ARTIFICIAL INTELLIGENCE, DIGITAL GOVERNMENT, AND PUBLIC VALUE IN HIGHER EDUCATION: A CASE STUDY OF THE AGIPI/UEPG INSTITUTIONAL CHATBOT

INTELIGÊNCIA ARTIFICIAL, GOVERNO DIGITAL E VALOR PÚBLICO NA EDUCAÇÃO SUPERIOR: ESTUDO DE CASO DO CHATBOT INSTITUCIONAL DA AGIPI/UEPG

INTELIGENCIA ARTIFICIAL, GOBIERNO DIGITAL Y VALOR PÚBLICO EN LA EDUCACIÓN SUPERIOR: ESTUDIO DE CASO DEL CHATBOT INSTITUCIONAL DE LA AGIPI/UEPG

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ABSTRACT: The article analyzes the development and implementation of an institutional artificial intelligence-based chatbot at the Innovation and Intellectual Property Agency of the State University of Ponta Grossa (AGIPI/UEPG), examining its contributions to improving information management and generating public value. The research adopts the Design Science Research approach, with a case study conducted at AGIPI/UEPG. The system employs a Retrieval-Augmented Generation (RAG) architecture using Sentence-BERT and FAISS, based on a corpus of more than six hundred institutional documents. The analysis encompasses three dimensions: informational, relational, and strategic. The partial results demonstrate the feasibility of the solution and indicate its potential to reduce information access asymmetries, improve institutional interaction, and strengthen AGIPI's role within the regional Ageuni ecosystem. It is concluded that AI-driven public value generation depends on specific institutional, organizational, and regulatory conditions and does not automatically result from technological adoption.

KEYWORDS: Artificial intelligence. Public value. Digital government. Information management. Institutional chatbot.

RESUMO*: O artigo analisa o desenvolvimento e a implementação de um chatbot institucional baseado em inteligência artificial na Agência de Inovação e Propriedade Intelectual da Universidade Estadual de Ponta Grossa (AGIPI/UEPG), examinando suas contribuições para a qualificação da gestão da informação e a geração de valor público. A pesquisa adota a abordagem Design Science Research, com estudo de caso realizado na AGIPI/UEPG. O sistema utiliza arquitetura de Recuperação Aumentada por Geração (RAG), com Sentence-BERT e FAISS, sobre uma base de mais de seiscentos documentos institucionais. A análise contempla três dimensões: informacional, relacional e estratégica. Os resultados parciais evidenciam a viabilidade da solução e seu potencial para reduzir assimetrias no acesso à informação, qualificar a interação institucional e fortalecer a atuação da AGIPI no ecossistema regional Ageuni. Conclui-se que a geração de valor público pela IA depende de condições institucionais, organizacionais e normativas específicas, não decorrendo automaticamente da incorporação tecnológica.*

PALAVRAS-CHAVE*: Inteligência artificial. Valor público. Governo digital. Gestão da informação. Chatbot institucional.*

RESUMEN*: El artículo analiza el desarrollo y la implementación de un chatbot institucional basado en inteligencia artificial en la Agencia de Innovación y Propiedad Intelectual de la Universidad Estatal de Ponta Grossa (AGIPI/UEPG), examinando sus contribuciones a la mejora de la gestión de la información y a la generación de valor público. La investigación adopta el enfoque de Design Science Research, mediante un estudio de caso realizado en la AGIPI/UEPG. El sistema utiliza una arquitectura de Generación Aumentada por Recuperación (RAG), con Sentence-BERT y FAISS, a partir de una base de más de seiscientos documentos institucionales. El análisis contempla tres dimensiones: informacional, relacional y estratégica. Los resultados parciales demuestran la viabilidad de la solución y señalan su potencial para reducir las asimetrías en el acceso a la información, mejorar la interacción institucional y fortalecer la actuación de la AGIPI en el ecosistema regional Ageuni. Se concluye que la generación de valor público mediante la IA depende de condiciones institucionales, organizativas y normativas específicas y no se deriva automáticamente de la incorporación tecnológica.*

PALABRAS CLAVE*: Inteligencia artificial. Valor público. Gobierno digital. Gestión de la información. Chatbot institucional.*

