EXPLANATORY FACTORS FOR THE TIMELINESS OF ACCOUNTING INFORMATION IN MUNICIPALITIES OF MINAS GERAIS

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ABSTRACT

The objective of this study is to analyze the relationship between explanatory factors and the timeliness of accounting information in municipalities in Minas Gerais. As a methodological procedure, a multinomial logit model for panel data was employed, comprising 853 municipalities in the state of Minas Gerais from 2015 to 2019. The results indicate that the variables that most influence timeliness are the use of digital technologies in management activities, expenditure on socioeconomic development, net current revenue, tax effort, investment volume, and personnel expenditure. Furthermore, the study found an increase in the number of timely municipalities over the period analyzed. This research contributes to public management by identifying variables that lead to greater timeliness in municipalities and that should be emphasized by public administrators in order to achieve more timely accounting information.

Keywords: Timeliness. Stakeholders. Multinomial logit. Public management.

1 INTRODUCTION

Accounting in the public sector aims to provide information that supports accountability and management control. To achieve this purpose, accounting information must be timely (Sandria et al., 2021). Timeliness refers to the ability to communicate information to decision makers before it loses its usefulness for influencing their decisions (Alashi, 2020). Thus, the usefulness of information depends not only on its content but also on the speed with which it is disclosed (Türel, 2010).

In the public sector, the use of accounting information assumes particular relevance due to the relationships that characterize this environment, marked by the presence of multiple stakeholders. In the context of public action, stakeholders may include any individual or organization whose interests may be affected, such as citizens, civil society organizations, or other governmental entities. Therefore, every public service involves a broad range of stakeholders who expect qualitative social outcomes (Lindsay, 2006).

The legitimacy of governmental actions depends on a continuous process of societal acceptance. Public administration must therefore provide accountability for its actions to a diverse set of stakeholders (Bashir & Amir, 2020). Timeliness, as a qualitative characteristic of accounting information, is essential to ensure that stakeholders have access to information at the appropriate moment, thereby supporting decision making. The timeliness of information is believed to be influenced by characteristics of both the preparers and the users of that information. Accordingly, this study seeks to analyze specific features of municipalities and examine their influence on the timeliness of disclosed information.

Although there is widespread agreement in academia and among oversight agencies regarding the need for timely accounting information, it remains necessary to identify and discuss whether disclosure actually occurs in a timely and effective manner. Despite harmonization efforts (Sellami & Gafsi, 2017), accounting is a social science and is therefore subject to the societal characteristics of each subnational entity. As a result, factors that influence timeliness in one jurisdiction may not be present in another, leading to imbalances in the prompt availability of accounting information.

One of the greatest challenges to achieving timeliness in subnational governments lies in managing specific characteristics that may hinder prompt disclosure, ultimately resulting in informational dissatisfaction among stakeholders. It is therefore necessary to identify the explanatory factors associated with the timeliness of information in order to improve it. Additionally, it is essential to discuss the effectiveness of timeliness, particularly because administrative reforms have emphasized the need for greater transparency as a means of strengthening democracy. Governments and their online portals have become communicators of information flows generated by public management and directed toward stakeholders. However, doubts persist regarding the effectiveness of the information provided by public authorities (Antunes, 2018), and it remains unclear whether the current level of timeliness is sufficient to influence stakeholders' decision making.

For the purposes of this study, timeliness refers to the national regulation requiring subnational governments to present their accounting and budgetary results on a bimonthly basis through the Summary Budget Execution Reports (Relatórios Resumidos de Execução Orçamentária, RREO). Nonetheless, many municipalities, although legally required to do so, submit these reports late. Such delays may be explained by differences in their structural capacities, which directly affect the timeliness of RREO submission (Sandria et al., 2021).

Given the need to provide stakeholders with relevant information in a timely manner, timeliness is a qualitative characteristic that warrants examination in order to identify the factors that influence its occurrence. In this context, the present study is guided by the following research question: **which factors can explain the timeliness of accounting information in the**

municipalities of Minas Gerais? The objective is to analyze the relationship between explanatory factors and the timeliness of accounting information in these municipalities. The focus on the local level is justified by the fact that municipalities constitute the governmental sphere closest to the demands of civil society. The study seeks to contribute to the literature by examining timeliness through the lens of stakeholder theory, both of which remain underexplored in the Brazilian public sector.

