IMPLEMENTATION OF IT GOVERNANCE IN SMALL MUNICIPAL GOVERNMENTS: A PROPOSAL BASED ON THE REALITY OF CONCÓRDIA DO PARÁ

IMPLANTAÇÃO DE GOVERNANÇA DE TI EM PREFEITURAS DE PEQUENO PORTE: UMA PROPOSTA BASEADA NA REALIDADE DE CONCÓRDIA DO PARÁ

IMPLANTACIÓN DE GOBERNANZA DE TI EN MUNICIPIOS DE PEQUEÑO PORTE: UNA PROPUESTA BASADA EN LA REALIDAD DE CONCÓRDIA DO PARÁ

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ABSTRACT

This study examines the challenge of Information Technology (IT) governance in small municipal governments in Brazil, where limited budgets and the scarcity of technical personnel often lead to improvised decision-making and, consequently, inefficient public services. To analyze this scenario, a structured questionnaire was administered to 33 public servants from administrative, IT, and managerial areas. The results reveal a critical situation: 80% of administrative staff work without any formal training to operate municipal systems, and most hardware acquisitions are carried out without adequate planning. Qualitative responses reinforce these findings, indicating that the IT sector operates in isolation and functions almost exclusively through reactive maintenance. These circumstances reflect direct failures in basic COBIT 2019 processes, specifically in objectives APO08 and BAI08. In response, the article proposes a minimal IT governance structure tailored to the context of small Brazilian municipalities. Without requiring immediate infrastructure investments, the model prioritizes internal process organization and staff training, offering a practical tool for modernizing public management and increasing transparency in the use of municipal resources.

Keywords: IT Governance. Municipal Public Management. Information Technology. Small Municipalities. Strategic Planning.

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RESUMO

O presente estudo aborda o desafio da governança de Tecnologia da Informação (TI) em prefeituras de pequeno porte no Brasil. Com a falta de orçamento e de pessoal técnico nessas prefeituras, as decisões são frequentemente improvisadas, e o resultado disso são os serviços públicos se tornando ineficientes. Para analisar este cenário, foi aplicado um questionário com 33 servidores públicos das áreas administrativa, técnica de TI e de gestão. A realidade apresentada pelos dados é crítica: 80% dos funcionários do administrativo trabalham sem treinamento para usar os sistemas, e a maior parte das compras de hardware é feita sem planejamento adequado. Na parte qualitativa, as principais queixas indicam que a TI funciona isoladamente e opera apenas de forma reativa. Essa circunstância reflete falhas diretas em processos básicos do COBIT 2019, precisamente nos objetivos APO08 e BAI08. Diante disso, o artigo traz uma proposta de estrutura mínima de governança. Sem exigir gastos imediatos com infraestrutura, o modelo prioriza a organização dos fluxos internos e capacita os servidores, servindo como uma ferramenta aplicável para modernizar a gestão e dar transparência ao uso dos recursos municipais.

Palavras-chave: Governança de TI. Gestão Pública Municipal. Tecnologia da Informação. Municípios de Pequeno Porte. Planejamento Estratégico.

RESUMEN

Este estudio analiza el desafío de la gobernanza de Tecnología de la Información (TI) en municipios de pequeño porte en Brasil, donde las limitaciones presupuestarias y la escasez de personal técnico suelen conducir a decisiones improvisadas y, en consecuencia, a servicios públicos ineficientes. Para examinar este escenario, se aplicó un cuestionario a 33 servidores públicos de las áreas administrativa, técnica de TI y de gestión. Los resultados revelan una situación crítica: el 80% de los empleados del sector administrativo trabaja sin ningún tipo de capacitación formal para operar los sistemas municipales, y la mayoría de las adquisiciones de hardware se realiza sin una planificación adecuada. Las respuestas cualitativas refuerzan estos hallazgos, indicando que el sector de TI funciona de manera aislada y opera casi exclusivamente de forma reactiva. Estas circunstancias reflejan fallas directas en procesos básicos del COBIT 2019, específicamente en los objetivos APO08 y BAI08. En respuesta a este diagnóstico, el artículo propone una estructura mínima de gobernanza de TI adaptada al contexto de los municipios pequeños en Brasil. Sin requerir inversiones inmediatas en infraestructura, el modelo prioriza la organización de los flujos internos y la capacitación de los servidores, ofreciendo una herramienta práctica para modernizar la gestión pública y aumentar la transparencia en el uso de los recursos municipales.

Palabras clave: Gobernanza de TI. Gestión Pública Municipal. Tecnología de la Información. Municipios de Pequeño Porte. Planificación Estratégica.

