Strong and weak forms of artificial intelligence applied in the administration of justice in Brazil: case study of Maranhão's state court of appeals

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1. Introduction

The debate about integrity and good corporate governance has been remarkably intensified over the past three decades since the emergence of several corruption scandals, involving from government agents to private sector entities.

Countries such as the United States, Brazil and the United Kingdom had to restructure their regulatory systems in order to establish more efficient mechanisms to combat corruption and money laundering. For instance, the Foreign Corrupt Practices

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Act (1977), The UK Corporate Governance Code and the Statute Law No. 12.846/2013 served as important legislative milestones from each of the countries mentioned earlier.

Known as legislative milestones of corporate compliance, these standards, however, are not only designed to combat financial crimes or misconducts, but to establish guidelines capable of enabling efficiency gains in the governance of institutions.

It is based on such premise that compliance is comprehended and used as a set of management, leadership and accountability guidelines, both in the public and private sectors.

In Brazil, since the structural-legal reforms of the public administration that implemented the management model as a guide for official's conducts, it is highly recommended to use tools that, such as compliance, allow the public sector to reduce risks and, at the same time, enable ways to achieve strategic goals, especially within the judiciary branch, given the notable problems that can affect it.

Catalogue challenges that are usually dealt with by a Brazilian Court of Justice is no simple task. However, the World Bank's Diagnosis Report No. 319, as a result of the Washington Consensus, rightly points out to the fact that among all structural-institutional problems, the most serious and hard to handle are work buildup and procedural slowness.

Allied to the difficulties listed by the Report, digital revolution currently experienced causes important changes in the judicial structure which is mainly the reason why Brazilian courts are developing procedural-management software with automation skills.

Considering the relevant impact that technologies like this can have as a management tool in coping with case accumulation and procedural slowness is that the present study evaluates the regulatory aspects of the use of artificial intelligence and its use in Brazilian courts, focusing on the case study of Maranhão's State Court of Appeals[1].

To achieve such purpose, the critical sociolegal and legal-diagnostic method will be adopted, given the intention to understand and point out the reasons that involve artificial intelligence and the automation process in the administration of Brazilian justice, focusing on the case study of Maranhão's State Court of Appeals.

Regarding the research techniques, the study opted a theoretical investigation, using, for this end, the bibliographic review, in order to assess the historical and conceptual context that permeates the concept of artificial intelligence, as well as the use of official reports that outlined qualitative and quantitative analyses about the application of automation tools as an important mean of obtaining efficiency in the administration of justice.

2. Artificial Intelligence: concepts and features

Artificial intelligence (AI) has a wide theoretical range. For Pugliesi and Brandão,[2] for instance, AI concerns the ability of new technologies to carry out activities that were previously carried out only by humans.

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1 The Court is located at Maranhão, which despite a variety of natural resources is the state with lowest quality of life and the worst socioeconomic performance in Brazil, according to the Brazilian Institute of Geography and Statistics. Its Human Development Index (0,639) is, in fact, lower than those of Iraq (0,686) and Tajikistan (0,685).

2 MÁRCIO PUGLIESI - ANDRÉ MARTINS BRANDÃO, *A Uma conjectura sobre as tecnologias de big data na prática jurídica, Revista da Faculdade de Direito da Universidade Federal de Minas Gerais*, v. 67, 2020, pp. 453-482.

Although they are not mistaken in their consideration, such technology can be understood in a broader sense, since computational mechanisms are able to discover patterns, identify trends and thus make accurate predictions about what may occur in the future.

The theoretical currents that reflect on AI indicate that such new techs are in constant development, which means that its concept can be classified as partially fickle, *i.e.*, modifiable since this phenomenon described in the literature is intrinsically linked to machine learning – the computer's inorganic ability to progressively "learn" from its previous experiences and, thus, gradually improve its performance.

The constitutive element of AI are algorithms, predefined and formulated in sequenced ways that, based on data provided by a programmer, give a computer or software the ability to infer, *i.e.*, to build conclusions and actions, as a human being can make. It is, therefore, a technological application that seeks to truly anticipate or predict results, with a certain degree of accuracy, from the analysis of pre-existing data.

In the context of the administration of justice in Brazil, its noticeable the increase of several initiatives aimed at the development of disruptive information technologies, mostly led by private players, notedly *lawtechs* and *legaltechs*. These companies seek to build a new reality of legal practice, considering that the traditional model is no longer able to meet expectations efficiently.

