Digital Transformation, Technology, and Innovation: Analysis of Mayoral Candidates' Proposals in the 2024 Brazilian Municipal Elections

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Abstract. With the advent of the Knowledge Society, Digital Transformation, and Digital Government, Brazilians have increased their presence and use of digital and knowledge resources to meet their needs. Whether in Government, the Economy, or Citizenship, the digital, knowledge, and innovation era has brought significant challenges and opportunities to Brazil, especially for large Brazilian municipalities. In this context, this study aimed to identify the proposals for Digital Transformation, Technology, and Innovation from candidates in the 46 municipalities with populations exceeding 500,000 inhabitants who were best positioned in the voting intention polls for the 2024 municipal elections. Methodologically, a qualitative study was conducted using the technique of documentary analysis of secondary data, with government plans of the best-positioned candidates in electoral polls from the 46 selected municipalities as the primary source. A nine-step protocol was used to select proposals containing one of the 31 key terms employed. A total of 2,557 proposals from 142 candidates were identified, with 1,268 (49.59%) related to Digital Government, 658 (25.73%) to the Digital Economy, and 631 (24.68%) to Digital Citizenship. With an average of 17 proposals per candidate, the main thematic areas of the proposals were related to Digital Services, Health, Education, Business, and Public Management. The analyzed proposals provide an overview of candidates' priorities and can support the development of public policies that reflect a more strategic perception of the role of digital tools in municipal development, aligned with the demands of an increasingly digital society.

Keywords. Provide Digital Government, Electoral Proposals, Government Plans, Public Policies, Digital Transformation, Digital Society, Digital Economy.
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1. Introduction

In recent decades, innovation has gained momentum as a necessary response in public and private organizations driven by the accelerated pace of changes in the political, economic, and social environments (Farias & Porrúa, 2016). These innovations have been facilitating Digital Transformation (DT) in organizations by improving activities, processes, skills, and business models (Demirkan et al., 2016; Piccinini et al., 2015) through Information and Communication Technologies and Information Systems (Takahashi, 2000).

With the growth of DT in everyday life, the use of digital services is growing in the public and private sectors, generating positive and negative impacts on the culture, functioning of organizations, and their employees and users (Vial, 2019). Penmetsa and Bruque-Camara (2021) identified three central elements of a digital nation in the knowledge society: digital society, digital economy, and Digital Government.

From a government perspective, it is understood that in a world of change, governments need to be proactive, considering that new problems require new responses and old challenges require reanalysis (OECD & EUROSTAT, 2018). Thus, innovation in the public sector needs to move from a sporadic activity to a systemic one, where governments can be ready and able to face current and future challenges (OECD, 2018b).

Gil-Garcia et al. (2018) state that information and information technologies have become ubiquitous in the public sector and it is very difficult to think of a public problem or government service that does not involve them in a substantial way. Thus, we can understand Digital Government as the "use of Information and Communication Technologies (ICTs) to provide public services, aiming at greater speed, transparency and citizen engagement" (Layne & Lee, 2001; Le Blanc, 2020; Teo et al., 2008; United Nations, 2020).

According to Weerakkody et al. (2011), a Digital Government can increase efficiency, transparency and offer better public services to citizens and businesses. It will also help to improve public trust in relation to the perception of corruption, increase faster access to government information, reduce administrative costs and increase accountability (Tonggiroh, 2017).

In this sense, the OECD established a set of six dimensions that guide the transition from a traditional/electronic government to a Digital Government: User-centered administration to user-driven administration; From access to information to open by default; From a government as a service provider to a government as a platform for co-creation of public value; From reactive to proactive in the development of public policies and provision of services; Centered on information for a data-driven public sector; From the digitalization of existing processes to digital by design (OECD, 2014).

In Brazil, although the first Digital Transformation Strategy was developed in 2018, it was only in 2021 that the country was able to have its first Digital Government and Public Efficiency Law, Law No. 14,129/2021, known as the Digital Government Law, which establishes principles, rules and instruments for Digital Government and for increasing public efficiency in Brazil (Brasil, 2021).

However, in a country of continental dimensions like Brazil, formed by 27 Federative Units (FUs) and 5,570 municipalities, the implementation of Digital Government strategies is observed in a disproportionate and fragmented manner. The division of power between the federal and subnational governments is established by the Federal Constitution, which defines the exclusive and shared powers of each entity. Thus, each subnational location has its own governments and legislative assemblies (Ávila et al., 2023a).

Therefore, the implementation of policies for a Digital Government does not depend only on federal initiatives, but also on initiatives from subnational governments. A groundbreaking survey helped characterize this Brazilian complexity, in 2023, Ávila et al. (2023b) carried out a broad survey of the proposals of the candidates for Governor of the 27 Brazilian FUs in the 2022 elections, in order to identify in the candidates' government plans, proposals that contemplated perspectives of Digital Transformation, Technology and Innovation. A total of 1,343 proposals from 85 candidates were identified, of which 46% referred to Digital Government, 27% to Digital Economy and 27% directed to Digital Citizenship (Ávila et al., 2023b).