INTRODUCTION

Information Technology (IT) has, over the years, taken on an increasingly important role within organizations, no longer acting solely as technological support but directly contributing to how decisions are planned and executed. In this context, IT governance becomes essential by aligning technology-related decisions within the organization, defining who proposes a technological project, who approves it, and, most importantly, who is accountable for the results obtained, ensuring that technology investments generate effective outcomes (Weill & Ross, 2004).

In addition to ensuring that technology is used in ways that produce positive effects, IT governance also defines the processes and control mechanisms that guide decision-making and the management of technological resources (Van Grembergen & De Haes, 2018; ISACA, 2018). These practices also help identify and address technology-related risks, strengthen information security, and protect the data used by organizations (ISO/IEC 38500, 2015). Thus, the IT area does not act merely as technical support but begins to participate more effectively in institutional planning (Henderson & Venkatraman, 1993).

In the public sector, this dynamic becomes even more relevant due to the growing number of digital services offered to the population. From this perspective, IT governance contributes to institutional transparency, continuity of public services, and optimization of scarce resources (Van Grembergen & De Haes, 2018; ISACA, 2018). Such structuring encourages strategic alignment between administrative demands and the municipality's technological capacity, integrating IT activities with the ultimate objectives of public management (Luftman, 2019). Frameworks such as COBIT and ITIL provide best practices that assist organizations in building these processes and improving technology management (Isaca, 2018; Axelos, 2011). However, the adoption of these practices still varies significantly across public agencies. While larger administrations often rely on specialized teams and greater investment, many small municipalities face financial constraints, a shortage of qualified professionals, and difficulties in structuring IT governance processes (Cunha, Miranda & Przeybilovicz, 2024).

The classification of 'small municipality' adopted in this study follows the criteria established in Brazil by the Brazilian Institute of Geography and Statistics (IBGE), which defines Small Municipality Type I as those with up to 20,000 inhabitants. In the case of Concórdia do Pará, the official demographic census reports a population of approximately 40,000 inhabitants,

placing it in the category of Small Municipality Type II (population between 20,001 and 50,000 inhabitants). Municipalities classified as small typically have more limited budgets and smaller administrative structures compared to larger municipalities. This context reinforces the need for strategies adapted to the technological reality of these administrations.

Recent studies provide evidence that failures in IT governance within small municipal administrations directly contribute to inadequate investments, the adoption of inefficient systems, and, ultimately, public dissatisfaction with the digital services offered (Ribeiro & Segatto, 2025). Despite the clarity of these impacts, IT governance in small municipalities remains underexplored academically, especially regarding the development of models that can be applied according to the concrete limitations of these local governments (Cunha, Miranda & Przeybilovicz, 2024).

Given this complex scenario, the guiding research question emerges: how can an applicable IT governance model be proposed for small municipal governments, considering their budgetary and structural constraints? The search for an answer to this question motivated the development of this study, which focuses on the municipality of Concórdia do Pará. The general objective of this research is to develop a proposal for a minimal IT governance structure adapted to the needs of small municipalities, based on empirical reality and data collected in Concórdia do Pará. To achieve this purpose, the following specific objectives were established: (1) assess the current state of information technology in the analyzed municipality; (2) identify the main obstacles to implementing IT governance; and (3) propose a simple governance structure that is applicable and respects the municipal context, while still adhering to public-sector recommendations. This research is justified by its theoretical and practical relevance, addressing a significant problem in Brazilian public administration: the absence of consistent technology-oriented strategies in small local governments. By proposing a model adapted to local limitations, this study aims to contribute to the development of solutions that promote municipal modernization and more efficient use of technology.

THEORETICAL FRAMEWORK

Building a strong Theoretical Framework is a crucial factor for delimiting the field of study, providing the necessary conceptual foundation, and establishing dialogue with existing literature. In this work, the Theoretical Framework aims to explore the pillars of Governance, with particular emphasis on its application to Information Technology (IT) in the public sector,

especially in the context of small municipalities, which face unique challenges.

Governance: General Concepts

In general terms, governance can be understood as the system by which organizations are directed, monitored, and encouraged, involving the relationship between owners, boards of directors, executive management, and other stakeholders. Unlike operational management, which focuses on day-to-day activities, governance seeks to define guidelines, establish control mechanisms, and promote accountability for organizational decisions and results. Over time, governance has gained importance due to the need to strengthen transparency, ethics, and accountability, especially after financial crises and corporate scandals that revealed failures in organizational control mechanisms.

Governance contributes to reducing risks, improving the use of available resources, and increasing trust between the organization and its stakeholders. In the public sector, governance becomes even more important because it involves managing public resources and delivering services to society. For this reason, public management is expected to operate with efficiency, transparency, responsibility, and respect for the public interest. In this context, governance provides guidelines that orient decision-making and the actions of public managers, helping ensure that institutional objectives are achieved and that the population's needs are met more effectively.