Lawtechs are a sort of startups that create innovative solutions in the form of products or services that facilitate legal procedures. An example of lawtech of this niche in Brazil is *Jurídico Certo*, a software developer company through which anyone in the country can find a corresponding lawyer, also allowing companies to find a temporary *ad hoc* representative.

Legaltechs are also a sort of startup, but unlike its predecessor, they seek to find technological solutions for lawyers, with the aim of automating activities and routines typical of their offices. For example, *JusBrasil* provides a database of jurisprudence, doctrine and petition templates, that allows lawyers to perform duties more easily.

Such projects, although developed for private advocacy in its most, are not limited to it. Government institutions that are essential parts of the justice system, in general, have been given a certain commitment to the use and development of informational technologies in the intent to assist their end-activities.

In Brazil, it's possible to classify five main lines in which new information technologies are nowadays applied: i) automation and document management; ii) monitoring and extraction of data; iii) analytics and jurimetry; iv) online conflict resolution and v) digital process.

The first major technological innovation program of the judiciary came with the Electronic Judicial Process (EJP). Since the implementation of this new platform, the text became hypertext and judicial procedures migrated to a dematerialized environment.

The legal frame for the Brazilian digital process was the Statute Law No. 11.419/2006, which allowed electronic judicial process, also comprising broad discipline about document and information standards applied in any degree of jurisdiction.

Only in 2013, however, did the National Council of Justice (NCJ) institute the operational technical parameters applicable at a national level, enabling the full use of this tool[3], which broadly ended manual bureaucratic activities linked to the judiciary.

The second major milestone of computerization of Brazilian justice recently came along with the virtualization of the territorial division of justice, within the scope of the "100% digital justice" and "Justice 4.0" programs.

Through Resolutions No. 345/2020[4] and 385/2021[5] of the NCJ, Brazilian Courts were allowed to hold hearings and sessions in a completely virtual environment. Another innovation that deserves to be highlighted is the "virtual counter", which through Resolution No. 372/2021/NCJ,[6] enabled the virtual and immediate service of parties and lawyers by judicial clerks.

Nunes and Polinelli, by the way, believe that these NCJ's initiatives can "[...] reveal a political choice that will enable, in the near future, to empower the Brazilian state to promote e-access to justice with redistributive and/or corrective results, in many areas".[7]

It is important to note that despite the advances, given the regional differentiations experienced in the country, there are a considerable number of automation initiatives in the judiciary branch that are almost never coordinated nationally.

It's also important to note that, in Brazil, technological tools applied to the administration of justice have a significant range of complexity, from the simplest as *MinerJus* – a software developed at the Tocantins' State Court of Appeals that organizes cases by subject or theme – to the use of semi-autonomous decision-making software such as *Artificial Intelligence* and *Automation Intelligent* that operates in Bahia's and Mato Grosso's State Courts, both created with the purpose of directly assisting judges in elaborating decisions.

The use of these new technologies, however, is not restricted to the management of the end-activities inside government institutions, much less restricted to procedures brought to the attention of the Judiciary.

Especially for companies such as Thomson Reuters and International Business Machines Corporation[8], jurimetrics is, for instance, a fertile field of action that, through

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3 NATIONAL COUNCIL OF JUSTICE, *In 15 years computerization has transformed the 21st century Judiciary*, Brasília, DF, Brazil, 2020, https://www.cnj.jus.br/em-15-anos-a-informatizacao-transformou-o-judiciario-do-seculo-xxi/.

4 NATIONAL COUNCIL OF JUSTICE, *Resolution No. 345 of 09/10/2020*, *Disciplines the 100% Digital Judgment Program*, Brasília, DF, Brazil, 2020, https://atos.cnj.jus.br/atos/detalhar/3496.

5 NATIONAL COUNCIL OF JUSTICE, *Resolution No. 385 of 06/04/2021*, *Disciplines the creation of "Justice 4.0" program*, Brasília, DF, Brazil, 2021, https://atos.cnj.jus.br/atos/detalhar/3843.

6 NATIONAL COUNCIL OF JUSTICE, *Resolution No. 372 of 12/02/2021, Disciplines the virtual and immediate service of parties and lawyers by judicial clerks*, Brasília, DF, Brazil, 2021, https://atos.cnj.jus.br/atos/detalhar/3742.

7 DIERLE NUNES & CAMILLA POLINELLI, *Access to justice and technological change in the Brazilian justice system; technological management of disputes and the alignment of expectations for a transformation focused on the citizen – new designs, architecture of choices and proper treatment of disputes*, in DIERLE NUNES-ISADORA WENECK - PAULO LUCON - PAULO HENRIQUE DOS SANTOS (org.), *Procedural law and technology: the impacts of the technological turn at the global level*, Ed. Jus Podium, São Paulo, 2021, P. 17.