The selection of this research problem is grounded in the fact that, in Brazil, there is a gap in studies on the timeliness of accounting information in the public sector, as most investigations focus on the private sector. The literature on timeliness has examined accounting information from different perspectives and in various settings, with an emphasis on the private environment. Examples include the studies of Alkhatib and Marji (2012) on the Amman Stock Exchange, Ha et al. (2018) on the Vietnamese stock market, Ezat and El-Masry (2008) on Egyptian companies listed on the Cairo and Alexandria Stock Exchanges, Silva et al. (2016) on Brazilian family firms, and Zóboli and Rezende (2008) as well as Altoé et al. (2015), both in the Brazilian stock market. Collectively, these studies have shown that accounting information is timely for decision-making agents.

In the public sector, Dwyer and Wilson (1989) investigated the factors influencing the timeliness of municipal reports in 142 cities in the United States. Sandria et al. (2021) found that the use of the internet significantly affects the timeliness of local government financial reports in the Suliki district, as do investments in human resources. Therefore, although timeliness has been widely studied in the private sector, it remains insufficiently explored in the public context, particularly in Brazil, where decision makers also rely on timely accounting information to support their choices.

2 EXPLANATORY FACTORS OF ACCOUNTING INFORMATION TIMELINESS

Timeliness, or the promptness of accounting information, refers to the disclosure of such information at a moment that allows it to be useful for decision making (Türel, 2010). The timeliness of accounting information encompasses both the frequency and the speed with which it is published (Alashi, 2020), indicating that data are or should be presented within a specific time frame.

In both the private and public sectors, the timeliness of information tends to be positively or negatively influenced by the characteristics of those who communicate the information and by those of the stakeholders. Stakeholders, or interested parties, are individuals or groups capable of claiming, influencing, and being affected by the objectives and actions of a given organization (Freeman & Reed, 1983) or policy (Brugha & Varvasovszky, 2000).

Stakeholder theory seeks to understand the relationships between an organization (whether private or public) and its environment (Gomes et al., 2010). According to this theory, organizational decisions should aim to satisfy and balance stakeholder interests, given that these actors are vital to organizational development. It is therefore necessary to identify the opportunities and threats faced by the organization, including political, economic, social, and technological trends and events (Bryson, 1988).

One possible source of conflict among these actors is informational asymmetry, since some stakeholders possess greater capacity to communicate with the organization and, consequently, gain access to more information. The timeliness of accounting information is an important factor in minimizing informational asymmetry, as delays in disclosure significantly reduce organizational efficiency and increase uncertainty about organizational data (Özcan, 2019). Furthermore, a lack of timeliness may signal misappropriation or improper use of resources by the organization (Leventis & Weetman, 2004).

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An important mechanism for reducing informational asymmetry in the public sector is transparency in the disclosure of public data. A transparent public administration enables society to participate more effectively in oversight, thereby strengthening democracy (Figueiredo & Santos, 2017). Timeliness supports transparency because the faster a report is issued, the more transparent it becomes, given that transparency involves not only the provision of information but also its availability at the appropriate time (Abdullah, 2006). Disclosing accounting information promptly therefore demonstrates managerial efficiency and effectiveness, as well as contributes to reducing informational asymmetry between managers and stakeholders (Suadiye, 2019). Thus, the first hypothesis is formulated as follows:

H$_1$: Greater transparency in municipal management leads to greater timeliness.

Another important factor for stakeholder participation, as it supports accountability, is the expansion of internet access (Carmeli, 2008). Zuccolotto and Teixeira (2019) indicate that, in the twenty-first century, information technologies have enhanced transparency with respect to information disclosure and compliance. Additionally, Sandria, Elfiswandi and Yamasitha (2021) found that the use of the internet influences the timeliness of financial reports. In line with this evidence, the second hypothesis is proposed:

H$_2$: Greater use of digital technologies in municipal management activities generates greater timeliness.