This survey made it possible to identify a favourable agenda especially for the Digital Government theme, directing the positioning of the FUs towards a digital government as a state policy, inserted in the organizational structure of the government, where structural public policies are formulated and decisions on structuring issues of the State are made (Ávila et al., 2023a).

However, when observing the 5,570 Brazilian municipalities, the disparities in access to infrastructure and ICTs are more pronounced, highlighting inequalities between municipalities regarding the adoption of Digital Government, indicating the opportunity to observe at a more basic level how municipal governments position themselves on this issue.

Elections for mayors in Brazil take place every four years and determine the head of the Executive Branch of each municipality. Candidates are chosen through direct elections, in which the winner is the candidate who obtains the absolute majority of valid votes, in accordance with electoral legislation supervised by the Superior Electoral Court (TSE).

The last election for mayors in Brazil took place in October 2024, with 15,574 candidates for mayor. In this scenario, based on the same methodology used in the study conducted by Ávila et al. (2023b), the proposals adhering to the adoption of initiatives focused on digital government in Brazilian municipalities were mapped. Thus, this article aimed **to identify the proposals for Digital Transformation, Technology, and Innovation from mayoral candidates of the 26 state capitals and 20 other municipalities with a population exceeding 500,000 inhabitants, who are best positioned in the voting intention polls for the 2024 elections**.

2. Background

2.1 Science, Technology and Innovation as an Innovation mechanism in the subnational public sector

Science and technology have been increasingly generating value for people through innovative activities. In the digital realm, society has absorbed various innovations into everyday life, such as the adoption of digital applications for banking transactions, purchasing products and services, supporting urban mobility, and even accessing public services (Ávila, Lanza & Valotto, 2023b). Innovations can be understood as the successful exploitation of ideas through the interaction of actors, generating new knowledge and the development of new solutions or the improvement of existing ones (OECD/Eurostat, 2018; Schumpeter & Swedberg, 1942).

In this sense, we observe the rise of Digital Transformation (DT), defined by Demirkan, Spohrer & Welser (2016) as a "profound and accelerated transformation of activities, processes, competencies, and business models to fully leverage the changes and opportunities brought by digital technologies and their impact on society in a strategic and prioritized manner." DT encompasses the deep changes occurring in society, the economy, and governments through the modernization of governance, the management of digital technologies, and, with the growing presence of DT in daily life, the use of digital services increases in both public and private sectors. This generates both positive and negative impacts on culture, organizational functioning, and the experience of employees and users (Vial, 2019).

Within this context, countries worldwide are witnessing one of the most significant transformations in history, as governments and companies have come to heavily depend on the Internet and technology to minimize the disruption caused by lockdowns (Soto-Acosta, 2020).

In a virtuous cycle of how Digital Transformation can support the development of Science, Technology, and Innovation, Ávila, Lanza & Valotto (2023b) highlight advantages such as: increased capacity for data and information processing; improved collaboration and knowledge sharing; facilitation of decision-making; process automation; and access to new data sources.

In the knowledge society, Penmetsa & Bruque-Camara (2021) conducted a study to identify the key elements of a digital nation, composed of three core components: a digital society, a digital economy, and a digital government. These authors point out that nations worldwide are facing challenges in integrating and simplifying their digital infrastructure, identifying six major categories of challenges in literature: people, technology, institutions, policy, economy, and sustainability.

Addressing this issue specifically in the public sector, innovation has been gaining momentum as a necessary response driven by the accelerated pace of changes in political, economic, and social environments (Farias & Porrúa, 2016). However, the OECD (2018) notes that although innovation is present in the daily routine of the public sector, it mostly occurs in a reactive or opportunistic manner rather than strategically. Consequently, government organizations are increasingly falling behind the pace and direction of changes occurring outside the public sector.

Another relevant factor stems from the changes in citizen profiles and attitudes in recent decades. Demographic shifts, higher education levels, greater access to information, and the unlimited capacity to establish connections have combined to create a more informed citizen, more aware of their rights, more participative, and therefore more demanding (Farias & Porrúa, 2016). This new citizen and societal profile generate new and greater demands for public services and policies and stimulates innovation and digital transformation in the public sector (Edler & Georghiou, 2007).

In this regard, public sector innovation must involve the notion of Digital Government, understood as the Digital Transformation of the public sector (Penmetsa & Bruque-Camara, 2021). Since the early 2000s, nations have initiated their digital (or electronic) government policies and strategies, especially driven by the New Public Management movement. According to Weerakkody, El-Haddadeh & Al-Shafi (2011), a Digital Government can increase efficiency, transparency, and deliver better public services to citizens and businesses. It also helps improve public trust by reducing perceptions of corruption, providing faster access to government information, lowering administrative costs, and enhancing accountability (Tonggiroh, 2017).

