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AN EXPLORATORY STUDY OF THE IMPACT OF ARTIFICIAL INTELLIGENCE ON THE JUDICIARY PRODUCTIVITY AND EFFICIENCY

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ABSTRACT

This exploratory study investigates the application of artificial intelligence (AI) within the Sergipe State Court, focusing on its impact on efficiency, productivity, and user satisfaction. AI technologies, such as machine learning algorithms and natural language processing (NLP), have streamlined judicial processes, including automated case prioritization, enhanced legal research, and predictive analytics for informed decision-making. The study highlights AI's potential to ensure consistent and fair judgments, increasing satisfaction among judicial service users in Sergipe. However, it also addresses significant risks, including algorithmic biases and concerns about AI's trustworthiness and transparency. These risks emphasize the need for careful oversight and monitoring to prevent adverse impacts on justice. According to the exploratory research, the main benefit expected by users is the significant increase in efficiency and productivity, however, the main identified risk lies in concerns about algorithmic biases and trust in AI systems, a factor considered essential or very relevant by a significant portion of respondents. Regarding the services to be prioritized for enhancement with AI, the grouping of documents by similarity emerges as primordial, considered essential or very relevant by most employees. The study concludes with recommendations for integrating AI to improve operational efficiency and the credibility of the Sergipe State Court.

Keywords: Artificial Intelligence. Judiciary. Productivity. Efficiency.

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INTRODUCTION

The increasing integration of artificial intelligence (AI) in various sectors of society is driving the need for innovative and efficient solutions within the judiciary. At the forefront of this digital transformation, the Court of Justice of the State of Sergipe (TJSE) is a relevant case study to analyze the potential and challenges of implementing AI in its processes. The integration of artificial intelligence (AI) into judicial systems is revolutionizing the landscape of legal administration worldwide. In Brazil, the potential of AI to address longstanding challenges such as case backlogs, inefficient legal research processes, and the inconsistent application of laws has garnered significant attention (Zhu e Zheng, 2021). This study delves into the transformative impact of AI technologies, including machine learning algorithms and natural language processing (NLP), which offer innovative solutions for automating and streamlining various judicial functions and can be framed as a support tool for assessing court activity. By integrating tools into the workflow of courts that assist in the analysis, classification, and retrieval of legal documents, efficiency improvements can be achieved (Freire *et al.*, 2023).

However, the adoption of AI in the judiciary has challenges. One of the primary concerns revolves around the risks of algorithmic bias, where AI systems may inadvertently perpetuate existing biases present in historical data (Han *et al.*, 2024). Such biases can lead to unequal treatment and potentially unjust outcomes, raising severe ethical and legal concerns. Additionally, the scientific community and legal authorities have highlighted the opacity of AI decision-making processes about malpractice and discussed the risk associated with legal and technical black box practices linked to AI applications (Demertzis *et al.*, 2023). These issues are critical, as they directly affect public trust in the fairness and impartiality of the judicial system.

To address these concerns, the study emphasizes the necessity of robust ethical guidelines and regulatory frameworks that govern the use of AI in the judiciary. This includes the development of transparent algorithms and regular audits of AI systems, as seen in (Mumford, Atkinson e Bench-Capon, 2023). By fostering an environment of accountability and continuous improvement, the judiciary can better align AI applications with principles of justice and equity. Moreover, engaging stakeholders, including legal professionals, technologists, and the public, in the discourse around AI use in the judiciary is crucial for building consensus on best practices and ensuring that the technology serves the broader interests of society. The research focuses on the growing integration of artificial

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intelligence in the Judiciary, with the central problem being understanding how AI impacts the Court of Justice of Sergipe. The main objective is to investigate organizational transformations, explore employees' perceptions of AI adoption's benefits and challenges, and identify concrete opportunities for improving judicial services.