INTRODUCTION

Artificial intelligence (AI) has been expanding its presence in the public sector, particularly in initiatives aimed at improving service quality, supporting decision-making, and the strategic use of information in digital environments (Zuiderwijk et al., 2021; Mellouli et al., 2024). This trend has led governments and public organizations to adopt technological solutions with the aim of expanding institutional capacity, improving information flows, and responding more effectively to social demands (Hjaltalin & Sigurdarson, 2024; van Noordt & Tangi, 2023). In Brazil, this process is part of a broader context of administrative modernization, in which innovation in the public sector is viewed as a driver of institutional transformation and management improvement, with implications for the state's ability to deliver results to society (Cavalcante et al., 2017; Pires & Gomide, 2016).

Public universities play a significant role in the national innovation system, particularly through their innovation agencies, which are involved in intellectual property management, technology transfer, and collaboration with the private sector and society. However, fragmented documentation, scattered regulations, and information asymmetry limit the efficiency of these structures and reduce their capacity to generate public value, as defined by Moore (1995). Studies on state capacities indicate that the effectiveness of public organizations depends on the coordination of administrative, relational, and analytical capacities, which determine the quality of policy and service delivery (Cavalcante et al., 2017; Pires & Gomide, 2016).

The Innovation and Intellectual Property Agency of the State University of Ponta Grossa (AGIPI/UEPG), a member of the Ageuni Program, established by State Innovation Law No. 20,541/2021 and regulated by State Decree No. 10,769/2022 (Paraná, 2021, 2022), is the empirical subject of this study. It is one of the first innovation agencies in Paraná, with an institutional history predating the state regulatory framework, which highlights both its development and the challenges related to the organization and circulation of information in its operations within the Triple Helix model (Etzkowitz & Leydesdorff, 2000).

Recent literature on AI and digital government indicates a concentration of studies on municipal services and broad public service platforms, with less attention paid to Latin American contexts and specialized public organizations, such as university innovation agencies (Cortes-Cediel et al., 2023; Larsen & Følstad, 2024). Furthermore, the adoption of AI in the public sector involves issues related to legitimacy, transparency, accountability, and institutional trust, which require an appropriate legal and administrative framework (Mellouli et al., 2024; Robles & Mallinson, 2023).

In this context, the scientific contribution of this study lies in the integration of artificial intelligence, digital government, and public value within an organizational context that remains largely unexplored in the literature: university innovation agencies. By analyzing the implementation of an institutional chatbot powered by a specialized document database, this research broadens the discussion on the use of AI in the public sector beyond general customer service, incorporating the informational, relational, and strategic dimensions of public value creation within a public university organization.

In this context, this article aims to analyze the development and implementation of an AI-based institutional chatbot at AGIPI/UEPG as a mechanism for enhancing information management and generating public value within the framework of university digital government.

THEORETICAL FRAMEWORK

Public value and university innovation agencies

The concept of public value, developed by Moore (1995), serves as a central reference point for contemporary public management. By shifting the focus from legality and procedural control to the production of legitimate and socially relevant outcomes, the author organizes government action around the following strategic triangle: the generation of outcomes with public relevance, the political legitimacy to pursue them, and the administrative capacity to implement them. Kelly et al. (2002) emphasize that public value is dynamic and can only be understood through active listening to social needs. Bryson et al. (2014) add that its creation involves collaborative networks, participatory governance, and strategic vision. In the Brazilian context, Cavalcante et al. (2017) demonstrate that innovative initiatives in the federal public sector tend to produce public value incrementally—by improving existing processes and services—rather than through radical disruptions, which highlights the relevance of technological solutions aimed at enhancing already established capabilities.

In this regard, public universities—especially through their innovation agencies—play a foundational role in linking academic research, the productive sector, and society. The Triple Helix model, proposed by Etzkowitz and Leydesdorff (2000), identifies this linkage as a central condition for the development of knowledge-based innovation systems, in which the interaction between universities, businesses, and government serves as the primary driving force. From this perspective, the Technological Innovation Centers (TICs) and university innovation

agencies are not merely technical structures for managing intellectual property, but institutional hubs whose capacity for dissemination and coordination is essential to the effectiveness of the innovation system itself.