In this direction, the evolution of Digital Government around the world can be tracked through key international indices such as the “Digital Government Index – DGI” (Ubaldi, González-Zapata & Barbieri, 2020) and the United Nations’ “E-Government Development Index – EGDI” (United Nations, 2020). These indices and related studies compare the development of Digital Government across countries. However, research on this topic at the subnational level remains an area in need of further development.

The difficulty lies in the fact that these indices do not consider the local context of cities within countries, since it

is unlikely that national governments, responsible for the well-being of an entire country, fully understand the needs of communities in the same way that local governments do (Shackleton, Fisher & Dawson, 2004). Therefore, it is important to monitor the progress and shortcomings of innovative Digital Government practices at the subnational level (Edison, Ali & Torkar, 2013), so that medium- and long-term strategies can be developed by policymakers (Taques et al., 2021). For this purpose, it is essential to use appropriate metrics that reflect the stage of development in Digital Transformation and innovation.

3. Methodological Procedures

This is an initial and descriptive study that aims to map and classify municipal electoral proposals related to digital transformation. The analysis provides a general overview of how candidates are addressing digitalization across different dimensions of the knowledge society, laying the groundwork for deeper future investigations. To achieve the proposed objective, a qualitative research study was conducted using the methodology of documentary analysis of secondary data, specifically government plans of mayoral candidates in the 2024 municipal elections in Brazil. Among the 5,570 Brazilian municipalities, this study considered those with a population of at least 500,000 inhabitants, according to the country's official 2022 census, in addition to the 26 state capitals, resulting in 46 municipalities. The methodological protocol was based on nine main steps:

1. Downloading the database of mayoral candidates with registered candidacies on the official platforms of the Superior Electoral Court (TSE) or Regional Electoral Courts (TREs) on August 15, 2024. In the databases, with more than 15,000 registered candidates, the names of the candidates, Federal Units, party numbers, and acronyms were collected.

2. Identifying registered electoral surveys on TSE or TRE platforms to detect candidates representing at least 70% of the voting intentions in stimulated surveys (when candidates' names are announced to respondents) from August 16 to August 20, 2024. This criterion resulted in the selection of the 134 best-positioned candidates in the 46 municipalities eligible for the study. The electoral surveys included in this analysis were collected from 18 distinct institutes: Datafolha, Datatempo, Exata-BR, Futura Inteligência, Futura/100% Cidades, Imape, IPESPE, Methodus, Prefab Future, Quaest, Serpes, Vox Brasil Opinião e Pesquisas, OVALE/ÁGILI Pesquisas, Paraná Pesquisas, Todo Dia/Agili, Radar Inteligência, Real Time Big Data, and Record TV.

3. Downloading the government plans of the 134 best-positioned mayoral candidates in the electoral surveys via the TSE's DivulgaCand platform. When government plans were unavailable or incomplete, they were supplemented through candidates' and parties' platforms or media channels.

4. Updating voting intentions on September 10, 2024, to ensure candidates representing 70% of voting intentions in recent electoral surveys were included, aiming to reflect any changes in candidate standings.

5. Extracting government proposals that included a predetermined set of 31 key terms (in both Portuguese and English), defined by the research team as representative of the digital era: g*overno digital, transformação digital, tecno*, digital, digitaliza*, LGPD, cidade* inteligente*, smart cit*, sistema, aplicativo, app, internet, conectividade, Wi-fi, 5G, portal, website, inclusão digital, central de atendimento, inteligência artificial, machine learning, IA, AI, automa*, laboratório, startup, inova*, transparência, integração de dados, carta* de serviço, dados abertos*. The selection of these terms was informed by a review of relevant literature and public policy documents. Proposals were identified through a systematic keyword search across all documents. To ensure consistency and reduce bias, the coding was first tested in a pilot analysis, and a second researcher reviewed a sample of the results for verification.

6. Reviewing the selected proposals involved assessing their feasibility within the 2025–2028 government cycle. Only those proposals containing action-oriented language—verbs in the infinitive, future present, or present continuous—were retained. Each proposal was manually reviewed and classified according to predefined thematic and dimensional categories. To strengthen analytical reliability, coders followed a shared protocol, and discrepancies were resolved through discussion. This iterative process helped refine the coding categories and ensured alignment with the research objectives.

7. Classifying the proposals into one of three dimensions: Digital Government, Digital Society, or Digital Economy.

8. Classifying the proposals into 23 thematic government areas driven by Digital Transformation, Technology, and Innovation: Agriculture, Control and Accountability, Human Rights, Education, Employability, Sports and Leisure, Public Management, Housing, Inclusion, Infrastructure, Innovation, Artificial Intelligence, Legislation, Mobility, Business, Digital Platform, Health, Public Security, Digital Services, Sustainability, Tourism and Culture, Urbanism,

and Maintenance.