This exploratory study was conducted through a web-based form to gather insights from judges and court staff across various fields, including core judicial functions, innovation arenas, information and communication technologies (ICT), and business specifications. Using the Likert scale, the form allowed for a detailed analysis of participants' perceptions and experiences regarding adopting AI in their workflows. Likert scale is a method for evaluating respondents' levels of agreement or disagreement with various statements. It highlights that the scale's construction is guided by research objectives, often measuring opinions about a single latent variable through multiple mutually exclusive items. This approach allows researchers to capture the complexity of participants' attitudes and perceptions of specific dimensions of the studied phenomenon (Joshi *et al.*, 2015).

Additionally, this approach provides an overview of existing workflows and the possibilities for enhancement through technology, contributing to the formation of a diagnostic that can guide future innovation initiatives in the Sergipe judicial system. Thus, this study maps the professionals' opinions and seeks to identify pathways for effective AI integration, addressing this transition's challenges.

The study's main areas of investigation include the perception of employees regarding the benefits of AI in the judiciary, such as process optimization, workload reduction, and increased accessibility. Additionally, the research seeks to identify concerns related to the implementation of AI, such as ethical issues, security risks, and the impact on the workforce.

Table I - Position distribution

Position	Number
Judges	19
Staff - End Area	14
Staff - IT Area	12
Staff - Business Definition Area	5
Other Areas	6

The data from the survey shows the distribution of job roles among the survey participants regarding the potential use of AI in the Tribunal de Justiça de Sergipe (TJSE). The largest group consists of magistrates (19), followed by staff from core areas of the court

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(14), staff from the IT sector (12), employees involved in business definition and innovation (5), and a miscellaneous group categorized as “Other” (6). The predominance of magistrates and staff from key sectors such as IT and core areas indicates that the insights gathered reflect judicial and operational perspectives, essential for AI integration within the court system.

The combination of both data sets indicates that any future implementation of AI within the TJSE would need to consider the specific needs and workflows of both the judiciary and administrative staff. The diverse nature of the respondents’ units, ranging from IT departments to civil and criminal courts, implies that AI solutions must be versatile and tailored to different aspects of court activities, including case management, decision support, and administrative functions.

Finally, the study explores which specific TJSE services could be improved through the use of AI, with a focus on automating repetitive tasks, document classification, and database searches. The results of this research are expected to contribute to developing an AI implementation strategy at the TJSE that is aligned with the institution’s needs and societal demands and aims to build a more efficient, transparent, and accessible justice system.

This article is structured as follows: the section METHOD AND PROCEDURE section aims to detail the methodological approach used in the study, describing the research questions and the data collection steps through the online survey. The DESCRIPTIVE ANALYSIS section intends to present the data collected by the study in a detailed and organized manner, showing the participants’ perceptions of the potential benefits, challenges, and services of AI at TJSE. The RESULTS AND DISCUSSIONS section has the central intention of analyzing and interpreting the results presented in the previous section about the initial research questions. The THREATS TO THE VALIDITY section discusses the potential methodological limitations and weaknesses of the study that could affect the validity and generalization of the results. The CONCLUSIONS section will synthesize the study's main findings and general implications.

RESEARCH DESIGN

RESEARCH QUESTIONS

This research investigates the transformative impact of Artificial Intelligence (AI) on the workforce of the Court of Justice of Sergipe (TJSE), a Brazilian state court system.

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Specifically, the study addresses three interconnected research questions. The primary research question examines the overall impact of AI implementation on TJSE's workforce, seeking to understand the broad organizational changes and adaptations required in this digital transformation process. The first specific research question delves into the human aspect by exploring TJSE employees' perceptions regarding both the benefits and challenges associated with AI adoption, providing valuable insights into the workforce's readiness and potential resistance to technological change. The second specific research question focuses on identifying concrete opportunities for AI enhancement within TJSE's service portfolio, aiming to map which judicial and administrative processes could benefit most from AI implementation. Through these research questions, this study contributes to the growing knowledge about AI adoption in judicial systems and provides practical insights for other courts planning similar digital transformations.