In Brazil, the regulatory framework underpinning the role of universities in the innovation system has gradually taken shape. Federal Law No. 10,973/2004 (Innovation Law) established measures to incentivize research in the productive sector and mandated the creation of TICs at Scientific and Technological Institutions (STIs) (Brasil, 2004). The Legal Framework for Science, Technology, and Innovation (Federal Law No. 13,243/2016) expanded opportunities for cooperation between STIs and the productive sector and legally strengthened the role of university agencies (Brasil, 2016).

In the State of Paraná, State Innovation Law No. 20,541/2021 established the Paraná Innovation System and granted the TICs expanded responsibilities, including the development of strategies for bringing innovations to market, fostering relationships between STIs and companies, and connecting startups and inventors with the productive sector (Paraná, 2021). The Ageuni Program, regulated by State Decree No. 10,769/2022, designated the TICs of Paraná's seven state universities as Agencies for Sustainable Regional Development (Paraná, 2022).

When applied to the university context, the public value framework highlights that the performance of innovation agencies should be evaluated not only based on technical functionality but also on their ability to transform users' experiences with the institution, thereby increasing access, transparency, and institutional trust. Pires and Gomide (2016) argue that the governance of innovative public policies depends on a combination of technical-administrative and political-relational capabilities, which implies that the implementation of AI systems in public agencies cannot be reduced to the technological dimension alone but must also address the management of stakeholders, decision-making processes, and institutional expectations. The Ibero-American Charter on Artificial Intelligence in Public Administration (CLAD, 2022) establishes that the development and application of intelligent systems must respect the principles of algorithmic transparency, data protection, digital inclusion, and institutional accountability, in accordance with the requirements of the General Data Protection Law (Federal Law No. 13,709/2018) (Brasil, 2018).

Digital government and artificial intelligence

Digital government is not limited to the digitization of administrative processes. Dunleavy et al. (2006) identify, within the concept of Digital Era Governance, the decline of fragmented structures centered on traditional bureaucracy and their replacement by models based on the reintegration of functions, a citizen-centered approach, and the deep digitization of public services. AI is an essential part of this new configuration, as it enables the reconfiguration of the interface between government and citizens, making public services more responsive, predictive, and integrated (Margetts & Dunleavy, 2021).

The literature indicates that the debate on AI in public governance is still in the phase of theoretical and empirical consolidation (Zuiderwijk et al., 2021). It is observed that transparency, accountability, data protection, and explainability are among the most recurring themes; without them, AI may undermine institutional trust. Van Noordt and Tangi (2023) identify a strong complementarity between the historical development of e-government and the organizational capacity to use AI. Maragno et al. (2023) demonstrate that the implementation of AI in public organizations results from a combination of technological, organizational, and environmental factors, rather than from a linear logic of adoption.

In the context of chatbots and virtual agents in the public sector, Cortes-Cediel et al. (2023) show that these systems have been used primarily for information searches, document retrieval, and service delivery. Larsen and Følstad (2024) argue that municipal chatbots tend to produce incremental impacts, particularly by facilitating access to information, and may generate second-order effects by providing support for the improvement of administrative routines. Institutional trust emerges as a central dimension in this debate, as the absence of comprehensive AI policies contributes to public mistrust, privacy concerns, and fears of unequal treatment (Robles & Mallinson, 2023).

The adoption of AI in the public sector depends on organizational capabilities that go beyond digital infrastructure, involving new interdependencies among data, routines, competencies, and institutional conditions of use (Maragno et al., 2023; Sienkiewicz-Małyjurek, 2023). Tangi et al. (2025) argue that the integration of AI should be understood as a socio-technical phenomenon, in which benefits are realized when there are changes in organizational structure, governance, and institutional culture.

The specialized literature also indicates that the applications of chatbots in specialized institutional contexts remain under-explored; in these contexts, the system not only answers

frequently asked questions but also serves as a mechanism for contextualized retrieval of organizational information, document mediation, and support for access to regulatory and technical knowledge (Larsen & Følstad, 2024; Scutella et al., 2024). This gap positions the present study in an area that has received little attention in the international literature, particularly with regard to public university organizations in Latin American contexts.