9. Repeating steps 3 to 8 after the first round of municipal elections for seven candidates incorporated from the second round of the 2024 municipal elections, who were not included in the initial delimitations but achieved a sufficient percentage to contest the second round, adding 199 new proposals. all data were condensed into a database available online for consultation (Ávila, Lanza & Valotto, 2024)

This methodological process resulted in 2,557 proposals from 142 candidates. For data analysis, techniques of descriptive statistics and content analysis of the proposals were applied.

4. Results and Analysis

Initially, the 2,557 mapped proposals were categorized among the three dimensions of the knowledge society proposed by Penmetsa and Bruque-Camara (2021), resulting in 2,168 proposals (49.6%) focused on digital government, 658 proposals aimed at the digital economy and 631 proposals linked to digital citizenship. Fig. 1 illustrates the results.

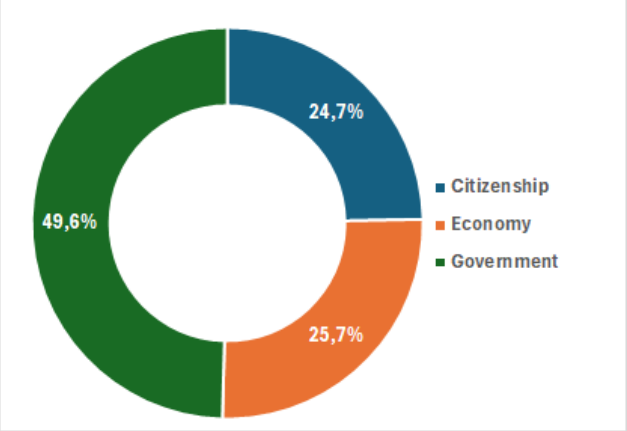

Fig. 1 – Distribution of proposals among the dimensions of the Knowledge Society.

The predominance of proposals focused on digital government indicates that candidates are placing emphasis on modernizing public administration, whether in internal processes or in the provision of public services to citizens. When analyzing the content of these proposals, it is possible to identify that a significant part of them revolve around topics such as digitalization of services, adoption of digital platforms, increased transparency, use or improvement of technological tools, improvement of public management, development of infrastructure, adoption of innovative solutions, among others.

As for the proposals aimed at the digital economy, there is a focus on the modernization and competitiveness of productive sectors through digital technologies. The focus is mainly on the digitalization of businesses through applications, development of technology hubs and parks, tax reductions for innovative businesses, social innovation programs and promotion of entrepreneurship. The main areas highlighted in this segmentation refer to tourism & culture, employability, digital services, innovative businesses such as startups, innovation ecosystems, sustainability and urban planning.

Regarding digital citizenship proposals, the proposals focus mainly on issues such as the implementation of free Wi-Fi access points, digital technological training and qualifications, social and digital inclusion among the elderly, modernization of social assistance, investments in telehealth, training and hiring of teachers, and digitalization of education. Among the priority areas identified in this dimension are mobility, health, education, public safety, infrastructure, and human rights.

The three dimensions were then cross-referenced with the proposals of each of the 46 municipalities included in the study. The distribution is shown in Table 1.

Tab. 1 - Distribution of dimensions by municipality

City	Government Proposals	Economy Proposals	Citizenship Proposals	Total Proposals
Aparecida de Goiânia	19	10	19	48

Aracaju	69	47	33	149
Belém	13	6	4	23
Belo Horizonte	24	14	8	46
Boa Vista	6	2	6	14
Campinas	29	11	4	44
Campo Grande	27	10	9	46
Contagem	10	5	4	19
Cuiabá	49	23	23	95
Curitiba	58	29	22	109
Duque de Caxias	20	8	26	54
Feira de Santana	11	18	8	37
Florianópolis	17	6	4	27
Fortaleza	34	16	18	68
Goiânia	26	11	21	58
Guarulhos	11	12	14	37
Jaboatão dos Guararapes	10	1	4	15
João Pessoa	22	17	34	73
Joinville	9	3	3	15
Juiz de Fora	5	2	1	8
Londrina	38	18	12	68
Macapá	22	10	13	45
Maceió	37	21	12	70
Manaus	48	19	21	88
Natal	42	21	17	80
Nova Iguaçu	11	1	5	17
Osasco	49	28	19	96
Palmas	33	44	20	97
Porto Alegre	14	12	9	35
Porto Velho	14	5	9	28
Recife	12	18	9	39
Ribeirão Preto	23	8	17	48
Rio Branco	15	20	10	45
Rio de Janeiro	14	17	20	51
Salvador	46	36	25	107
Santo André	41	15	18	74
São Bernardo do Campo	45	39	22	106
São Gonçalo	71	17	13	101
São José dos Campos	4	10	7	21
São Luís	7	4	1	12
São Paulo	65	14	22	101
Serra	62	7	21	90
Sorocaba	17	3	3	23
Teresina	19	6	9	34