Table II – Research questions

Research Questions	Motivation
RQ: What is the impact of AI on TJSE's workforce?	To understand how AI integration affects court operations, workforce structure, and organizational processes.
SRQ1: What is the perception of TJSE employees regarding the benefits and challenges of AI?	To assess workforce readiness and identify potential barriers to AI adoption from the employees' perspective.
SRQ2: What would be the best prioritization of services to be enhanced by AI?	To identify and prioritize court processes that would benefit most from AI implementation.

EXECUTION

We conducted a survey to identify the benefits, risks, and potential services that Artificial Intelligence (AI) could offer at the Court of Justice of Sergipe (TJSE), which involved several steps. The participants' questions and answers are available in a public repository[3]. The first step was defining the questions for the survey. This required a clear understanding of the areas where AI could make a difference and the stakeholders' concerns. Questions were carefully formulated to capture a range of perspectives, focusing on the potential advantages, risks, and specific services that AI might provide. This phase thoroughly reviewed internal needs and industry trends related to AI in judicial systems.

Once the questions were finalized, we submitted the form for review and approval by the highest authority within the Sergipe State Court to validate its applicability. The President of the Court formally approved the application without reservations. With this

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approval, we began identifying the appropriate individuals to participate in the survey. Including people with diverse roles within the TJSE, such as judges, clerks, administrative staff, and IT professionals, was essential. By selecting a representative sample from these groups, we ensured that the research would provide a comprehensive perspective on how AI could impact various functions within the court. The diversity of respondents allowed us to gather a wide range of insights, reflecting a broad spectrum of experiences and viewpoints.

The third step was creating the survey. We chose an online platform that allows easy distribution and ensures that responses can be collected and stored securely. The survey design was intuitive, with a mix of multiple-choice, Likert-scale, and open-ended questions. Before distributing the survey, we validated it with specialists familiar with the business and operations of the TJSE. These experts reviewed the questions to ensure they were relevant and worded and that the survey would effectively capture the necessary information. The validation process was crucial for refining the study, ensuring it addressed the most critical areas of AI and avoided ambiguity or bias.

Finally, the survey was applied to the selected group of participants. After it was distributed, we collected responses and began the analysis phase. The data was sorted and categorized to identify common themes and trends, particularly regarding the benefits, risks, and potential AI services for the TJSE. This analysis provided valuable insights that will inform future discussions on how AI could be implemented to enhance the court's operations while addressing any associated challenges.

DATA ANALYSIS

AI POTENTIAL BENEFITS

Based on the 56 responses gathered from collaborators at the Court of Justice of Sergipe (TJSE), the table provides detailed insights into how various aspects of Artificial Intelligence (AI) are perceived in importance and relevance. The data is broken down into four categories: “Essential”, “Very Relevant”, “Relevant” and “Less Relevant”, allowing for a deeper understanding of the potential impact AI could have on the court’s operations.

Starting with Efficiency and Productivity, 44.60% of respondents considered this benefit as “Essential”, while an equal percentage (44.60%) viewed it as “Very Relevant”. This means that nearly 90% of respondents recognize the significant potential of AI to enhance efficiency and productivity at TJSE. Only a tiny fraction found it merely “Relevant”

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(8.90%) or “Less Relevant” (1.80%). This overwhelming emphasis on efficiency suggests strong support for AI tools that could streamline processes, reduce manual labor, and speed up workflows within the court.

Table III - Potential Benefits

Potential Benefit	Essential	Very Relevant	Relevant	Less Relevant	Irrelevant
Efficiency and Productivity	44,6%	44,6%	8,9%	1,8%	0%
Workload Reduction	33,9%	48,2%	12,5%	5,4%	0%
Accessibility and Transparency of Data	25%	33,9%	28,6%	12,5%	0%
Improvement in Decision-making Accuracy	23,2%	32,1%	30,4%	14,3%	0%

When it comes to “Workload Reduction”, 33.90% of respondents classified it as “Essential”, and an even higher percentage (48.20%) rated it as “Very Relevant”. These categories account for over 80% of responses, indicating that reducing the burden on employees through AI automation is a critical benefit. Only 12.50% considered this benefit as merely “Relevant”, and an even smaller percentage (5.40%) viewed it as “Less Relevant”. This result indicates a high expectation that AI will ease the workload, particularly in a judicial environment where large caseloads and administrative tasks are typical.