Theories and Models Related to Governance

The implementation of Information Technology Governance involves multiple factors, such as the definition of responsibilities, stakeholder participation in decision-making, resource availability, and the influence of regulations that guide public administration. For this reason, this study employs four organizational theories that help explain these different aspects and provide a foundation for analyzing the reality of small municipal governments.

Agency Theory

Agency Theory explains situations in which a person or institution (the principal)

delegates to another (the agent) the responsibility of managing resources or making decisions on its behalf (Jensen & Meckling, 1976). Because the interests of these two parties are not always aligned, conflicts may arise regarding how resources are used and how decisions are made. For this reason, control and monitoring mechanisms are necessary to reduce these conflicts and increase management transparency.

In Information Technology Governance, this theory helps clarify the importance of defining responsibilities, monitoring the execution of actions, and creating mechanisms that allow the organization to evaluate whether technology investments are truly meeting its objectives. In this way, governance reduces the likelihood of decisions based solely on individual interests and strengthens accountability regarding the use of IT resources.

In small municipal governments, this discussion becomes even more relevant because financial and technological resources are typically limited. When clear rules do not exist to define priorities, monitor investments, and assign responsibilities, the chances of resource waste, acquisition of inadequate solutions, and difficulties in technology management increase. In this context, Agency Theory reinforces the importance of IT governance as an instrument for making decisions more transparent and aligned with the public interest.

Stakeholder Theory

Stakeholder Theory argues that an organization should not consider only the interests of its owners or executives, but also those of other individuals and groups who may be affected by its decisions (Freeman, 1984). These stakeholders include employees, suppliers, service users, oversight bodies, and society itself. Thus, the organization should seek a balance among these different interests during decision-making.

In Information Technology Governance, this theory shows that technology-related decisions affect more than just the IT team. The choice of a system, the implementation of a digital service, or the definition of technology investments directly impacts public servants, managers, and citizens who use these services. Therefore, governance must consider the needs of these different groups when planning and executing IT-related actions.

In small municipal governments, this perspective becomes even more important because technology directly influences the delivery of public services. When IT decisions take into account the needs of public servants and the population, the likelihood of implementing solutions

that are better suited to the municipality's reality increases, improving citizen service and enabling more efficient use of public resources.

Resource Dependence Theory

Resource Dependence Theory is based on the idea that no organization can function solely with its own resources. To carry out its activities, it depends on financial, technological, human, and material resources that often come from the external environment (Pfeffer & Salancik, 1978). For this reason, organizations seek to manage this dependence in ways that reduce risks and maintain greater stability in their operations.

In Information Technology Governance, this theory helps explain the importance of planning the use of available resources and defining priorities for technology investments. It also shows that decisions related to hiring suppliers, acquiring equipment, and training professionals directly influence the organization's ability to keep its IT services functioning properly.

This reality is even more evident in small municipal governments, which typically operate with limited budgets, small teams, and difficulties in hiring specialized technology professionals. Under these conditions, IT governance becomes essential for organizing the use of available resources, establishing priorities, and reducing dependence on decisions made solely to address immediate problems.

Institutional Theory

Institutional Theory explains that many organizations adopt certain practices not only because they improve performance, but also because they must meet societal expectations, comply with regulations, or follow models considered appropriate for their sector (DiMaggio & Powell, 1983). This process, known as isomorphism, leads different organizations to adopt similar structures and practices in pursuit of legitimacy.

In Information Technology Governance, this theory helps explain why many organizations seek to implement frameworks, policies, and governance processes. In many cases, this adoption occurs to meet recommendations from oversight bodies, legal requirements, or recognized best practices, even when the organization does not yet have sufficient structure to fully implement all these recommendations.

In small municipal governments, this situation is quite common. There is often a need to follow regulations and recommendations related to technology management, transparency, and information security. However, budget, infrastructure, and staffing limitations hinder the full implementation of these practices. For this reason, IT governance must consider the reality of each municipality, allowing its implementation to occur gradually and in accordance with the administration's capacity.

Information Technology (IT) Governance

Information Technology (IT) Governance corresponds to the set of practices used to guide, monitor, and control how technology is utilized within organizations. Its main objective is to ensure that IT investments contribute to achieving institutional goals while risks are properly identified and managed (ISO/IEC 38500, 2015). Unlike IT management, which is more closely related to day-to-day operational activities, IT Governance focuses on defining guidelines, responsibilities, and monitoring mechanisms that orient technology-related decision-making (ISACA, 2018; Van Grembergen & De Haes, 2018). In this way, it seeks to ensure that the IT area is aligned with organizational strategies and that technological resources are used efficiently, generating value for the institution (Weill & Ross, 2004; Henderson & Venkatraman, 1993).