Uberlândia	37	10	15	62
Vitória	13	4	17	34
Total	**1268**	**658**	**631**	**2557**

At least one proposal for this dimension was mapped in all locations. However, since the digital government dimension represents almost 50% of all mapped proposals, this category was also the most frequent among the municipalities, with a variation between 4 and 71 proposals, with an average of 28 proposals per municipality. The five municipalities with the highest number of proposals were: São Gonçalo (71); Aracaju (69); São Paulo (65); Serra (62); and Curitiba (58); On the other hand, the five municipalities with the fewest proposals in this dimension are: Joinville (9); São Luís (7); Boa Vista (6); Juiz de Fora (5); and São José dos Campos (4).

For proposals in the digital economy dimension, we observed a variation between 1 and 47 proposals, with an average of 14 proposals per municipality. The five cities with the most proposals in this category were: Aracaju (47); Palmas (44); São Bernardo do Campo (39); Salvador (36); and Curitiba (29); On the other hand, the six cities with the fewest proposals were: Sorocaba (3); Joinville (3); Boa Vista (2); Juiz de Fora (2); Jaboatão dos Guararapes (1); and Nova Iguaçu (1).

Finally, in the digital citizenship dimension, the proposals varied between 1 and 34, with an average of 14 proposals per city, as well as in the digital economy dimension. The five cities with the most identified proposals were: João Pessoa (34); Aracaju (33); Duque de Caxias (26); Salvador (25); Cuiabá (23); On the other hand, the nine cities with the fewest identified proposals were: Belém (4); Campinas (4); Contagem (4); Florianópolis (4); Jaboatão dos Guararapes (4); Joinville (3); Sorocaba (3); Juiz de Fora (1); São Luís (1).

The next analysis only looked at the number of proposals mapped by city. In this analysis, the ranking of municipalities was established by the total number of proposals and not by the Average Candidate Proposals, since the criterion considered was the greatest possible variety of proposals in a single municipality. Tab. 2 shows the distribution of the 10 municipalities with the largest number of proposals identified.

Tab. 2 – Top 10 municipalities by total proposals

FU	Municipality	Total Proposals	Candidates analysed	Average Candidate Proposals	Rank
SE	Aracaju	149	4	37	1
PR	Curitiba	109	5	22	2
BA	Salvador	107	2	53	3
SP	São Bernardo do Campo	106	4	26	4
RJ	São Gonçalo	101	2	50	5
SP	São Paulo	101	5	20	5
TO	Palmas	97	3	32	7
SP	Osasco	96	3	32	8
MT	Cuiabá	95	3	32	9
ES	Serra	90	3	30	10

The top 10 cities varied between 90 and 149 proposals. In order to deepen the analysis regarding the main themes addressed in these proposals, the frequency of the 23 thematic government areas driven by Digital Transformation, Technology, and Innovation was analyzed, focusing on the top five municipalities with the most mapped proposals.

Aracaju was the municipality with the largest number of identified proposals (149), being the city with the greatest amplitude among the others placed. The main thematic areas of these proposals are “Digital Services”, “Public Management”, “Business”, “Digital Platform” and “Employability”. In second place, Curitiba received 109 coded proposals, mainly on the topics of “Digital Services”, “Employability”, “Business”, “Public Security” and “Digital Platform”. The third municipality with the most mapped proposals was Salvador (107), with a predominance in the areas of “Employability”, “Digital Services”, “Business”, “Digital Platform” and “Education”.

São Bernardo do Campo appears in fourth place with 107 identified proposals, with a predominance of the topics

"Employability", "Business", "Health", "Sustainability" and "Mobility". The fifth place with the largest amount of mapped proposals were the municipalities of São Gonçalo and São Paulo, both with 101 proposals. While in São Gonçalo the predominant themes were "Health", "Business", "Digital Services", "Public Management" and "Mobility", in São Paulo the main themes of the proposals were "Health", "Business", "Digital Services", "Public Management" and "Mobility".

The 23 thematic government areas driven by Digital Transformation, Technology, and Innovation were then analyzed, now considering all 46 municipalities participating in the study, in order to identify the most frequent in each thematic area. The results are presented in Tab. 3.