In terms of “Accessibility and Transparency of Data”, 25% of respondents found it “Essential”, while 33.90% rated it as “Very Relevant”. This combined 58.90% suggests that the majority see AI as a valuable tool for improving access to data and making court processes more transparent. Meanwhile, 28.60% considered it “Relevant”, reflecting a more moderate view of its importance, and 12.50% found it “Less Relevant”. Although not as strongly emphasized as efficiency and workload reduction, there is still a solid recognition of the role AI could play in organizing and presenting information in a clear, accessible way.

The category of Improvement in Decision-making Accuracy received more diverse responses. A smaller percentage (23.20%) deemed it essential, while 32.10% rated it as Very Relevant*. Interestingly, 30.40% of respondents found it merely Relevant, making this the highest percentage in the “Relevant” category compared to the other aspects. Finally, 14.30% of respondents considered decision-making improvement as “Less Relevant”, indicating that while there is interest in AI’s potential to assist in judicial decisions, there may be reservations or a belief that it will not fundamentally transform this area as much as others.

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The relatively high scores for “Efficiency and Productivity and Workload Reduction likely reflect the immediate, tangible impact that AI could have in optimizing the TJSE’s operations. Many of the day-to-day tasks performed by court staff—whether they involve data entry, case management, or document processing—could benefit from automation. AI-driven tools would allow staff to focus on more value-added tasks, such as analyzing complex legal matters or providing more personalized support to judges.

In contrast, Accessibility and Transparency of Data appear to be viewed as slightly less critical than the operational aspects of AI. However, as seen by Pah et al (2022), it is still significant, as improved data transparency can enhance trust in the judiciary (Pah et al., 2022). Accessible data allows for more informed decisions by judges and lawyers, and more importantly, it ensures that the public can track the progress of cases more efficiently. This suggests that, while immediate operational gains are prioritized, long-term improvements in transparency are also on the radar of the TJSE’s collaborators..

Decision-making Accuracy appears to be the area where respondents were most divided. While a notable portion sees it as beneficial, the mixed responses suggest that some may be concerned about relying on AI for decisions in a context where human judgment is integral. AI tools could provide valuable support in analyzing precedents and offering recommendations based on past rulings (Wang *et al.*, 2019) Still, the data suggests that human oversight will remain crucial in this area, with AI playing more of a supplementary role.

Overall, the responses from TJSE collaborators indicate that AI is viewed as a powerful tool for improving efficiency, reducing workload, and enhancing data accessibility, with slightly more caution surrounding its role in decision-making. This balanced perspective reflects both excitement about the operational benefits of AI and a measured approach to its use in areas that require nuanced human judgment.

AI POTENTIAL CHALLENGES

Table IV - Potential Challenges

Potential Challenge	Essential	Very Relevant	Relevant	Less Relevant	Irrelevant
Algorithm Biases and Trust	50%	28,6%	14,3%	7,1%	0%
Loss of Human Discretion	39,3%	39,3%	19,6%	1,8%	0%
Specificity of Legal Language	39,3%	42,9%	17,9%	5,4%	0%
Legal Assistant	37,5%	33,9%	17,9%	8,9%	1,8%

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Document Summarization	30,4%	41,1%	23,2%	5,4%	0%
Judicial automation by Online Dispute Resolution	25%	28,6%	25%	10,6%	1,8%

The data from the table reveals essential insights into the concerns and perceptions of TJSE employees regarding the risks associated with implementing AI in the court. One of the key takeaways is that “bias-related issues”—whether based on gender, ethnicity, or other factors—are seen as a major challenge. A significant portion of respondents (82.10%) view this as essential, very relevant, or relevant, indicating a widespread concern that AI systems could introduce or perpetuate bias in judicial decisions. This highlights the need to carefully develop and test AI tools to ensure fairness and avoid discriminatory outcomes.