Although related, IT Governance and IT Management have different purposes. While IT Governance defines guidelines, establishes priorities, and monitors results, IT Management is responsible for executing operational activities such as system maintenance, user support, and implementation of technological solutions. Thus, governance guides decisions, and management puts those decisions into practice.

IT Governance Models and Frameworks

To support the implementation of IT Governance, several models and frameworks have been developed as references for public and private organizations. Although each has specific objectives, all aim to guide technology management in a more organized manner, reducing risks and ensuring that IT is aligned with institutional needs.

a) COBIT (Control Objectives for Information and Related Technologies): Developed by ISACA, COBIT is one of the most widely used frameworks for IT Governance. Its

purpose is to assist organizations in defining processes, responsibilities, and control mechanisms, enabling technology to generate value, reduce risks, and support the achievement of strategic objectives (ISACA, 2020). In the public sector, COBIT also serves as a reference for assessing governance maturity levels and identifying improvement opportunities.

b) ITIL (Information Technology Infrastructure Library): ITIL is a set of best practices focused on IT service management. Its emphasis is on organizing activities such as user support, incident management, change management, and continuous service improvement. Although oriented toward IT management, ITIL complements IT Governance by providing processes that help operationalize the guidelines defined by governance (AXELOS, 2011).
c) ISO/IEC 38500: ISO/IEC 38500 is an international standard that presents principles to guide managers and executives in making decisions related to Information Technology. Its objective is to ensure that IT is used responsibly, efficiently, and in alignment with organizational goals, serving as a reference for implementing IT Governance practices (ISO/IEC 38500, 2015).

IT Governance Structures in the Public Sector

Implementing IT Governance in the public sector requires adapting its principles to the reality of public administration. Unlike private companies, public agencies must consider aspects such as transparency, accountability, fiscal responsibility, and continuity of services provided to the population (Linhares et al., 2020). For this reason, certain structures are considered essential to support IT Governance in this context:

a) IT governance committees: Governance committees bring together representatives from different administrative sectors to discuss and monitor technology-related decisions. Their responsibilities include defining priorities, approving investments, monitoring results, and assessing IT-related risks.
b) Policies and procedures: Another important element is the formalization of policies and procedures. These documents establish rules for technology use, guide the execution of activities, help protect organizational information, and contribute to standardized processes that comply with legislation.

c) Roles and responsibilities: Clearly defining roles and responsibilities is also part of IT Governance. Knowing who decides, who executes each activity, and who is accountable for results prevents conflicts, reduces rework, and makes technology management more organized.

In small municipalities, these structures do not always need to be implemented in the same way as in larger organizations. In many cases, the IT team is small and available resources are limited, requiring adaptations that preserve governance principles without increasing management complexity. For this reason, the proposal presented in this study considers a minimal governance structure compatible with the reality of municipalities of this size.

Challenges in Implementing IT Governance in Small Municipalities

The implementation of IT Governance in small municipalities still faces several difficulties. Although its benefits are widely recognized, the reality of these administrations is often marked by limitations that hinder the structured adoption of governance practices (Cunha, Miranda & Przeybilovicz, 2024; Ribeiro & Segatto, 2025).

In the state of Pará, this scenario becomes even more challenging. While demands for transparency, oversight, and improvement of public services increase, many municipalities still face infrastructure limitations, small teams, and few resources allocated to technology (Silva & Amorim, 2025). As a result, the IT area often concentrates its efforts on solving day-to-day problems, making it difficult to plan governance-oriented actions.

Among the main challenges is budgetary limitation. In many municipalities, available resources are insufficient to invest in technological infrastructure, software acquisition, or training for IT personnel. This situation also influences another recurring problem: the difficulty of hiring and retaining specialized professionals, especially in smaller municipalities where career opportunities and salaries tend to be less attractive.

Another factor that hinders IT Governance implementation is organizational culture. In some cases, technology is still viewed merely as a support sector responsible for solving technical problems, without participating in strategic decision-making. Additionally, changes in work processes or the adoption of new systems may generate resistance among public servants.

It is also common for the technology area to lack long-term planning. Without a plan that defines priorities, objectives, and investments, many decisions end up being made only to address

immediate demands. Furthermore, several municipalities still use outdated equipment and systems that no longer meet public administration needs, hindering service modernization and the adoption of IT Governance practices.

These difficulties are frequent in small municipalities and help explain why governance is still implemented slowly in many local administrations.

The theoretical foundation presented in this chapter provides the necessary basis for understanding the main concepts related to IT Governance and the challenges of its implementation in small municipal governments. These concepts serve as a reference for analyzing the reality of the Municipality of Concórdia do Pará, presented in the next chapter, which describes the methodological procedures used in the research.