Tab. 3 – Categorization of proposals into 23 thematic areas

Areas	Proposals	Share	Rank	Top municipality with most proposals in the area
Digital Services	276	10,8%	1	Aracaju (22)
Health	258	10,1%	2	Serra (16)
Education	232	9,1%	3	Duque de Caxias (16)
Business	211	8,3%	4	Palmas (21)
Public Management	209	8,2%	5	Aracaju (18)
Employability	192	7,5%	6	Aracaju (16)
Digital Platform	179	7,0%	7	Aracaju (16)
Mobility	171	6,7%	8	Manaus (11)
Sustainability	164	6,4%	9	Osasco (13)
Infrastructure	158	6,2%	10	Serra (11)
Public Safety	112	4,4%	11	Curitiba (9)
Innovation	92	3,6%	12	Rio de Janeiro; São Bernardo do Campo; São Gonçalo; Uberlândia (6)
Tourism and Culture	66	2,6%	13	Curitiba (8)
Inclusion	53	2,1%	14	Goiania (5)
Control and Accountability	52	2,0%	15	Natal (6)
Legislation	32	1,3%	16	Londrina (7)
Human Rights	31	1,2%	17	São Gonçalo (4)
Artificial Intelligence	25	1,0%	18	Curitiba; Fortaleza; Natal; Salvador; Santo André; São Paulo (2)
Urban Planning	23	0,9%	19	Palmas (3)
Janitorial	9	0,4%	20	Fortaleza; São Bernardo do Campo (2)
Sports and Leisure	6	0,2%	21	Salvador (2)
Agriculture	3	0,1%	22	Rio Branco (2)
Housing	3	0,1%	22	Palmas (2)
Total	**2557**	**100,0%**	**-**	**-**

Among the 23 areas covered, the theme "Digital Services" was the most frequent, with 276 proposals (10.8%). The proposals identified in this area mainly deal with digital management models integrated into online technology platforms or applications, implementation of digital systems in various spheres, use of online scheduling, development or improvement of digital portals for public services, investment in technological infrastructure to increase agility in the use of public services and adoption of virtual service methods. In second place, the theme "Health" was categorized into 258 proposals (10.1%), with proposals focusing on actions such as implementation or advancement in telehealth, Electronic Medical Records, development of an application or website to streamline care, online scheduling of appointments and exams, implementation of electronic panels, interoperability of information between services for appointments and exams, patient history and modernization of diagnostic and treatment equipment in health units.

The theme "Education" was the one with the third largest coding in the study, with 232 proposals (9.1%). The

proposals were mainly directed at modernizing computer lab equipment in schools, digital literacy initiatives, adoption of new information and communication technologies, access to innovative technologies and methodologies for teachers and students, implementation of virtual learning environments, cataloging, digitization and availability of school collections, expanding access to the internet in schools and digital training for teachers.

Regarding the themes with the fewest codifications in the study, we highlight “Agriculture” and “Housing”, both with 3 codifications (0.1%). The proposals for “Agriculture” were related to the implementation of a land information portal, the establishment of a municipal agricultural calendar aligned with production chains, and investment in agricultural technology and rural extension with the aim of modernizing the sector. The proposals related to “Housing” were aimed at stimulating innovative projects that expand the supply of housing, the creation of a digital system for monitoring and evaluating housing policies, and the development of new technologies and methodologies that can be applied to housing policies.

Table 2 also allows us to analyze the municipalities with the most proposals in each thematic area. A total of 19 municipalities were identified, distributed across the 23 areas analyzed. Of these, 9 municipalities appear more than once. Aracaju has the highest frequencies in four areas: “Digital Services”, “Public Management”, “Employability” and “Digital Platform”; Palmas leads in three areas: “Business”, “Urban Planning” and “Housing”; Curitiba is ahead in three: “Public Safety”, “Inclusion” and “Artificial Intelligence”; Serra is in first place in two areas: “Health” and “Infrastructure”; Natal also appears ahead in two areas: “Control and Accountability” and “Artificial Intelligence”; São Gonçalo leads in two areas: “Innovation” and “Human Rights”; Fortaleza appears with the largest number of proposals in two areas: “Artificial Intelligence” and “Caretaking”; Salvador leads in two areas: “Artificial Intelligence” and “Sports and Leisure”; and São Bernardo do Campo is ahead in two areas: “Innovation” and “Caretaking”.

The next analysis sought to focus specifically on the content of the collected proposals, analyzing the 31 key terms used to select the proposals that adhered to the objective of this study. Each proposal could contain more than one key term, thus, 4,626 key term encodings were applied. Fig. 2 presents a word cloud sizing the most recurrent terms in the proposals.