8 The multinational International Business Machines Corporation was the developer of the world's first robot lawyer, called ROSS, see JOÃO OZORIO DE MELO, *Law firm debuts first "robot lawyer", Revista consultor jurídico*, 2016, https://www.conjur.com.br/2016-mai-16/escritorio-advocacia-estreia-primeiro-robo-advogado-eua.

big data analytics, allows players to anticipate or predict risks potentially linked to their choices and strategies, considering, for example, the expected time of litigation or even the chances of success.

This practice is no longer uncommon, as Junquilho explains:

> The use, for example, *of analytics* to predict case outcomes through the well-known predictive analysis promotes the strengthening of the advantages of the usual litigants. Ordinarily lawyers advise clients to act based (sic) on their intuitions and limited to their direct or indirect experience of law in previous cases. However, it is already technically possible to promote this legal analysis through the structuring of information through algorithms that work with patterns of facts, judgment and precedents to predict the outcome of a process in a multitude of decision-makers and courts. One of the potentialities of artificial intelligence is to deal with big data in unstructured databases and extract decision-making subsidies from them. The advantage of predictive analytics is that it provides a mechanism to access a vast amount of information and systematize it to extract a likely outcome from the case in question. As McGiniss and Pearce report 'computational power allows substantial data to be collected and organized' in order to extract patterns between the data, and *an adequate machine learning* can be analyzed within the standards[9].

It means that machines gradually no longer boil down to heavy and hard work such as basic office administration and "cutting biscuits" in modern factories as once pointed out by Susskind[10].

Although it is already possible to question whether it would be prudent or appropriate to entrust certain activities to a software, it is unquestionable that for some of them the machine's accuracy may even be able to overcome human cognitive abilities.

This leads us to a point in which society should consider not to replace human intelligence, of course, but reflect upon how better results ought to be achieved by combining both human and artificial intelligence.

3. Artificial Intelligence applied in the administration of Brazilian Justice: regulatory standards and milestones

The foundations of justice while conceived by Rawls' deliberative theory, in many respects, complement each other to form the ideal of an "accessible justice" as later developed by Cappelletti and Garth.

It is important to highlight that, for Rawls[11], law can be conceived as a both rational-social structure, *i.e.*, a logical system of rules desired and accepted by society, which enables citizen participation in public life, and, ultimately, freedom of self-determination.

Cappelletti and Garth's theory[12], contributes to such thesis based on two complementary dimensions necessary to comprehend the parameters that should guide the performance of the Judiciary branch in the distribution of justice.

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9 TAINÁ AGUIAR JUNQUILHO, *Projeto Victor: perspectivas de aplicação da inteligência artificial ao Direito*, *Revista de Direitos e Garantias Fundamentais*, v. 19, n.3, 2018, pp. 218-237.

10 RICHARD SUSSKIND, *Online Courts and the Future of Justice*, Oxford University Press, Paperback Edition, 2021, p. 111.

11 JOHN RAWLS, *A Theory of Justice*, CAMBRIDGE, 1971.

12 MAURO CAPPELLETTI & BRYANT GARTH, *Access to Justice*, *vol. 1: A World Survey*, *Sitjoff and Noordhoff,* 1978, p. 8.

The first of these dimensions shows that full access to justice is subordinated to a formal and material equality. The second, specifies that social justice must "produce results that are individually and socially just"[13].

The combination between these two dimensions allows us to outline a theoretical model from which people can claim rights or resolve disputes through the State, which distributes justice through a declaratory or constitutive pronouncement, the decision.

Such classical theories find it difficult to be applied in the reality of contemporary justice systems[14], mainly because Brazil, for instance, is one of the countries with the highest rates of lawsuits in the world.

Although the average productivity of Brazilian magistrates is relatively high, when compared with the performance of other Latin American judges, there is a significant discrepancy between the number of demands submitted and resolved by the Judiciary.

This observation, important to say, is an empirical reality revealed by the National Council of Justice itself, according to which, in 2021, while a total of 26.9 million cases solved by the Brazilian Judiciary were recorded, another 27.7 million new demands were distributed[15].

Except for the Brazilian Justice dedicated to electoral cases, there was a significant increase in the number of new lawsuits in all other segments of justice in 2021 when compared to the previous year. In state courts, *e.g.*, the growth of pending lawsuits reached 1 million (1.7%) whereas, at a federal level, 881.7 thousand (9.5%)[16] [17].

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13 See MAURO CAPPELLETTI - BRYANT GARTH, *supra* note 12.