METHODOLOGY

This research aimed to analyze the reality of IT Governance in the Municipality of Concórdia do Pará, Amazon, Brazil, and, based on the data obtained, develop a governance proposal tailored to small municipal governments. To achieve this, a methodology was defined that could adequately capture the context studied and produce information that would serve as the foundation for the proposal presented in this work.

The research is applied in nature, as it seeks to propose a solution to a problem observed in the reality of municipal public administration. The objective is not only to understand the phenomenon but also to develop a proposal that can be used by small municipalities (Gil, 2019).

The study employs a mixed-methods approach, combining quantitative and qualitative data. Quantitative data allowed the identification of the frequency of the main problems found in the municipality, while qualitative data contributed to understanding participants' perceptions of the Information Technology area (Creswell, 2014).

The research also has an exploratory character, as it addresses a topic still scarcely discussed in the context of small municipal governments, seeking to understand the main challenges in implementing IT Governance.

To achieve the objectives of this study, a case study was conducted in the Municipality of Concórdia do Pará, located in northern Brazil, which shares characteristics common to many small Brazilian municipalities. This method was chosen because it allows the researcher to analyze the reality of the problem directly in the environment where it occurs (Yin, 2018). The

municipality was selected because it exhibits characteristics common to many small municipalities, such as limited budgets, a small IT team, and difficulties in maintaining long-term technological planning.

Data collection was carried out in two stages: a literature review and the administration of questionnaires. The combination of these sources made it possible to understand the problem and gather information that served as the basis for the proposal developed in this work.

Initially, a literature review was conducted to identify the main concepts related to IT Governance and Public Governance. Scientific articles, books, and documents from consolidated frameworks such as COBIT, ITIL, and ISO/IEC 38500 were consulted (Weill & Ross, 2004; Van Grembergen & De Haes, 2018; Ribeiro & Segatto, 2025). This review served as the foundation for developing the questionnaire used in the research.

Next, a questionnaire composed of closed and open-ended questions was administered to a sample of 33 participants linked to the municipal administration. The sample was defined by convenience and intentionality, consisting of all IT department employees, as well as a sample of administrative staff and municipal managers. The questionnaire was created using the Google Forms platform and made available to participants for completion. This composition allowed the collection of both the perceptions of IT professionals and the views of staff who use the systems and participate in decisions related to technological planning and investments. The questions were developed based on the value management and risk management principles of COBIT 2019 (ISACA, 2018; 2020). The full questionnaire is provided in Appendix A.

Responses to the open-ended questions were analyzed using Thematic Content Analysis, as proposed by Bardin (2011). The process began with reading all responses to become familiar with the collected material. Next, recurring words, expressions, and ideas were identified and grouped into thematic categories. These categories served as the basis for interpreting participants' perceptions of IT Governance and the main challenges encountered in municipal administration.

In parallel, responses to the closed-ended questions were analyzed using simple descriptive statistics. The data were organized into tables to calculate absolute and percentage frequencies, allowing the identification of the main problems related to IT Governance in the municipality.

The IT Governance proposal was developed based on the results obtained from the field research and the literature review. The objective was to create a simple model compatible with

the reality of small municipalities, considering their resource limitations and using COBIT 2019 as the main reference for its construction (ISACA, 2018; 2020). The proposal was developed by comparing the problems identified in the field research with recommendations found in the literature on IT Governance. For each difficulty observed in the municipality, practices compatible with the reality of small municipal governments were identified.

As this is a case study conducted in only one municipality, the results cannot be generalized to all Brazilian municipal governments. However, the characteristics of Concórdia do Pará are similar to those of many small municipalities, allowing the proposal developed to serve as a reference for similar contexts.

Another limitation concerns the interpretation of open-ended responses, which involves the researcher's analysis. To reduce potential bias, Bardin's (2011) Content Analysis method was used, along with comparisons between the qualitative and quantitative results obtained in the research.

There were also limitations regarding participants' availability to respond to the questionnaire. To minimize this issue, anonymity was guaranteed, and efforts were made to administer the instrument at times that facilitated staff participation.

Despite these limitations, the procedures adopted allowed for an understanding of the reality of IT Governance in the Municipality of Concórdia do Pará and provided sufficient information for developing the proposal presented in this work. The results obtained from the research are presented in the following chapter.