Another significant risk identified is the “loss of human discretion”. While only 8.90% consider this risk “Essential”, a combined 73.20% see it as “Very Relevant” or “Relevant”. The nature of judicial decision-making requires human judgment and interpretation, something that AI cannot fully replicate. This concern suggests that AI tools in TJSE should be designed to complement rather than replace human judgment, with judges retaining ultimate control over decisions.

A relatively lower but notable concern relates to the “specificity of legal language”. With only 1.80% considering this issue as “Essential”, and the largest group (42.90%) viewing it as “Less Relevant”, this suggests that employees are less worried about AI’s ability to understand or process legal terminology. However, 32.10% still consider it a “Relevant” challenge, indicating that some refinement and tailoring of AI systems to legal language will be necessary, even if it’s not the primary risk.

The issue of “algorithmic opacity”, or the lack of understanding of how AI systems work, stands out as a significant concern. 58.90% of respondents rate this risk as “Essential” or “Very Relevant”. This implies a strong need for transparency and education around AI systems within TJSE. Employees need to trust and understand the tools they use (Mumford, Atkinson e Bench-Capon, 2023). If AI is to be adopted successfully, it will be crucial to explain how these systems make decisions and how they can be monitored and controlled.

Privacy and data protection emerge as one of the most critical concerns. The largest group of respondents (32.10%) marked this as “Essential”, and a combined 82.10% see it as essential, very relevant, or relevant. In a judicial setting where confidentiality and security are paramount, introducing AI systems must ensure that sensitive data is handled carefully

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(Zhu e Zheng, 2021). The data suggests that AI solutions will need to prioritize robust privacy and security measures to gain the trust of both employees and the public.

Interestingly, despite the varied opinions, no respondents rated “loss of human discretion” as “Irrelevant”, and very few marked other categories like “bias” or “privacy” concerns as irrelevant either. This reinforces the idea that all the risks mentioned are essential to some extent, and none of them can be entirely disregarded when planning the integration of AI into the court’s operations.

The data also reveals that while there are substantial concerns about AI’s risks, there is a more moderate view on the “specificity of legal language” issue, with the majority viewing it as less critical than other challenges. This suggests a belief that AI systems can be effectively adapted to the legal context or that the specific language of the law is not as significant an obstacle as, for example, bias or transparency issues.

The relatively balanced distribution of responses regarding “algorithmic opacity” shows that while some employees may understand AI well, a significant portion still feels that more needs to be done to demystify how AI works. Ensuring that AI tools are understandable and transparent will be key to overcoming this challenge, as opacity can lead to mistrust and resistance to AI implementation.

TJSE employees perceive several significant risks in the adoption of AI, with the most critical being concerns around “bias”, “privacy”, and “algorithmic transparency”. The results suggest a cautious approach to AI implementation, where these risks are actively addressed to ensure that AI enhances judicial processes without compromising fairness, security, or human judgment. These findings will be invaluable in shaping how AI is introduced into the court’s operations, guiding both technological and ethical considerations moving forward..

POTENTIAL AI-DRIVEN SERVICES

Table V - AI-Driven Services

Service	Essential	Very Relevant	Relevant	Less Relevant	Irrelevant
Consultations in Asset Databases	50%	28,6%	14,3%	7,1%	0%
Classification of Procedural Attributes	39,3%	39,3%	19,6%	1,8%	0%
Similarity Grouping Documents	39,3%	42,9%	17,9%	5,4%	0%
Legal Assistant	37,5%	33,9%	17,9%	8,9%	1,8%

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Document Summarization	30,4%	41,1%	23,2%	5,4%	0%
Judicial automation by Online Dispute Resolution	25%	28,6%	25%	10,6%	1,8%

The analysis of the potential services that artificial intelligence (AI) can provide at the Court of Justice of Sergipe (TJSE) reveals a promising yet challenging landscape. Based on the presented data, it is evident that employees recognize the importance of automation and emerging technologies to enhance the efficiency and effectiveness of judicial processes. The prioritization of services such as audio and image recognition demonstrates significant demand for modernizing current practices, allowing for extracting relevant data from hearings and documents, thereby facilitating organization and access to information.