14 By "justice systems" we mean the complex of institutions that operate within the scope of judicial provision and those whose mission is essential to administer justice or whose action involves the elaboration of policies and the provision of services that enable citizens to defend their rights.

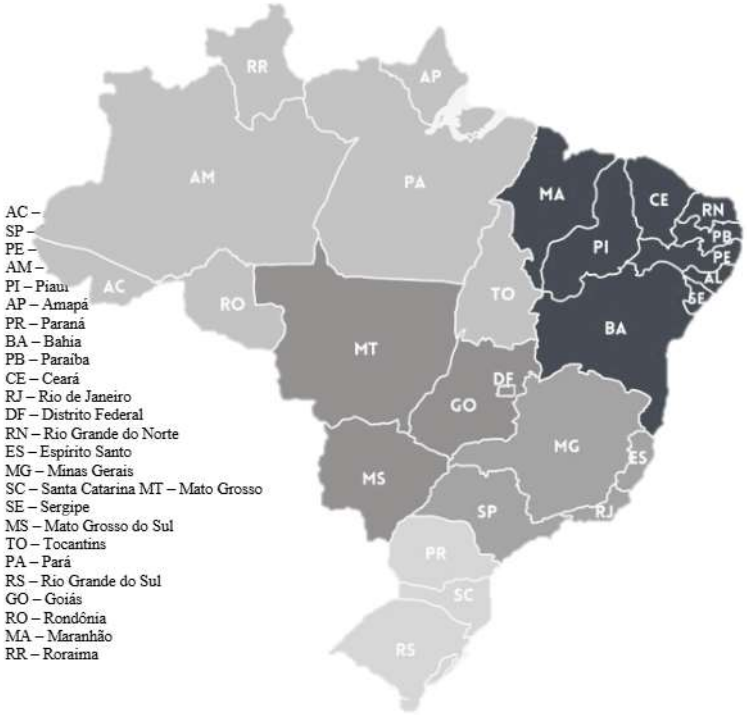
15 The National Council of Justice was created by Constitutional Amendment N°. 45/2004, tasked with ensuring the autonomy of the Judiciary and compliance with the Statute of the Judiciary, defining the plans, goals and programs of institutional evaluation of the Judiciary, receiving complaints, electronic petitions and representations against members or body of the Judiciary, judging disciplinary proceedings and improving practices give speed, produce and give broad publicity to statistical reports relating to judicial activity throughout the country, pursuant to Art. 103-B of the CF/1988.

16 On average, Brazilian courts have one of the highest workloads (6,962 cases per judge) and the highest congestion rate (68.5% in 2019).

17 According to the Brazilian Constitution, State Courts are responsible for adjudicating all matters not falling under the jurisdiction of other branches of the judiciary. In other words, if a dispute does not fall within the competence of Federal, Labor, Electoral or Military branches, it shall be adjudicated by State justice. The list of matters under its appreciation includes issues related to civil, criminal, administrative, tax and environmental law, among others. Brazilian Justice Brazilian Justice is organized based on the federal units that collectively form the Federation. There are 26 states along with the Federal district (Brasília), thus totaling 27 Courts of that kind. The first degree of jurisdiction is provided by State judges, who exercise their office in the districts spread throughout the country, formally known as *comarcas*.

Figure (1)

State Court jurisdiction in Brazil



Source: Own elaboration (2023).

These data show that Brazilian judiciary is still not able to deal with such an amount of demand[18].

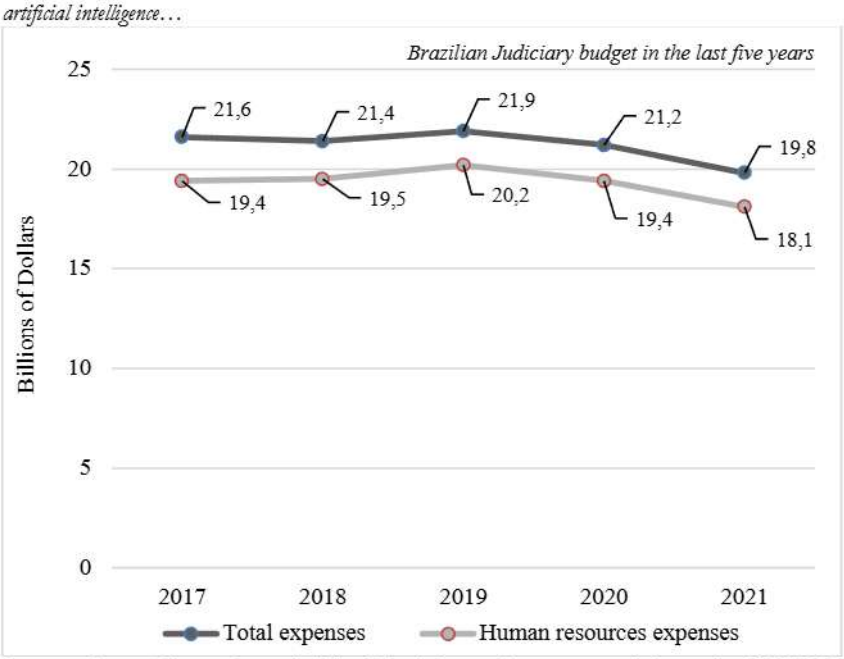
Brazilian Judiciary is not only unable to deal with the dozens of millions of cases presented to it every year, but also considerably expensive.