RESULTS AND DISCUSSION

The results presented in this chapter are based on the responses to the questionnaire administered to public servants of the Municipality of Concórdia do Pará. The full questionnaire is provided in Appendix A of this work. To facilitate the analysis, the questions were grouped according to the participants' profiles, allowing the identification of perceptions from administrative staff, the Information Technology team, and municipal managers. The study included 33 participants: 20 from the administrative sector (ADM), 5 from the Information Technology team (IT), and 8 municipal managers (MANAGEMENT). This division made it possible to compare each group's perspective on technology use, the main challenges encountered in the municipality, and how IT-related decisions are conducted. These challenges

are consistent with the broader context of small municipalities in Brazil, particularly in regions where technological infrastructure and specialized personnel are scarce.

Quantitative Diagnosis and Descriptive Statistics

The data obtained from the closed-ended questions show that the Municipality of Concórdia do Pará still faces difficulties related to staff training, IT planning, and the organization of internal processes. Regarding training, it was found that 80% of administrative staff (16 out of 20) and 62.5% of managers (5 out of 8) reported never having received training to use the municipality's official systems. This result indicates that a significant portion of employees use technological tools without any formal preparation.

The results also show that IT planning often occurs only when an immediate need arises. Half of the managers interviewed (50%, or 4 out of 8) stated that the purchase of computers and software is carried out without prior planning, driven mainly by urgent demands. Within the Information Technology team, 80% of participants (4 out of 5) reported that maintenance on computers and network equipment usually occurs only after failures appear. Additionally, the same proportion (80%) indicated that there is no formal documentation of procedures executed by the support team, making it difficult to standardize activities and share information.

Analysis of Open-Ended Responses and Relation to COBIT 2019

Responses to the open-ended questions were analyzed using Content Analysis as proposed by Bardin (2011). From this analysis, three themes emerged most frequently in participants' responses. These results were then compared with the Governance and Management Objectives of COBIT 2019 (ISACA, 2018), allowing the reality observed in the municipality to be contrasted with the framework's recommendations. Table 1 presents this relationship.

Table 1. Relationship between the problems identified in the municipality and COBIT 2019 processes

Thematic Category (Bardin)	Recurring Complaints from Staff	Misaligned Process (COBIT 2019)	Bottleneck Identified in the Municipality
1. Isolation of IT	"IT does not communicate with our sector," "outdated systems that freeze," "too much paperwork."	APO08 – Manage Relationships	IT operates only as physical support and does not participate in the strategic decisions of administrative sectors.

2. Lack of Training	"We don't know how to use the new system," "no basic training," "errors due to lack of instruction."	BAI08 – Manage Knowledge	Underutilization of software purchased by the municipality due to the absence of continuous training.
3. Reactive Maintenance	"They only fix things when they break," "no budget planning," "no record of support activities."	BAI09 – Manage Assets / APO12 – Manage Risk	Frequent instability in digital services and vulnerability in the municipality's physical infrastructure.

Source: Prepared by the authors.

The first category identified was the isolation of the IT department. Participants' responses show that the IT sector is still viewed primarily as responsible for computer maintenance and the resolution of technical problems, with little participation in decisions related to administrative processes. This situation demonstrates misalignment with COBIT 2019 objective APO08, which emphasizes the importance of strengthening the relationship between the IT area and other organizational sectors. This result is also discussed by Linhares, Santos, and Marini (2022), who highlight that technology produces better outcomes when it is integrated into organizational activities rather than acting solely as technical support. This situation can also be understood through Agency Theory. When communication between the IT area and management is limited, difficulties increase in monitoring decisions, defining responsibilities, and ensuring that technological resources are used in accordance with the interests of public administration (Jensen & Meckling, 1976).

The second category identified was the lack of training for public servants. This result reinforces the data presented earlier, which showed that 80% of administrative staff had never received training to use the municipality's official systems. Implementing new systems without a training process makes it difficult for employees to use these tools and reduces the expected return on technology investments (Ribeiro & Segatto, 2025). This situation can also be explained by Institutional Theory. In many cases, municipalities adopt new systems to meet legal requirements or to follow the practices of other administrations, but do not invest in preparing staff to use them properly (DiMaggio & Powell, 1983).