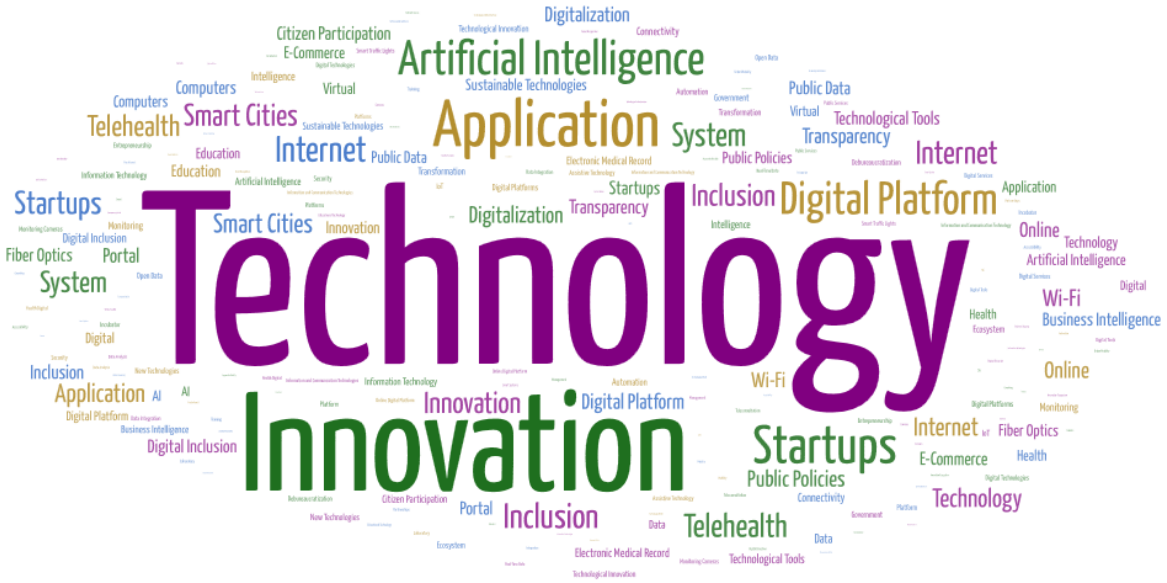

Fig. 2 – Key terms categorized in the proposals.

Fig. 2 shows that the term “Technology” was the most frequent, with 650 mentions. Next, the most recurrent terms were Innovation (371), “App” (175), “Startups” (142), “Artificial Intelligence” (129), “Digital Platform” (122), “Internet” (97), “Inclusion” (93), “System” (89) and “Telehealth” (88). Tab. 4 presents some real proposals that represent each of these terms.

Tab. 4 – Top 10 most frequent terms in proposals and examples

Key term	Original Proposal	Candidate	Municipality
Technology	“Promote the adoption of sustainable construction technologies and practices, with tax incentives for projects that use renewable energy, water	Eduardo Siqueira	Palmas

	reuse and ecological materials."	Campos	
	"Explore new technologies and international best practices to improve the efficiency of security operations and reduce costs, including the use of drones for patrolling and monitoring hard-to-reach areas."	Cristina Graeml	Curitiba
Innovation	"Explore new technologies and international best practices to improve the efficiency of security operations and reduce costs, including the use of drones for patrolling and monitoring hard-to-reach areas"	Anivaldo Luiz da Silva	Maceió
	"Establish, within the scope of the Municipal Executive Branch, the Fortaleza Technological Innovation Fund – FIT, with the objective of fostering technological innovation in the city, encouraging local companies to invest in scientific, technological and innovation research projects, with a view to developing new business models, economically sustainable and with respect for sustainability."	Wagner Sousa Gomes	Fortaleza
App	"Create a digital Labor Office (virtual platform with a mobile App), linked to the City Hall's digital office, to share information about ongoing projects, news about deliberations of the Municipal Labor Council and data on public funds, as well as make job opportunities available in the city to serve the unemployed and those looking for their first job"	Tarcísio Motta	Rio de Janeiro
	"Create an app factory (partnership between IMA and universities) and develop a community delivery platform and app ("iCamp"), which humanizes the work of app delivery drivers and other service providers"	Pedro Tourinho	Campinas
Startups	To facilitate a bank of innovative projects for public management, whether through competitions, qualification of professionals, or by promoting space for technical and academic students to develop their course completion work, aiming at a possible modernization of local public services, as well as being the stimulus for the creation of accelerator/incubator companies – Recruitment of startups.	Emilia Correa	Aracaju
	"Make a Public Center for Creative Economy viable, to attract, develop and disseminate initiatives in this sector with startup business hub incubators."	Marcelo Lima	São Bernardo Do Campo
Artificial Intelligence	"Launch a security application with artificial intelligence to monitor and protect women at risk, including a virtual panic button that facilitates immediate contact with the Municipal Guard."	Leonardo Barreto de Moraes	Porto Velho
	"Real-time monitoring of traffic and road conditions: Use high-definition cameras and artificial intelligence to coordinate rapid action and improve traffic."	Silvio Mendes	Teresina
Digital Platform	"We will modernize public services with the implementation of the E-CG Platform, which will integrate several online services into a single Platform"	Adriane Lopes	Campo Grande
	"Create the digital Platform for Urban Environmental Care, where citizens are registered on the Platform and rewarded through "Osascoin" for tasks within their home space."	Gerson Pessoa	Osasco
Internet	"Consolidate and expand the implementation of free internet access throughout the city (parks, squares, public buildings and public areas)"	Carlito Merss	Joinville
	"Promote free internet to all elementary school students in the municipal public school system to ensure technological education and digital inclusion"	Juliana Brizola	Porto Alegre
Inclusion	"Create Jovem Tech, a technology training program for low-income young people, with Technical Education and Technological Education modalities."	Tabata Amaral	São Paulo
	"Democratize access to technology and promote digital inclusion in the Municipal Public Education Network, using digital tools and resources to improve the quality of education and prepare students for the challenges of the 21st century."	Eder Mauro Cardoso Barra	Belém
System	"Implement Geospatialized System to promote the adequate management of urban space and promote the monitoring of public policies;"	Aline Paranhos Gurgel	Macapá
	"Implementation of Intelligent System: Develop and implement an intelligent system for monitoring, tracking and managing solid waste, using	Amom Mandel	Manaus