METHODOLOGY

This study is qualitative and applied in nature, aimed at understanding the information processes at AGIPI/UEPG and proposing a practical solution designed to improve access to institutional information. The qualitative approach is suitable for in-depth analysis of information flows, organizational practices, and the perceptions of the actors involved (Minayo, 2010). The applied nature of the study is oriented toward solving a real-world problem through the development of a product for institutional use (Gil, 2008).

From a methodological standpoint, the study adopts the principles of Design Science Research (DSR), an approach that differs from traditional research in that its central purpose is the creation and evaluation of solutions to specific organizational problems (Hevner et al., 2004). In DSR, the product developed is not only the result of the research but also the central instrument for generating knowledge, insofar as its design, implementation, and evaluation produce evidence regarding the problem under investigation. The research comprises four interconnected phases: 1. Institutional diagnosis; 2. Design and development; 3. Implementation; and 4. Evaluation.

The diagnostic phase was conducted through a case study at AGIPI/UEPG, a method appropriate for investigating contemporary phenomena within their real-world context (Yin, 2015). Data collection involved primary and secondary sources: a documentary analysis of the agency's regulations, resolutions, reports, and institutional materials; and semi-structured interviews with managers and staff at the EPITEC and INPROTEC units, with the aim of mapping information flows and identifying bottlenecks in the access, organization, and dissemination of institutional information.

The qualitative data were analyzed using thematic content analysis (Bardin, 2011), with open coding and subsequent grouping into categories. The three central analytical dimensions of the article—informational, relational, and strategic—emerged from this analytical process by linking the patterns identified in the empirical data to the theoretical framework of public

value (Moore, 1995) and to the axes of state capacities proposed by Pires and Gomide (2016). These are not, therefore, categories deduced exclusively from theory, but rather analytical constructs resulting from the triangulation of data, literature, and the objectives of the developed solution.

The design and development phase resulted in an institutional chatbot based on Natural Language Processing (NLP) (Jurafsky & Martin, 2026) and implemented using a Generation-Augmented Retrieval (RAG) architecture (Lewis et al., 2020), which combines the semantic retrieval of document excerpts via embeddings with the generation of responses by large language models (LLMs). The knowledge base, consisting of more than six hundred institutional documents that were previously processed and indexed, was built using the Sentence-BERT model (Reimers & Gurevych, 2019) for embedding generation and FAISS (Johnson et al., 2021) for efficient vector search.

Given the current stage of the research, this article covers the phases of institutional diagnosis, design, development, and initial implementation of the system. At this stage, the evaluation is exploratory in nature and focuses on an initial verification of the system's functionality and an analysis of its suitability for the informational needs identified in the case study. Thus, the results presented correspond to preliminary evidence regarding the feasibility and potential for applying the solution in the context of AGIPI/UEPG.

The systematic evaluation of the artifact constitutes the next stage of Design Science Research and will be conducted through usability tests, interaction simulations, and questionnaires administered to the agency's users. Both quantitative and qualitative dimensions will be considered, including response time and time to resolve inquiries, the appropriateness and clarity of responses, perceived usefulness, and user experience. These metrics will allow for a more comprehensive assessment of the system's performance and its effects on access to institutional information.

As a subsequent stage of participatory validation, a hackathon involving the innovation agencies that are part of the Ageuni system is planned. This activity, aligned with the open innovation paradigm (Chesbrough, 2003), will seek to broaden the evaluation of the solution across different institutional contexts and identify aspects related to usability, transferability, and opportunities for improvement that structured evaluations conducted in isolation may not reveal. Throughout the different stages of the research, we will employ triangulation of methods and sources (Gil, 2008; Minayo, 2010), integrating theoretical and empirical data and, in subsequent stages, data derived from the system's use.

RESULTS AND DISCUSSION

Trajectory and institutional structure

The creation of institutional structures dedicated to intellectual property management and technology transfer at public universities is part of a trend that has intensified globally since the 1980s. In the United States, the Bayh-Dole Act (1980) granted universities the right to patent and license inventions resulting from federally funded research, spurring the creation of technology transfer offices and serving as a model for similar policies in other national contexts (Mowery et al., 2004).

