

THE USE OF ARTIFICIAL INTELLIGENCE IN CONTRACTING AS DIGITAL TRANSFORMATION IN PUBLIC INSTITUTIONS

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Abstract: Digital transformation is a growing need for efficiency and data security. In this context, this work aimed to address the impacts that Artificial Intelligence (AI) may cause to the control of public procurement based on the New Bidding Law. In this way, a systematic review of the literature on AI and public agencies was carried out. The results found indicated that the use of AI on behalf of the control of administrative activity and public procurement is a reality. More research is needed to identify other factors that this technology can serve as an innovation tool capable of supporting the efficiency of public procurement.

Keywords: digital transformation, public procurement, artificial intelligence, public agencies.

O USO DA INTELIGÊNCIA ARTIFICIAL NAS CONTRATAÇÕES COMO TRANSFORMAÇÃO DIGITAL EM INSTITUIÇÕES PÚBLICAS

Resumo: A transformação digital é uma necessidade crescente de eficiência e segurança de dados. Nesse contexto, este trabalho teve como objetivo abordar os impactos que a Inteligência Artificial (IA) poderá causar ao controle das compras públicas fundamentadas na Nova Lei de Licitações. Desta forma, foi realizada uma revisão sistemática da literatura sobre IA e órgãos públicos. Os resultados encontrados indicaram que utilização da IA em prol do controle da atividade administrativa e das compras públicas é uma realidade. Mais pesquisas são necessárias para identificar outros fatores que esta tecnologia pode servir de instrumento de inovação capaz de apoiar a eficiência das contratações públicas.

Palavras-chave: transformação digital, contratações públicas. inteligência artificial. órgãos públicos.

1. INTRODUCTION

Digital technologies have grown exponentially, and their use has become common in people's daily lives. The development and implementation of information and communication technologies have become an important tool to achieve the 17 goals of the 2030 Agenda for Sustainable Development. Driven by the desire to provide quality services to society, the movement of public organizations to adhere to Artificial Intelligence tools has become ever greater [1].

In Brazil, the new bidding law [2] has brought technological and digital innovation to the public procurement market, with a focus on modernizing procedures through electronic administrative processes [3]. In its only paragraph of article 11, the senior management of the body becomes responsible for both the governance of procurement and for implementing processes and structures that enable and achieve the established objectives, such as encouraging innovation. Thus, according to the provisions, senior management will need to promote an enabling environment and ensure that contracts are aligned with the objectives pursued, including to promote efficiency, effectiveness, and efficacy [4].

Within this scenario of digital transformation in the public administration, the use of artificial intelligence represents a challenge in view of its submission to the legal regime of public law. Adopting new technologies requires planning and adapting the administrative structure so that the public administration can effectively absorb the benefits of technology [3]. These strategies require an organizational change within institutions to establish a digital culture and intense cross-sector collaboration [5].

There are few articles on the implementation of Artificial Intelligence (AI) in public procurement processes as a prerequisite for digital transformation. There are more papers researching about AI implementation for public organizations in controlling public procurement sector and judicial sector [6].

In view of the recent change in the regulatory framework for public procurement (new competition law nº. 14.133 published in April 2021 with a deadline for application until 12/31/23), it is a major challenge for the public sector to implement digital processes. And based on the premise that not all countries adopt the same procurement strategy, this article sought to investigate, through an integrative literature review, addressing the impacts that AI may cause to the control of public brazilians procurement based on the New Bidding Law, which becomes an even greater challenge in the post-pandemic world.

2. METHODOLOGY

The methodological approach used was a literature review that allowed presenting the state of the art on the use of AI in the control of public procurement. Thus, contributing to the exposure of opportunities for improvement in the area and to the development of new theories.