Audio and image recognition, classified as “Essential” by 44.60% of respondents, highlights a substantial need for automated transcription and data analysis solutions. As seen in (Metsker, Trofimov e Kopanitsa, 2021), voice recognition technology replaces traditional clerks’ notes, using voice recognition technology to convert audio and video evidence in court into voice. Then, the language is converted into text. This technology not only improves efficiency but also the accuracy of records.

Another highlighted service in the survey is the automation of consultations in asset databases, such as sisbajud and renajud. Considered “Essential” by 50% of employees, this service has the potential to transform how data is accessed and analyzed. Automating these queries promises to enhance the speed of asset verification, minimizing human errors and expediting decision-making. As efficiency in accessing critical information improves, it is expected that judicial processes will become more agile and transparent.

The classification of procedural attributes and the grouping of documents by similarity are services that also received high relevance ratings. With 39.30% and 33.90% of employees considering them “Essential”, these services demonstrate the need for more effective data organization. Classifying and grouping documents based on specific attributes or similarities can simplify the search and analysis process, making it easier for TJSE professionals to find relevant information amidst increasing volumes of documents.

Legal assistance through chats for inquiries into legal databases is another important service that has received favorable evaluations from employees. An instant support system can provide easier access to legal information, allowing professionals to clarify doubts and make more informed decisions quickly. Such a service can increase efficiency and provide natural language explanations (Demertzis *et al.*, 2023). The summarization of legal

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documents, with 30.40% of employees considering it “Essential”, is a proposal that can alleviate the workload of professionals, allowing for quicker and more objective analyses of complex documents. By automating the creation of summaries, employees can devote more time to qualitative analyses and strategic decision-making, improving the quality of services the TJSE provides.

The proposal for complete automation of legal agreements through arbitration received a reasonably low score. This may demonstrate the team’s concern about their human discretion and jobs being replaced by AI. As Metsker, Trofimov and Kopanitsa (2021) point out, when it comes to ’discretion’, ’judgment’, and other issues closely related to human characteristics, it is still necessary to follow the internal logic of justice. Machines cannot take the place of judges to make judgments.

The data analysis reveals a clear trend of acceptance and need for technological innovation within the TJSE. As these AI services are implemented, the court needs to foster a culture of continuous employee training, ensuring that everyone feels comfortable and prepared to use these new tools. Digital transformation in the judiciary is not just a matter of efficiency; it also involves transparency and accountability—fundamental elements in building a fairer and more accessible judicial system.

ANSWERING THE RESEARCH QUESTIONS

1) *RQ: What is the impact of AI on TJSE’s workforce?:* The analysis of the results from this exploratory research reveals how implementing Artificial Intelligence (AI) at the Court of Justice of the State of Sergipe (TJSE) presents a multifaceted impact on its workforce. The widespread perception among collaborators regarding the benefits of AI, especially in terms of increased efficiency and productivity and a significant reduction in workload, demonstrates an expectation for the optimization of judicial activities and processes. However, this optimistic view coexists with relevant concerns about the inherent risks of AI, such as algorithmic biases, the potential loss of human discretion, the opacity of decision-making systems, and the critical issue of privacy and data protection. These apprehensions underscore the need for an ethical implementation of AI in the judiciary.

2) *SRQ1:What is the perception of TJSE employees regarding the benefits and challenges of AI?*: Regarding the perception of TJSE employees on the benefits and challenges of AI, the research details a notable recognition of the technology’s potential to improve efficiency, reduce workload, and increase data accessibility and transparency.