AGIPI/UEPG is part of this historical trajectory as one of the first NITs in Paraná. Its creation dates back to 2006, following UEPG's participation in the MCT/FINEP/Ação Transversal call for proposals, which funded the establishment of technological innovation centers in ICTs. The agency's formal structure was approved by the University Council on June 20, 2008, and restructured by UNIV Resolution No. 31, dated July 27, 2011, which establishes, in Article 1, AGIPI's institutional objectives: to implement science, technology, and innovation policies; to promote a culture of intellectual property; promote technology transfer; and provide technical assistance in the incubation of innovative projects (UEPG, 2011). It is worth noting that the creation of AGIPI in 2006 preceded the Paraná State Innovation Law by fifteen years, which indicates a proactive stance by UEPG in institutionalizing its innovation practices.

The agency consists of four units: the Executive Board, the Administrative Support Secretariat, the Office of Intellectual Property and Technology Transfer (EPITEC), and the Technology Project Incubator (INPROTEC), with responsibilities formally established by UNIV Resolution No. 31/2011 and CA Resolution No. 315/2013.

EPITEC is responsible for managing intellectual property protection processes, including advising researchers on the preparation of patent applications, trademark registrations, industrial design registrations, and computer program registrations, as well as monitoring the progress of these proceedings with the National Institute of Industrial Property (INPI). The cumulative indicators through 2025 highlight the volume of information managed by the unit: 40 patent applications filed, 35 software registrations, 1 industrial design registration, 1 trademark registration, and 201 service requests. In 2025 alone, there were 211 service interactions, 10 software registrations, 14 trademark registrations, 5 patents granted, and 2 patents registered (UEPG, 2026). EPITEC also maintains the Technology Showcase, a

portfolio of patents from UEPG and partner institutions, featuring technologies in the fields of health, the environment, renewable energy, cosmetics, food, and pharmaceutical formulations.

INPROTEC, regulated by CA Resolution No. 315/2013, holds CERNE 1 certification and has been accredited by Separtec since 2024 as an Incubator for Environments that Promote Innovation in the State of Paraná. Its portfolio in 2026 includes companies in the fields of healthcare, biotechnology, technology, virtual reality, education, and agribusiness. Notable achievements in 2025 include the graduation of the first startup under the current management, the awarding of R$ 250,000 to three startups through the Anjo Inovador Program, and the engagement of more than 1,500 people in entrepreneurship initiatives (UEPG, 2026).

AGIPI's structure reflects an organization with clearly defined functions within its units, but with information flows that cut across them transversally. Patents, registrations, technology transfer agreements, public notices, incubation reports, and regulatory documents circulate among the Executive Board, EPITEC, INPROTEC, and the Secretariat without a centralized system for organization and retrieval. This characteristic, which the literature refers to as "documentary fragmentation" (Maragno et al., 2023), limits institutional performance and reduces the agency's capacity to consistently generate public value. However, it does not stem from institutional failure, but rather from the challenges of growth and dissemination inherent in the Triple Helix model in a regional context (Etzkowitz & Leydesdorff, 2000).

The institutional chatbot: Architecture and development

The AGIPI/UEPG institutional chatbot was designed as a tool to enhance information management, with the goal of facilitating access to institutional content related to intellectual property, business incubation, the agency's rules and procedures, and the Ageuni ecosystem. The technical architecture is based on the RAG paradigm (Lewis et al., 2020), which combines information retrieval via embeddings with response generation by LLMs. This architecture differs from purely generative models by prioritizing guided document retrieval, which ensures traceability and adherence to institutional content—an aspect that is particularly relevant in regulatory contexts such as those of an intellectual property agency.

The embedding model used is Sentence-BERT (Reimers & Gurevych, 2019), which enables semantic comparison between the user's query and the indexed excerpts from the knowledge base. The most relevant excerpts are retrieved using FAISS (Johnson et al., 2021), a library specialized in efficient vector search. The system provides for integration with local language models run via Ollama, which are used complementarily to make the response more

fluid, without replacing the rationale based on the retrieved documents. The knowledge base, comprising more than six hundred institutional documents, undergoes Natural Language Processing (NLP) stages (Jurafsky & Martin, 2026), including text extraction, noise removal, standardization, tokenization, chunk segmentation, and the construction of vector indices.