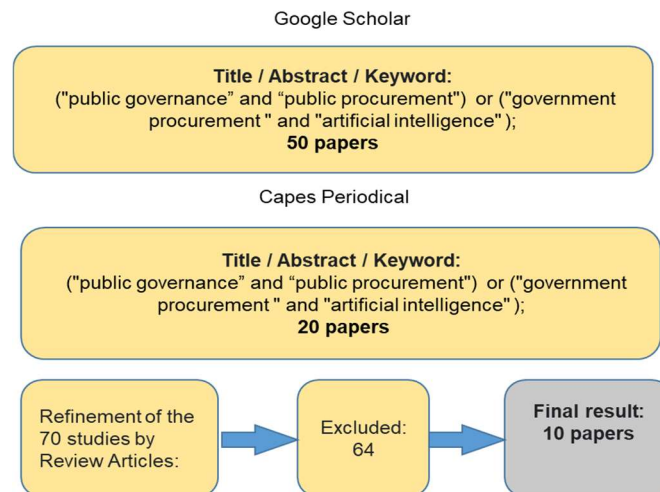
The literature review protocol was designed to achieve two main objectives: 1) to reflect on strategies and impacts of AI in Brazilian public institutions hiring processes; 2) map the strategies adopted by the institutions to overcome the new legal mark for public procurement.

The search method was by topic, truncation, and Booleans. The keywords researched were public governance, public procurement, government procurement and artificial intelligence.

Six articles related to the scope of this research were selected. A qualitative analysis was carried out considering the concepts of change management and governance in public procurement.

The analysis of the identified works was carried out according to the phases defined in Figure 1.

Figure 1. Search and selection method



3. RESULTS AND DISCUSSION

The New Bidding Law (Law No. 14.133/2021) introduced innovations in the direction of the digital public administration paradigm. Established by article 174 of the New Bidding Law as the official electronic site that is intended for the centralized and mandatory disclosure of the acts of the bodies, the National Public Procurement Portal (PNCP) is considered the main mandatory official electronic site for carrying out bidding processes [9].

Another innovation brought in by Law No. 14.133/2021, referring to technological innovations, and capable of helping the technology contracting process, is the bidding modality called competitive dialog. This is aimed at contracting works, services, and purchases in which the public administration holds dialogues with bidders previously selected using objective criteria, with the aim of developing one or more alternatives capable of meeting its needs, and the bidders must submit a final proposal after the dialogues have ended [2].

On March 29, 2021, Law No. 14,129/2021, known as the Digital Government Law, was enacted. This law innovates the legal system and is intended to instrumentalize the process of digitalization of the Brazilian public administration, regarding the efficiency of administrative activity and the provision of public services to citizens.

In line with the provisions of the New Bidding Law on the digitalization of processes related to public procurement, SEGES/ME Ordinance No. 8.678/21

mentions the governance of public procurement at the federal level. This ordinance establishes as guidelines for governance in public procurement the reduction of bureaucracy, the encouragement of social participation and the use of digital technologies to support public procurement [7]. Among the technologies recently added to the gov. br/purchasing portal, and which can be considered type IA, are the Preliminary Technical Study, Risk Management Matrix, and Terms of Reference, all in digital form and linked to the Annual Procurement Plan (PGC). With the completion of these functionalities, calls for tender will soon also be available, according to the object to be contracted.

Among the barriers encountered in digital public administration is the need for communication and exchange of experiences between the various sectors of society (the public, academia, citizens, and companies). To this end, the digital transformation process must consider the organizational structure comprehensively and in a way that benefits the public interest [8]. The quality and quantity of data are essential for artificial intelligence to function properly. In this way, the technological system must have access to the database in all the sectors involved, which requires organization at a strategic level [9].

Public administrations face great difficulties in reconfiguring their internal activity (structures, systems, and procedures) and external activity (relationship with society), as well as ensuring that new technologies optimize and ensure sustainable and inclusive development to reduce existing inequalities [8]. Technology is capable of dehumanizing public administration since citizens will no longer find a human being to present their needs and demand a solution. This leads to the reflection that the mass use of technological tools by some citizens cannot be ignored, otherwise a scenario of discrimination and violation of rights will be created. This situation can be exemplified using a chatbot - a conversational system that analyzes user responses in order to resolve a question - which requires the use of a device and digital dexterity and cannot be the only communication channel for an illiterate user [5].