As a matter of fact, recent data (2022) present formally by the National Council of Justice reveals that in order to pay human resources, the Judiciary spends a total of 18 billions dollars annually[19]. The graphic below depicts this reality.

Figure (2)

18 According to the National Council of Justice, as of 2019, a lawsuit in Brazil can generally take ten years until its resolution. *See* NATIONAL COUNCIL OF JUSTICE, *Justiça em Números*, 2020, http://Justicaemnumerosano-base2019/ConselhoNacionaldeJustica.

19 As of 2023, a single lawsuit in Brazil, generally, can cost up to 735 taxpayers' dollars.



Source: Own elaboration subsidized by information extracted from the NCJ (2023).

Confronted by this scenario, Katsh[20] registers that the use of artificial intelligence tools is the main alternative way of solution, highlighting two major needs: first, the need to virtualize justice, the second, to automate the judicial-decision process.

These changes aimed at institutional efficiency gain are, in fact, of great importance, considering that technological innovations as dynamic mechanisms tend to drive the creation of existing problem-solving models, making use of fewer human resources, thus allowing scalable benefits. Certainly, this is a need already perceived by the national coordination of the Brazilian Judiciary, although, sadly, belatedly.

The main evidence that this is, in fact, a relevant concern of Brazilian government officials can be observed in the "Justice 4.0 program".

The Justice 4.0 Program encourages the development and use of new technologies and artificial intelligence to make Brazilian justice more efficient and effective.

It builds on existing efforts to promote judicial automation and the use of technologies such as machine learning to reduce manual efforts and promote the best use of human and material resources.

In addition, the Program improves the strategies currently used by the Brazilian justice to manage data and information, which tends to increase transparency and provide significant advances in judicial policies.

The strategic initiatives of the Justice 4.0 Program are managed by the National Council of Justice, with the support of the United Nations Development Program (UNDP).

The tools, methodologies and studies developed throughout the program are accompanied by teams from both UNDP and NCJ. All knowledge and solutions are being appropriated by the NCJ through a project sustainability strategy.

The main identifiable result of this recent judicial management policy is the increase in the number of artificial intelligence projects under development. The first coordinated

20 ETHAN KATSH, *The Electronic Media and the Transformation of Law*, Oxford University Press, 1989.

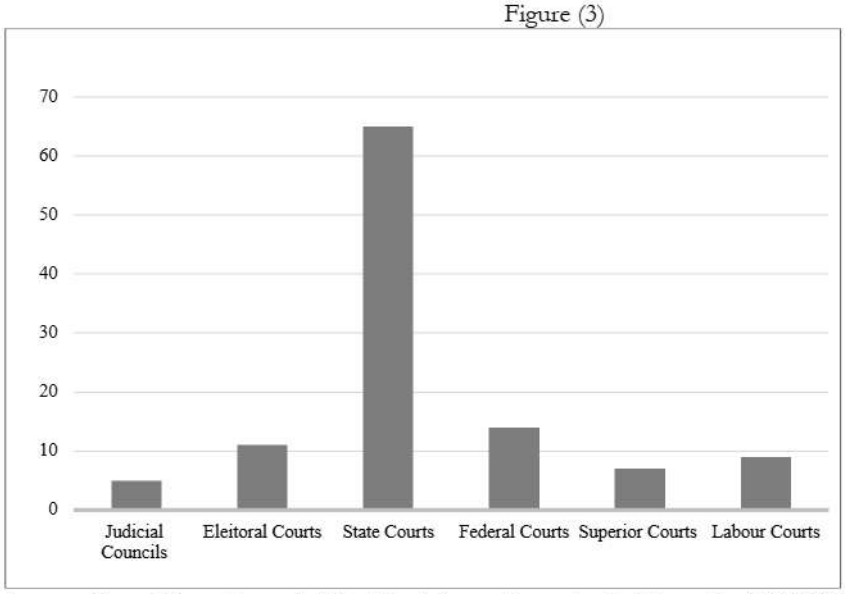
survey at national level identified in 2021 a total of 41 initiatives, distributed among 32 courts in the country.[21]