During the diagnostic phase, bottlenecks in accessing institutional information were identified through document analysis and semi-structured interviews. In addition, the most frequently asked questions identified within the agency were systematized, making it possible to recognize users' recurring information needs and inform the organization of the chatbot's knowledge base. The knowledge base was structured to address the main information needs of the agency's various audiences, including researchers, students, companies, startups, and institutional partners. The system was configured to prioritize extractive responses guided by the indexed document base, in line with the principles of algorithmic transparency set forth in the Ibero-American Charter on AI (CLAD, 2022) and with the requirements of the LGPD. The systematization of frequently asked questions provides empirical evidence of the demands that guided the system's development and is available, along with other supplementary research materials, in an open repository on the Open Science Framework (OSF), under DOI 10.17605/OSF.IO/9USBT. The initial implementation demonstrated the functional feasibility of retrieving information based on natural language queries; however, systematic metrics regarding semantic retrieval accuracy, traffic volume, and performance under real-world conditions are not yet included in the scope of this phase of the research.

The analysis of the AGIPI/UEPG chatbot can be organized into three dimensions: informational, relational, and strategic.

In the informational dimension, the system facilitates access to intellectual property content and reduces cognitive barriers, consistent with studies that point to improvements in access to information through the use of chatbots. The use of RAG architecture allows for the traceability of responses, but its effectiveness depends directly on the quality of the document base. Outdated or incomplete information can generate incorrect responses, which requires continuous curation to prevent the widening of information asymmetries (Cavalcante et al., 2017; Maragno et al., 2023).

In the relational dimension, the chatbot improves interaction with users and increases transparency, provided there is clarity, predictability, and mechanisms for escalating issues to human support. Excessive replacement of human mediation can undermine institutional trust,

especially in contexts that require interpretation and judgment, indicating that the system should act as a complement, not a substitute (Lotta, 2019; Hemesath & Tepe, 2024).

From a strategic perspective, the chatbot helps build a scalable knowledge base and reinforces AGIPI's role in the innovation ecosystem. However, its expansion involves risks such as technological dependence and difficulties in institutionalization if organizational changes are not implemented. In this context, participatory validation serves as a mechanism for legitimizing and supporting the adoption of the solution (Cavalcante et al., 2017; Dunleavy et al., 2006).

The findings from this stage also align with international experiences regarding the adoption of chatbots in the public sector. Cortes-Cediel et al. (2023) note that these tools have been used primarily to facilitate access to information, document retrieval, and the delivery of public services, while Larsen and Følstad (2024) highlight their potential to bring about incremental improvements in the interaction between citizens and public organizations. Scutella et al. (2024), in turn, emphasize the importance of users' experience and perception of value when interacting with virtual agents in public services. The AGIPI/UEPG case resembles these experiences by using the chatbot as a mechanism for accessing institutional information, but it is unique in its application within a university innovation agency and the organization of a specialized document database. In this sense, the proposal broadens the discussion on chatbots in digital government by linking their adoption not only to the provision of informational services but also to the informational, relational, and strategic dimensions of public value creation.

This three-dimensional analysis is linked to the strategic triangle of public value (Moore, 1995) and to the framework of state capacities for the governance of innovative policies (Pires & Gomide, 2016). In terms of outcomes of public relevance, the system reduces information asymmetries and expands access to the agency's services. In terms of legitimacy, the initiative is grounded in a regulatory framework that includes the Innovation Law, the Legal Framework for Science, Technology, and Innovation, the Paraná State Innovation Law, the General Data Protection Law (LGPD), and the principles of the Ibero-American Charter on AI, thereby providing legal and institutional support. In terms of administrative capacity, the RAG architecture and the indexed knowledge base form the foundation of a technically viable solution. The combination of these three dimensions demonstrates that the chatbot cannot be evaluated solely as a technological product, but rather as an institutional intervention that reconfigures workflows, expectations, and trust relationships within a public organization. This

reconfiguration, in turn, is conditioned by the agency's technical-administrative and political-relational capacities—capacities that, in the case of AGIPI, have been historically accumulated and constitute the foundation upon which the technological solution may or may not produce sustainable public value.