	technologies such as IoT (Internet of Things), big data and artificial intelligence."		
Telehealth	"Create the "Talk to Me Health" Project, which is a Telehealth service for teleconsulting, teleeducation and telediagnosis in priority areas, with an emphasis on primary health care. This project will be developed in partnership with higher education institutions that have a Telehealth center."	Janad Valcari	Palmas
	"Increase investments in Health with electronic medical records, implementation of electronic password panels in UBS, teleconsultations and improvement of information sharing between services for consultations and exams"	Marília Aparecida Campos	Contagem

When analyzing the top 10 key terms, as well as the respective examples of proposals, some intersections of areas can be observed, such as the use of digital technologies and innovations aimed at security (use of drones and artificial intelligence) or for education or inclusion initiatives, such as application development, training programs or provision of free internet.

It is also possible to establish an integration of solutions, such as apps and digital platforms for transparency, integration and digitalization of services. Another relevant aspect is the promotion of innovation and entrepreneurship through startups and innovation ecosystems that encourage technological development and modernization of public services.

Thus, it is clear that the proposals address a complementarity of themes, suggesting for example that digitalization (with terms such as "Digital Platform", "App" and "Internet") can serve as a basis for other innovation initiatives in areas such as education, health, mobility and public safety. It is also observed that the initiatives are not presented in isolation, where technology is seen as a driver for local development.

5. Conclusions

This study aimed to identify the proposals for Digital Transformation, Technology, and Innovation from mayoral candidates of the 26 state capitals and 20 other municipalities with a population exceeding 500,000 inhabitants, who are best positioned in the voting intention polls for the 2024 elections. The results indicated a predominance of proposals aimed at the digital government dimension (almost 50% of the total) at the municipal level, in line with the study by Ávila, Lanza & Valotto (2023b) who, when analyzing the same criteria in the elections of candidates for Governor in the 2022 election, identified 46% of the proposals also aimed at digital government.

This similarity demonstrates a tendency of governors at the subnational level in Brazil to modernize internal processes and the provision of public services through digitalization. The results also indicate a growing attention to digital transformation as a tool to boost the competitiveness of productive sectors and promote social inclusion. The analysis of the 23 thematic areas highlights a more targeted focus on "Digital Services", "Health" and "Education", while the main keywords ("Technology", "Innovation", "App", "Startups" and "Artificial Intelligence") point to the search for solutions that use technology as a basis for initiatives that complement each other, strengthening everything from public safety, education, health, employability, to digital training and innovation in the business sector.

When looking specifically at the municipalities, some cities stand out for the number of proposals and also for the diversity of areas addressed. However, it is important to emphasize that when looking at the proposals broadly, different strategies and priorities are revealed, which vary according to the context and local demands. The sharp economic differences in specific regions of Brazil can present an important barrier that limits the possibilities of innovation and adoption of technologies to advance the digitalization of services and advance digital government equally in the country.

This research has some limitations: (1) The data extraction was conducted from the perspective of the three researchers. A review of the government plans by other researchers might result in a different identification of the set of proposals. (2) Possible changes in candidate standings in electoral polls published after September 10, 2024, were not considered. (3) Some proposals from candidates who were not among the best-positioned may not have been considered. (4) Proposals that did not use any of the key terms adopted in the research were not considered.

Future research could deepen the qualitative analysis of the proposals' content, evaluating their level of innovation, feasibility, and alignment with existing public policies. It would also be relevant to investigate the territorial impact of the proposals, considering regional disparities in access to and priorities for digital transformation. Another

possibility is to analyze the relationship between candidates' profiles and the types of proposals presented, as well as to study how these proposals influence the electorate or are incorporated into government plans after the elections. Future research could also explore more qualitative dimensions of the 5,557 mapped proposals by, for instance, examining their applicability and tracking the implementation efforts of elected candidates. Moreover, subsequent studies may develop indicators to assess the effectiveness of policies in digital government, digital economy, and digital citizenship, thereby enabling a comprehensive evaluation of urban evolution within the context of digital transformation.

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