In early 2022, the Center for Innovation, Administration and Judicial Research from *Getúlio Vargas Foundation*[22], released the report "technology applied to the management of conflicts within the judiciary" in which it is possible to verify that at least 47 courts in Brazil already operated in their routines some artificial intelligence mechanism.

As of 2023, the National Council of Justice mapped a total of 111 AI projects developed or under development in Brazilian courts, an increase of 171% when compared to the immediately preceding period.

By analyzing the initiatives by branch of justice in which developed and project's characteristics, it is possible to observe that most artificial intelligence tools applied in the administration of Brazilian justice is present at State Court level, followed by Federal Court, as shown in the graphic below.

Figure (3)



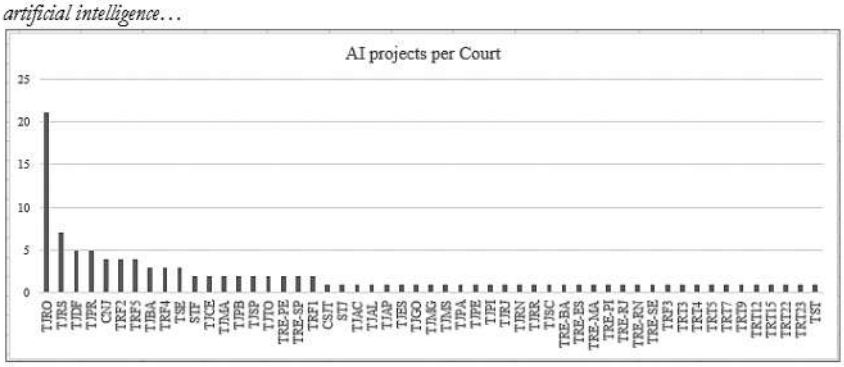
Source: Own elaboration subsidized by information extracted from the NCJ (2023).

Among all 27 States, Rondônia's State Court of Appeals has the greatest number of AI projects, totalizing 21 initiatives, which represents 18% of all tools developed or currently under development in the country. The chart below illustrates the number of projects distributed per court.

Figure (4)

21 NATIONAL COUNCIL OF JUSTICE, *Justice 4.0: AI is present in most Brazilian's courts*, Brasília, DF, Brazil, 2020, https://www.cnj.jus.br/justica-4-0-inteligencia-artificial-esta-presente-na-maioria-dos-tribunais-brasileiros/.

22 CENTER FOR INNOVATION, ADMINISTRATION AND JUDICIAL RESEARCH, GETÚLIO VARGAS FOUNDATION. *Technology Applied to Conflict Management within the Brazilian Judiciary*. 2nd ed, Rio de Janeiro, FGV, 2022.



Source: Own elaboration subsidized by information extracted from the NCJ (2023).

Despite the multiplicity, 65% of projects are not initiated or are in a preliminary stage of development. As for the rest, 26% is still in intermediate phase of development (1%-75%). That means that only 8% of the tools at the national level are at an advanced stage of development, fully performing their purposes.

These applications are currently being used in Maranhão's, Alagoas, Pará, Rio Grande do Norte and Minas Gerais State Courts, and in the 1st Region of Federal Court, Electoral Court of Piauí, and Regional Labor Courts of the 9th and 22nd Region[23][24][25].

The evaluation of this group reveals that AI is still at a very rudimentary stage in Brazilian Judiciary[26]. Among such courts, only one has a software capable of automatizing decision-making in electoral accountability processes, while another has an automation tool capable of predicting the degree of chances for labor agreements.

All the other Courts have automated mechanisms of lower complexity, serving, in general, as keyword search engines, *i.e.,* a text analyzer, for indexing or classification purposes, preparing lawsuits for further human intervention.

4. Case study of Maranhão's State Court of Appeals application of AI solutions

In the case under study, Maranhão's State Court of Appeals only began to adopt artificial intelligence and automation tools in its routines recently, in mid-2022.