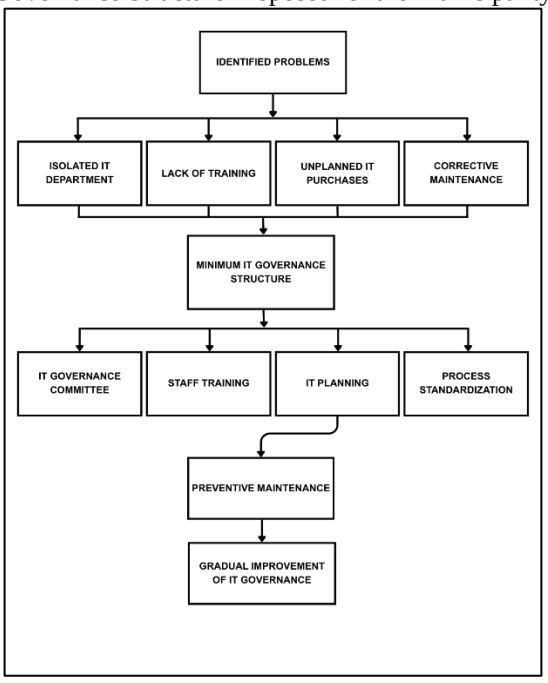
The third category identified was the reactive maintenance of IT infrastructure. Responses from the IT team show that maintenance usually occurs only after failures arise, indicating the absence of preventive actions. This scenario increases the risk of service interruptions and loss of important information, especially in municipalities with limited resources for technology investment (BRASIL, 2024). This result also reinforces Resource Dependence Theory, as budget limitations and the shortage of specialized professionals directly influence how technology is managed in the municipality (Pfeffer & Salancik, 1978).

The results discussed in this section show that the main problems found in the Municipality of Concórdia do Pará are not solely related to the lack of resources or equipment. The research also revealed difficulties related to how technology is organized, planned, and used in the daily routine of municipal administration. Based on this diagnosis, it was possible to develop an IT Governance proposal tailored to the needs observed in the municipality, presented in the next section.

Proposed Minimal IT Governance Structure for the Municipality of Concórdia do Pará

The proposal presented in this study was developed based on the problems identified during the research conducted in the Municipality of Concórdia do Pará. Rather than suggesting the full implementation of consolidated models such as COBIT or ITIL, the proposal brings together actions that can be implemented gradually, respecting the limitations in staffing, budget, and infrastructure observed in the municipality.

Figure 1. Minimal IT Governance Structure Proposed for the Municipality of Concórdia do Pará



Source: Prepared by the authors.

The logic used in developing the proposal is presented in Figure 1. The model is based on the main problems identified in the research and links each of them to an IT Governance action considered appropriate for the municipality's reality. Rather than proposing complex changes at

the outset, the structure prioritizes measures that can be implemented gradually, creating a foundation for the development of IT Governance within the municipal administration.

Table 2 details the proposed actions, their objectives, and the relationship of each action with the COBIT 2019 processes.

Table 2. Proposed actions for implementing the minimal IT Governance structure.

Problem Identified in the Research	**Proposal of This Study**	**Objective**	**Related COBIT 2019 Process**
IT operates only as technical support and participates little in administrative decision-making.	Establish an IT Governance Committee with representatives from management and the IT team, holding periodic meetings to discuss priorities and investments.	Bring the IT area closer to management and align technological decisions with the municipality's needs.	APO08 – Manage Relationships
Most public servants have not received training to use the municipality's systems.	Implement a continuous training plan and develop basic manuals for the main systems used by staff.	Improve system use and reduce operational errors.	BAI08 – Manage Knowledge
Acquisition of computers and software occurs without planning.	Develop an annual IT plan containing needs, priorities, and investment forecasts.	Organize resource allocation and reduce emergency purchases.	APO05 – Manage Portfolio
There is no documentation of procedures executed by the IT team.	Standardize IT processes and maintain records of support activities, maintenance, and configurations performed.	Facilitate service continuity and preserve team knowledge.	BAI08 – Manage Knowledge
Equipment maintenance occurs only after failures.	Create an inventory of equipment and establish a preventive maintenance schedule.	Reduce service interruptions and increase equipment lifespan.	BAI09 – Manage Assets / APO12 – Manage Risk

Source: Prepared by the authors.

The first proposed measure seeks to bring the Information Technology sector closer to municipal management. During the research, it became evident that the IT team works primarily on equipment maintenance and the resolution of technical problems, participating very little in decisions related to the municipality's planning processes. The creation of an IT Governance Committee can help ensure that the IT area participates in discussions on priorities, investments, and the needs of different administrative sectors.

Another point that deserves attention is staff training. The results showed that a large portion of participants had never received training to use the systems adopted by the municipality. This situation hinders the use of available tools and reduces the benefits expected from technology investments. For this reason, periodic training sessions and the development of support materials are proposed to guide staff in using the systems most frequently employed in the municipality.

The research also showed that many decisions related to the purchase of equipment and software occur only when a problem or urgent need arises. To reduce this type of situation, the development of an annual IT plan is proposed, allowing demands to be organized in advance and investments to be made in a more structured manner, according to the administration's priorities.

Another aspect observed was the absence of documentation of activities performed by the IT team. The lack of records makes service continuity difficult and concentrates knowledge in a small number of staff members. Standardizing procedures and recording activities performed can facilitate the team's work, improve sector organization, and preserve information for future reference.