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Although there is also a recognition of the potential to enhance decision-making accuracy, this area generated a somewhat more reserved evaluation. Conversely, the most pressing challenges identified by employees include the possibility of algorithmic biases and the consequent issue of trust in AI, the risk of diminishing the importance of human judgment, and the difficulty in understanding the internal workings of algorithms. Data security and protection also stand out as central concerns.

3) *SRQ2: What would be the best prioritization of services to be enhanced by AI?:* The evaluation by TJSE employees of which specific services could be improved with AI points to prioritizing tools that optimize information management and support legal activity. Automated consultation of asset databases, classifying procedural attributes, and grouping documents by similarity stands out as services with high optimization potential. The virtual legal assistant and the automatic summarization of documents were also well-evaluated, indicating a demand for solutions that directly support legal professionals and streamline the analysis of large volumes of data. Judicial automation through Online Dispute Resolution received a slightly lower priority. This prioritization of services reflects the most immediate operational and informational needs perceived by TJSE collaborators..

THREATS TO THE VALIDITY

Two potential threats to the validity of this study lie in the data collection method and the sample used. The research employed an online form with questions, including the Likert scale, to assess participants' perceptions. While useful for quantifying opinions, this method is susceptible to response biases, such as acquiescence or social desirability bias, where respondents may present opinions they perceive as more acceptable. Additionally, the very construction of the Likert scale, although guided by the research objectives, can influence responses, limiting the complexity of opinions to a predefined spectrum.

Another significant threat to the study's external and internal validity concerns the sample and the potential lack of technical knowledge among respondents regarding AI. Although the research sought the participation of various professionals from TJSE, including judges, staff from core areas, IT, and innovation, a non-representative sample may limit the generalizability of the results to the entire court. Moreover, perceptions of the benefits and challenges of AI may vary significantly depending on each participant's level of technical knowledge about the technology. Those with less familiarity may base their

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opinions on limited information or unfounded expectations, which could influence the validity of their assessments.

CONCLUSIONS

According to the discussed results, this scientific article concludes that the implementation of Artificial Intelligence (AI) at the Court of Justice of the State of Sergipe (TJSE) presents a significant potential to optimize operations and transform the work dynamics of its workforce. The collaborators of TJSE demonstrate recognition of the primary benefits of AI in increasing efficiency and productivity, as well as in reducing the considerable workload, indicating openness and expectation regarding tools that can modernize judicial processes.

However, it is crucial to note that this optimistic perspective is accompanied by substantial concerns about the risks inherent in adopting AI. The issues of algorithmic biases and the consequent need to ensure fairness and equity in decisions, the potential loss of human discretion in a context where individual judgment is fundamental, the lack of transparency in the internal functioning of algorithms ("black box"), and the critical concerns about the privacy and protection of sensitive data emerge as challenges that cannot be neglected.

The evaluation of the specific TJSE services that could be improved with AI reveals a prioritization of solutions focused on managing and organizing information and direct support for legal activity. Automated consultation of asset databases, the classification of procedural attributes, and the grouping of documents by similarity are areas with great potential for improvement. The good evaluation of the virtual legal assistant and the automatic summarization of documents reinforce the demand for tools that assist legal professionals in their daily work.

This exploratory study demonstrates that integrating AI at TJSE is seen as an opportunity to increase efficiency and reduce workload. Still, it highlights the need to carefully address ethical, transparent, and data security challenges. Any AI implementation strategy at TJSE should balance operational gains with ensuring a fair, transparent, and reliable judicial system, which will require the development of robust ethical guidelines, the implementation of regular audits of AI systems, and the continuous engagement of stakeholders in this digital transformation process. The results of this research provide a

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valuable diagnosis to guide future innovation initiatives and formulate an AI implementation strategy aligned with the institution's needs and society's demands.