Electronic portals also allow and facilitate the use of technological tools in the process of monitoring administrative activity, which operate using artificial intelligence to support control agents in public bodies. Also known as big data, the large volumes of data produced by the Brazilian public administration reinforce the instrumental nature of artificial intelligence, which is used by the public authorities to carry out their constitutional duties. The Federal Court of Auditors (TCU) is an effective example of the use of artificial intelligence in administrative control processes. As an example, the Alice system is used to analyze tenders and public notices and was one of the first AI tools adopted by the TCU to prevent fraud [6].

As a result, the New Bidding Law brings benefits to the transparency and control of public procurement, especially with the support of technological tools, prioritizing the electronic format of the procedures it regulates. This should be the new reality of public procurement carried out by the Brazilian state: public information made available and digitally accessible to society, in an open format and processable by AI.

To enable the process of digital transformation and the adoption of complex technologies such as artificial intelligence, the Brazilian government has adopted strategies through legal regulations. From the point of view of change management, it is possible to identify elements such as: identification and involvement of stakeholders, the role of leadership, effective communication of the paradigm shifts to a digital

mindset, the selection and provision of resources (information, structure and financial) in this process, listed in Table 1.

Table 1. Digital transformation public administration strategy and change management

Strategies	Change management element
Brazilian Strategy for Digital Transformation - Decree No. 9.139, of March 21, 2018	-Integration of all sectors of Brazilian society in favor of digital transformation, with the establishment of goals and dissemination of results
Digital Government Law - Law No. 14.129/2021, of March 29, 2021 - provides for the principles, rules and instruments for digital public administration and process for increasing public efficiency.	Strengthening the role of the leadership of public institutions in driving the digital transformation process
New Bidding Law - Law No. 14.133/2021 (i) the preferential use of the electronic administrative process to carry out public procurement, in all its phases (internal, external and contractual) and (ii) the creation of the National Public Procurement Portal - PNCP	Induction of communication channels thus increasing the quality of communication between stakeholders.
New Bidding Law - Law No. 14.133/2021 (iii) the new bidding modality called competitive dialog.	Inducing the participation of one of the stakeholders (supplier companies) in the process of selecting the best solution for a given application of digital technologies.
Innovation Law (Law No. 10.973/2004) Legal Framework for Startups (Complementary Law No. 182/2021)	Participation of the societal sector as a provider of technological development and knowledge transfer Provision of budgetary resource for innovation

Although the elements of establishing the importance of digitizing public institutions for society; identifying and engaging stakeholders; and providing the necessary resources were mentioned, it was not possible to identify strategies for establishing a culture for digital transformation. The professional culture for digital transformation was also discussed by [5], who suggests that the lack of change management skills among leaders leads to difficulties in establishing the necessary culture for digital transformation in institutions.

The COVID-19 pandemic has intensified the way in which Government-Society interacts electronically and the use of digital technologies. The use of AI will be increasingly discussed and evaluated in view of the difficulties faced not only in Brazil [6] but also in other countries [10] in relation to the regulatory framework and ethics in its application. However, Brazil is moving towards structuring public procurement to enable effective digital transformation by facilitating the use of AI in its processes.

4. CONCLUSION

The new bidding law includes in its legal content a new model for controlling public procurement, with a view to modernizing these activities and making them more efficient and organized.

It can be concluded that artificial intelligence, which requires electronic administrative processes to be applied, can be used as a tool to support the work carried out by the civil servants and units that make up the respective public procurement control fronts.

As a result, it has been shown that the electronic administrative process is not only the ideal and necessary path through which administrative acts need to pass before they can be carried out, but it is also the requirement for implementing the digital public administration model, since only through electronic processes can administrative activity make use of modern technologies such as artificial intelligence, in line with a technological society in the 21st century.

From the point of view of change management for the digital transformation process in public procurement, it is believed that institutions are well supported legally to face the difficulties that may arise. However, coordinated actions must be established between the sectors involved to guarantee compliance with the Brazilian government's strategic planning.

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