Although it has informed the NCJ only two projects, one in the intermediate phase and another in a relatively advanced stage, the Court has a total of four initiatives, which are: 1) *Apollo* - Precedent Analyzer, 2) *Apollo* - Prevention Analyzer, 3) *Triador*, recently renamed to *Clovis* and 4) *Judith.*

The *Apollo* Precedent Analyzer project, according to data from May 2022, is at a stage of 51% – 75% completed, and it's developed by small team of two programmers,

23 Which is equivalent to 73 projects in absolute numbers.
24 Which is equivalent to 29 projects in absolute numbers.
25 What is equivalent to 9 projects in absolute numbers.
26 In relation to this, we believe that is also possible to distinguish between a strong and weak forms of AI. While strong AI in Brazil represents the models of application capable of perform human-like thought in the judiciary process, the second represents a more modest sort of technology, often designed to bureaucratic routines, inspired not to overcome "human-judgment" but to prepare cases for further human intervention.

operating entirely based on Python language within[27] the Brazilian judiciary electronic environment of processes.

The tool, developed in cooperation with a local university, has no publicly available source code neither public information on whether such software already operates and/or its extension of operation.

This engine intends to analyze petitions distributed electronically to the magistrates of the Court and classify them according to pre-established topics, which, in the case, allows a summarized bureaucratic routine.

The *Apollo* Prevention Analyzer project is 76% - 99% completed and counts with a much bigger team of developers, also operating based on the Python language in the EJP environment.

The tool has no publicly available code, neither information related to its operation nor extension. In summary, the software is basically an administrative automation machine, intended to evaluate petitions distributed electronically to the magistrates of the Court in order to ascertain if the addressed judging official can overlook or decide upon the matter.

The project "*Triador*", unlike its predecessors, is not included in the survey made by the NCJ, so it is not possible to know at what stage of development or version it is. There is no public information about source or code used it this infrastructure, although it is known that this project is the result of a technical cooperation agreement with the Bahia's State Court of Appeals.

The Automation machine basically labels the processes distributed to judicial offices according to pre-established themes. In short, automation can access the EJP homepage, log into the system and identify the processes from textual search commands, which is why this automation is essentially bureaucratic and poses no direct effect upon decision-making.

Finally, the "*Judith*" project, as well as its predecessor, is not included in the survey made by the NCJ, so it is not possible to know in what stage of development or version this software is, nor is there any public information about its structure or source code.

None of the initiatives developed or under development within the scope of the Court studied are present in the National Repository of Software Projects and File Versioning of the NCJ, which hinders the mapping projects process and exposes the risk of developing duplicate softwares, thus violating the indispensable collaborative character that should mark innovation within the Brazilian Judiciary.

5. Conclusion

Artificial Intelligence is present today in personalized entertainment, such as music and movies, in traffic assistance, instant messaging, credit cards, social media and basically everything that enable us to interact with the world at any time.

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27 See JOHN V. GUTT, *Introduction to Computation and Programming Using Python,* Massachusetts Institute of Technology Press, (2013) understands the Python language as "a computational system often used to build websites and software, assisting in automating tasks and performing data analysis." The Python system is a general-purpose language, which means it can be used to create a variety of different programs. This versatility, along with its ease of use for beginners, has become one of the most used programming languages by AI developers.

The same phenomenon is perceived as part of legal systems nowadays, given that law is subordinated to the permanent moral and informational changes experienced in society, hence the main difficulty in conceptualizing what artificial intelligence consists of.

However, considering that AI is intrinsically connected to the computer's own inorganic ability to "learn" from its previous experiences and thus gradually improve its performance, its definition can be achieved in its constitutive elements, algorithms that, based on data provided by a programmer, can be understood as a kind of language that allows the software to be able to infer, *i.e.*, to build conclusions and actions upon analysis of preexisting data.

Therefore, AI is precisely a mechanism able to discover patterns, identify trends and make predictions about what may occur in the future.

Such capacities imprint a certain enthusiasm in the institutions of the Brazilian justice system, notedly because they are considered an important way of solving procedural accumulation.

If at the beginning of the decade the challenge of the Brazilian judiciary was to migrated processes from physical to the virtual world – something that was satisfactorily achieved with the Electronic Judicial Process, today, the main frontier is the automation of the judicial-decision-making process, a need already perceived by the national coordination of the Judiciary.

The evidence that this is a relevant concern of Brazilian government officials can be observed in the implementation of the Justice 4.0 program, an initiative of the National Council of Justice, which encourages the use of new technologies to reduce manual work in order to promote efficient use of human and material resources, since 2021.

The main identifiable result of this judicial management policy is the increase in the number of artificial intelligence projects in Brazilian courts, which already have at least 111 tools developed or in development, a growth of 171% when compared to the previous year.