The international literature has a gap regarding the application of chatbots in public university settings, with uses guided by specific documentary bases and a simultaneous focus on traceability, institutional adherence, and the perception of public value (Larsen & Følstad, 2024; Scutella et al., 2024). At the national level, research on innovation in the public sector has advanced in the analysis of state capacities and organizational transformation processes (Cavalcante et al., 2017; Lotta, 2019; Pires & Gomide, 2016), but studies that link AI, public value, and university management from an empirical perspective remain scarce. By proposing and analyzing this solution within a Brazilian public university agency, this research shifts the debate from broad and generic applications to a specialized organizational context, producing empirical evidence that simultaneously contributes to the international literature on digital government and to the Brazilian literature on innovation and state capacities.

It is important to recognize that the effects of chatbots on the generation of public value do not automatically result from their technological implementation. The specialized literature consistently demonstrates that AI tends to produce positive effects when incorporated into administrative structures capable of aligning it with public objectives, regulatory criteria, and control mechanisms (Maragno et al., 2023). The research empirically identified that the main risks of the developed solution are not technical but institutional: dependence on the quality and timeliness of the document database, the possibility of automated responses in situations requiring human mediation, and the risk that the perception of the system's efficiency may reduce investment in training and institutional communication processes. Recognizing these risks does not invalidate the solution but rather guides its governance: the AGIPI/UEPG chatbot is more effective as a component of an institutional information management strategy than as a standalone customer service tool. This distinction has direct implications for how other agencies within the Ageuni system may adopt similar solutions.

FINAL CONSIDERATIONS

The article analyzed the development and initial implementation of an artificial intelligence-based chatbot at AGIPI/UEPG as a tool to improve information management and

support the creation of public value. The results of this phase demonstrate the technical and institutional feasibility of the solution and its potential for application within the agency's context, although its actual effects depend on organizational, institutional, and regulatory conditions that go beyond the technological dimension.

Analysis across the informational, relational, and strategic dimensions indicates that the chatbot can help address some of the problems arising from information fragmentation, particularly by organizing and facilitating the retrieval of institutional information. However, the solution does not replace structured document management processes, since the quality and timeliness of the knowledge base remain contingent on the institution's own information governance practices.

The study makes three main contributions: on a theoretical level, it links public value, digital government, and artificial intelligence within the specific context of university innovation agencies; methodologically, it demonstrates the application of Design Science Research in conjunction with a case study for the development and analysis of a technological solution within a public organization; and, practically, it identifies opportunities, risks, and institutional requirements associated with the responsible adoption of AI systems for information management.

From a regulatory standpoint, the development of the chatbot takes into account legislation related to innovation and data protection—an aspect that is particularly relevant given the legal and documentary complexity that characterizes some of the information requests handled by AGIPI/UEPG. In this context, the adoption of AI should be understood as part of a broader information governance strategy, rather than as a standalone technological solution.

The main limitation is that the results presented correspond to the initial stage of the artifact's development and implementation and do not yet include a systematic evaluation under real-world conditions. As part of the ongoing research, usability tests, interaction simulations, and user evaluations will be conducted, covering quantitative and qualitative aspects related to performance, clarity of responses, time taken to resolve queries, and users' perception of the system's usefulness. The participatory validation phase involving the agencies that are part of the Ageuni system will subsequently allow for an examination of the solution's usability, transferability, and potential for improvement in different institutional contexts. Future studies may also conduct longitudinal investigations into the effects of adopting the chatbot on information flows, service efficiency, and the generation of public value, as well as compare its application across different university innovation agencies.

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- **Ethical approval**: The research was conducted in accordance with the ethical principles applicable to scientific research. The study was a documentary, exploratory, and institutional case study, utilizing public information, institutional documents, and data related to the development and implementation of the AGIPI/UEPG chatbot. No sensitive personal data was collected, nor were human subjects directly involved in the research; therefore, submission to the Research Ethics Committee was not required.
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- **Authors' contributions**: L. M. Q.: research design, theoretical discussion, analysis of results, and critical review of the manuscript. G. Q. P.: data analysis and interpretation, manuscript drafting, methodological organization, and consolidation of results. J. I. R. M.: theoretical framework, analysis of results, critical review, and scientific validation of the study. C. E. A. L.: technical development of the research, data analysis, validation of results, and manuscript review. All authors participated in the preparation of the manuscript, critically reviewed its intellectual content, approved the final submitted version, and assume joint responsibility for the published content.

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