Finally, the research identified that equipment maintenance occurs, in most cases, only after a problem arises. As an alternative, the creation of an updated inventory of IT equipment and the definition of a preventive maintenance schedule are proposed. Even though it is a simple measure, it can help reduce failures, extend equipment lifespan, and improve the availability of technological services offered by the municipality.

The actions presented were defined based on the problems identified during the research and aim to address the needs observed in the Municipality of Concórdia do Pará. By prioritizing process organization, definition of responsibilities, and staff training, these measures can be implemented gradually, without requiring significant investments at the outset. Thus, the proposed structure represents a starting point for implementing IT Governance in small municipalities with similar characteristics.

CONCLUSION AND FUTURE PROSPECTS

Information Technology Governance plays an important role in modernizing public administration, especially in a context where technology is increasingly present in the delivery of services to the population. However, implementing IT Governance practices in small municipalities remains a challenge, mainly due to budget limitations, the lack of specialized professionals, and the absence of structured technological planning.

The results obtained in this study showed that this reality is also present in the Municipality of Concórdia do Pará. The research conducted with 33 public servants identified problems related to the lack of user training, the absence of planning for technology investments, and the predominantly reactive performance of the IT team. These factors hinder the use of

technology as a management support tool and reinforce the need to adopt governance practices compatible with the municipality's reality.

In addition to identifying these difficulties, the research also made it possible to develop an IT Governance proposal based on the needs observed during the study. Rather than suggesting the full implementation of frameworks such as COBIT or ITIL, the proposal prioritizes actions that can be applied gradually, respecting the structural, staffing, and budget limitations found in small municipalities. In this way, the aim is to create a foundation for governance to evolve over time, without requiring changes that are incompatible with local conditions.

Another important result of this work was the development of the questionnaire used in the research. In addition to supporting the diagnosis conducted in Concórdia do Pará, this instrument can serve as a starting point for other municipalities to assess their current situation and identify the main challenges related to IT Governance.

As possibilities for future work, it is suggested that the proposed model be applied in other small municipalities, allowing comparisons across different contexts and improving the proposal developed in this study. Studies may also be conducted to monitor the implementation of IT Governance over time, evaluating its impacts on public management and on the quality of services offered to the population.

The findings of this study demonstrate that the challenges faced by the Municipality of Concórdia do Pará reflect a broader reality experienced by many small municipalities in Brazil, where structural limitations, scarce financial resources, and the absence of specialized personnel restrict the development of mature IT governance practices. By analyzing this context and proposing a minimal governance structure adapted to Brazilian municipal conditions, the study contributes to the ongoing effort to modernize public administration through feasible, incremental actions. The proposed model acknowledges the constraints typical of small Brazilian municipalities and offers a foundation upon which governance practices can gradually evolve, supporting more efficient technological management and improving the quality of services delivered to citizens.

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APPENDIX A – FIELD DIAGNOSTIC INSTRUMENT

Structured Questionnaire for Assessing IT Governance and Infrastructure

PART I: PROFILE IDENTIFICATION
1. What is your primary area of work within the municipality / municipal departments?
I work directly in the Information Technology / IT sector.
I hold a Strategic Management position (Secretary, Director, or Sector Chief).
I work in the administrative/operational area of a department (Accounting, Procurement, Taxation, Health, etc.).
PART II: END-USER BLOCK (ADMINISTRATIVE STAFF)
2. Do the technology tools and systems currently available adequately meet the specific needs of your sector's routines (e.g., issuing invoices, processing payroll, managing procurement)?
Yes, they fully meet our needs.
Partially (The systems work, but they are slow, freeze often, or lack essential features).
No, the systems are very unstable/ineffective and delay our daily work.
3. When you need technical support from IT or corrections in any system, how do you evaluate the response time?
Fast and efficient (Resolved on the same day).
Slow (Takes days and affects the workflow of the sector).
Nonexistent / We do not have adequate support for our sector.
4. Have you ever received any formal training or capacity-building offered by the municipality to operate your sector's systems?
Yes, complete training.
No, I had to learn on the job with help from colleagues.
PART III: TECHNICAL BLOCK (IT STAFF)
5. Is there any sector or staff member specifically responsible for the Information Technology area?
Yes, there is a formally structured sector.
Yes, but there is only one staff member responsible for all demands.
No specific responsible person (demands are handled informally).
6. How often do maintenance or updates occur in the systems used by the municipality?
Frequently (Following a planned schedule).
Rarely (Only reactively, when a critical failure occurs).
They do not occur, or I am not aware of them.
7. Is there formal documentation or record of the processes executed with IT support?
Yes, most routines and systems have documentation or manuals.
Partially (Only critical processes are documented).
There is no documentation or record of any kind.