicial Decision.

Evidently, this does not mean that there are no gains in this context, and other studies may later demonstrate the benefits of the technology, for example, with the use of AI for the admissibility of appeals (double degree of jurisdiction).

In relation to the fair legal order, the benefits found were of various orders, but again those directed to the Administration of Justice, Criminal Justice and the Theory of Judicial Decision predominated. In this step, the improvement of the administration of justice, support for the magistrate and procedural speed were highlighted, but the absence of mention of the quality of the judicial decision was surprising, which signals that there is still a long way to go for the Judiciary.

The risks in relation to access to jurisdiction are worrying, especially the possibility of reducing human resources, replaced by machines, and closing forums, something that is not proportional to the increase in the collection of cases identified in recent years.

It was noticed that the risks were concentrated especially in potential stimulants of prejudice and discrimination, in the face of blacks, indigenous people and other minorities. The reduction of the rule of law and the violation of due process were also identified.

Thus, between gains and risks, it is concluded that the use of AI, by the Judiciary, in jurisdictional activities, has the ability to catalyze injustices, especially in Criminal Justice, that violate access to justice. This scenario is in line with the stage of development of smart technologies, which is still incipient and, therefore, evolving.

It is possible to present some suggestions to enhance the gains and minimize the harmful effects of smart technology on access to justice.

Indeed, not all the work of the courts is complex work, so the need for information technology is not the same for all cases. It means that it is possible to employ AI, in aid of the magistrate, in cases of small complexity.

The use of AI tends to provide cost reduction and procedural speed, but it is necessary to be careful that these factors do not result in an exacerbated reduction of the workforce, due to the effect of replacing man by machine. This process can also increase the dehumanization of judicial decisions, catalyzing algorithmic aversion and resistance to the use of AI by citizens.

One cannot lose focus on investment in free legal aid and free justice, which means that the State must be attentive to its budgetary priorities so that it does not employ disproportionate financial efforts in AI and leave these strategies, which are fundamental for access to jurisdiction, in the background.

In the case of predictive Criminal Justice and the application of risk assessment software, it is necessary to improve the development of algorithms, with the effective participation of magistrates, including through courses and training, and to ensure transparency in the process of use, especially by providing access to AI tools and the possibility of questioning biases by parties who consider themselves harmed by the use of technology. reducing the possibility of prejudice and discrimination against black, indigenous and other disadvantaged minorities. It takes care of a fundamental strategy that will help not only to overcome distrust in algorithms, but will provide conditions for continuous testing, refinement and improvement of algorithms. This is an alternative to opening the algorithmic *black box*, including shedding light on it, since it haunts those involved in investigations of this nature so much.

This requires, at first, the adequate and urgent regulation of AI, without limiting its possibilities and mitigating technological development, but with a provision for the prevention of harm, something that proves to be a great challenge for the legislator. In addition, it is necessary to rethink the justice system itself, with specific legislative changes in the rites, especially to ensure access to a fair and appealable decision. Consequently, it is necessary to review the civil liability system to contemplate the illicit conducts practiced by developers and applicators of this technology and by hackers. In addition, one cannot lose sight of the need for investments in security to prevent unauthorized access to technological resources or cyberattacks, something that can compromise the credibility of the entire system.

You cannot fully hand over to machines, autonomously, the judicial decisions that will affect people's lives. It is essential that there is human supervision in the use of AI by the Judiciary, especially in those cases of greater complexity and that involve fundamental rights, such as freedom.

Without respect for fundamental rights and the rule of law, the use of AI by the Judiciary, no matter how fast and cheap it may be, will not ensure access to justice.

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