Despite the multiplicity of projects, most of them (65%) were not initiated or are in a very embryonic stage of development[28]. As of the remain, 26% is still in an intermediate phase of development (1%-75% completeness), *i.e.*, only 8% of the tools at the national level are at an advanced stage of development.

The evaluation of fully developed or advanced stage softwares shows that artificial intelligence applied in Brazilian Judiciary is not yet so "smart", given that among these tools, only one is able to automatize decision-making, while another can predict the degree of chances for labor agreements.

All the other AI are automated mechanisms of lower complexity, serving as keyword search engines, *i.e.*, a text analyzer, for indexing or classification purposes, preparing processes for further human intervention.

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28 To paraphrase Fábio Ribeiro Porto, *"all Courts in Brazil want a sort of AI to call their own"*, which is depicted by him as a *wacky race*, mainly because the only concern is to establish such applications with little or no concern to its quality and efficiency. See VALTER SHUENQUENER DE ARAÚJO, MARCUS LIVIO GOMES (coord.) - DORIS CANEN (org.) *Inteligência Artificial e aplicabilidade no Direito*, Brasília, National Council of Justice, 2022.
DIERLE NUNES, ISADORA WENECK, PAULO LUCON, PAULO HENRIQUE DOS SANTOS (org.). *Procedural law and technology: the impacts of the technological turn at the global level*, São Paulo, Ed. Jus Podium, 2021, P. 17.

This is the case of Maranhão's State Court of Appeals, which only began to adopt artificial intelligence and automation tools recently, in mid-2022. Out of the four initiatives available in this Court, two were not reported to national statistics.

In general, the tools applied in Maranhão's State Court does not have publicly available source code, neither information on whether it already operates, nor if they have been peer reviewed in order to evaluate its performance[29].

Except for *Apollo* Analyzer Prevention software, the automation initiatives of the Court are basically searching engines, seeking key terms and indexing the results found in the electronic environment of processes, thus not exactly and AI rather than a merely administrative automation tool, unable to directly influence on decision-making.

None of the initiatives developed or under development within the scope of the Court studied are present in the National Repository of Software Projects and File Versioning of the NCJ.

In fact, out of the 111 projects developed or under development, the Repository has only 9 *shared softwares*, which means that not only Maranhão's State Court of Appeals has a problem when it comes to sharing collaborative automation experiences.

This is the hardest challenge facing AI in the Brazilian Judiciary today, given that the underreporting of tools or their non-disclosure makes mapping difficult and exposes the risk of developing duplicate softwares, thus violating the indispensable collaborative character that should mark the innovation process.

AI in the administration of justice in Brazil can, therefore, be illustrated as numerous islands of individual non-standardized "solutions", strongly characterized by a redundant, overlapping and duplicate ideas.

To overcome such problems, its pivotal that the NCJ take the lead when it comes to develop AI and other forms of automation, allowing State and Federal Courts to collaborate as partners rather than dozens of isolated creators.

Stablishing a centralized agenda of what sort of automation tool should be created is also an important task, mainly because this will allow better use of both human and financial resources and, of course, reduce risks of overlapping initiatives. We believe that a tech-chamber should be established and heard on such specific matters.

After this, the focus point should rest on acquiring interoperability and standardization of the already existing AI and automation tools, enforcing transparency and code-sharing between Courts-NCJ. Until such point, AI in the administration of justice in Brazil should be considered a matter of fiction rather than reality.

29 There is almost an absolute lack of clear assessments of the real value that such applications can create, as well as the challenges that need to be faced to ensure that the Court and citizens could benefit of its "disruptive" impact.

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STRONG AND WEAK FORMS OF ARTIFICIAL INTELLIGENCE APPLIED IN THE ADMINISTRATION OF JUSTICE IN BRAZIL: CASE STUDY OF MARANHÃO'S STATE COURT OF APPEALS

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Abstract:
[Strong and weak forms of artificial intelligence applied in the administration of justice in Brazil: case study of Maranhão's state court of appeals] Brazilian Judiciary has been experiencing in the last decade the effects of digital transformation, as a result of new tech incentive programs, through which the government intensifies its investments in automation, virtualization and Artificial Intelligence (AI) tools, with expectations that this will provide both efficiency and resolution gains. Considering that these technologies can cut procedural time and probably reduce human and material resources in benefit of the Judiciary, the present paper evaluates AI regulatory standards and its use in Brazilian courts, focusing on the case study of Maranhão's State Court of Appeals.

Key Words:
Brazilian judiciary, technological innovation, artificial intelligence, efficiency gains; Maranhão's State Court of Appeals

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