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REFERENCES

1. DEMERTZIS, K.; RANTOS, K.; MAGAFAS, L.; SKIANIS, C.; ILIADIS, L. A Secure and Privacy-Preserving Blockchain-Based XAI-Justice System. **Information**, v. 14, n. 9, p. 477, 28 ago. 2023.

2. FREIRE, D. L.; DE ALMEIDA, A. M. G.; DE S. DIAS, M.; RIVOLLI, A.; PEREIRA, F. S. F.; DE GODOI, G. A.; DE CARVALHO, A. C. P. L. F. Exploratory Study of Data Sampling Methods for Imbalanced Legal Text Classification. *Em*: GARCÍA BRINGAS, P.; PÉREZ GARCÍA, H.; MARTÍNEZ DE PISÓN, F. J.; MARTÍNEZ ÁLVAREZ, F.; TRONCOSO LORA, A.; HERRERO, Á.; CALVO ROLLE, J. L.; QUINTIÁN, H.; CORCHADO, E. (Eds.). . **Hybrid Artificial Intelligent Systems**. Lecture Notes in Computer Science. Cham: Springer Nature Switzerland, 2023. v. 14001p. 108–120.

3. HAN, W. *et al.* LegalAsst: Human-centered and AI-empowered machine to enhance court productivity and legal assistance. **Information Sciences**, v. 679, p. 121052, set. 2024.

4. JOSHI, A.; KALE, S.; CHANDEL, S.; PAL, D. Likert Scale: Explored and Explained. **British Journal of Applied Science & Technology**, v. 7, n. 4, p. 396–403, 10 jan. 2015.

5. METSKER, O.; TROFIMOV, E.; KOPANITSA, G. **Application of Machine Learning Metrics for Dynamic E-justice Processes**2021 28th Conference of Open Innovations Association (FRUCT). **Anais**... *Em*: 2021 28TH CONFERENCE OF OPEN INNOVATIONS ASSOCIATION (FRUCT). Moscow, Russia: IEEE, 27 jan. 2021Disponível em: <https://ieeexplore.ieee.org/document/9347598/>. Acesso em: 30 out. 2024

6. MUMFORD, J.; ATKINSON, K.; BENCH-CAPON, T. **Combining a Legal Knowledge Model with Machine Learning for Reasoning with Legal Cases**Proceedings of the Nineteenth International Conference on Artificial Intelligence and Law. **Anais**... *Em*: ICAIL 2023: NINETEENTH INTERNATIONAL CONFERENCE ON ARTIFICIAL INTELLIGENCE AND LAW. Braga Portugal: ACM, 19 jun. 2023Disponível em: <https://dl.acm.org/doi/10.1145/3594536.3595158>. Acesso em: 30 out. 2024

7. PAH, A. R.; SCHWARTZ, D. L.; SANGA, S.; ALEXANDER, C. S.; HAMMOND, K. J.; AMARAL, L. A. N.; SCALES OKN CONSORTIUM. The Promise of AI in an Open Justice System. **AI Magazine**, v. 43, n. 1, p. 69–74, mar. 2022.

8. WANG, H.; HE, T.; ZOU, Z.; SHEN, S.; LI, Y. **Using Case Facts to Predict Accusation Based on Deep Learning**2019 IEEE 19th International Conference on Software Quality, Reliability and Security Companion (QRS-C). **Anais**... *Em*: 2019 IEEE 19TH INTERNATIONAL CONFERENCE ON SOFTWARE QUALITY, RELIABILITY AND SECURITY COMPANION (QRS-C). Sofia, Bulgaria: IEEE, jul. 2019Disponível em: <https://ieeexplore.ieee.org/document/8859448/>. Acesso em: 30 out. 2024

9. ZHU, K.; ZHENG, L. Based on Artificial Intelligence in the Judicial Field Operation Status and Countermeasure Analysis. **Mathematical Problems in Engineering**, v. 2021, p. 1–10, 13 set. 2021.