In addition to informational asymmetry, other factors may limit stakeholder participation, such as motivational deficits, economic conditions, trust, social circumstances, limited knowledge of the subject, material constraints, and centralized authority (Gutmann & Thompson, 1996). In this context, the nature of accountability has changed, and public organizations are increasingly held responsible for their actions.

According to Bryson (1988), stakeholders influence public organizations to adapt to this new reality, as these organizations focus on the criteria stakeholders use to assess organizational performance. The more engaged the stakeholders are, the greater the pressure for public accountability. The study conducted by Carmeli (2008) in Israel demonstrated, through the socioeconomic status of local residents, that the participation of the population as stakeholders influences the operationalization of financial information. Therefore, the amounts spent on the socioeconomic development of society tend to be an influential factor in the timeliness of municipalities. Based on this reasoning, the following hypothesis is proposed:

H$_3$: Higher spending on socioeconomic development in municipalities leads to greater timeliness.

In a complementary manner, the study conducted by Bashir and Amir (2020) indicated that the disclosure of financial accounting data in the public sector is a key step toward improving the quality of reports issued by state entities. Consequently, financial management in government, through the information disclosed, is used by various stakeholders as a basis for decision making. Municipal financial information therefore serves as a signal of the characteristics of local management and may be used to describe performance (Sandria et al., 2021).

Building on the understanding that financial information signals aspects of municipal management, it is reasonable to expect that such information relates to the quality of timeliness, since strong managerial performance may also indicate strong performance in timely reporting. Among the financial indicators available for municipalities is net current revenue. This indicator corresponds to the sum of current revenues collected in the reference month and the eleven preceding months, excluding duplications and certain components such as constitutional and legal transfers between governmental entities, employee contributions to social security, revenues derived from financial compensation between pension regimes, and revenues from asset disposals (Lei Complementar No. 101, 2000). Based on these considerations, the following hypothesis is proposed:

H₄ₐ: The higher the municipality's net current revenue, the greater its tendency toward timeliness.

Another important indicator of municipal management is tax effort, which is directly related to revenue generation, as it reflects the ratio between tax revenue and total revenue collected. This parameter is therefore associated with the taxing capacity of the entity (Massardi & Abrantes, 2015). It is assumed that the greater the tax effort exerted by the municipality, the more resources are generated, and the stronger the tendency for residents to monitor how these resources are used in order to oversee the application of the taxes they pay. Consequently, the need for timely information increases. Given the relevance of tax effort for municipal management, the following hypothesis is proposed:

H₄ᵦ: The greater the municipal tax effort, the greater the tendency toward timeliness.

Regarding financial accounting data in the public sector, Alkhatib and Marji (2012), in their study on the private sector, demonstrated that timeliness is also associated with elements that indicate a firm's capacity to generate profits and with the relationship between revenues and expenses. To adapt this logic to the public context, attention is directed to municipal investment and budget balance. Investment reflects the municipality's capacity to generate well-being and competitiveness and is measured as the ratio between investment expenditures and total revenue. Budget balance, in turn, refers to the ratio between revenue collected and expenditures. These variables are expected to influence timeliness, as municipalities with higher levels of investment and a balanced budget tend to disclose their actions more readily, motivated both by accountability and by political or electoral considerations. Based on this reasoning, the following hypotheses are formulated:

H₅ₐ: The greater the municipal investments, the greater the tendencies toward timeliness.

H₅ᵦ: Greater municipal budget balance tends to lead to greater timeliness.

With respect to these financial hypotheses, from H4a through H5b, it is assumed that timeliness is positively influenced by favorable performance in revenues, investments, and budget balances in subnational entities. The timely disclosure of such data, when favorable, may be explained by impression management, meaning that managers may manipulate accounting reports when circumstances are unfavorable to them, disclosing accurate information under satisfactory conditions but managing disclosures when the entity's situation is less favorable (Salles & Boente, 2024).

According to Sandria et al. (2021), personnel expenditures are among the most important organizational components. Their study shows that human resources in local government have a significant relationship with the timeliness of financial reports. The relevance of this variable is linked to the fact that political actors may use these expenditures discretionarily, and because personnel expenses may reach up to 60 percent of total expenditures under the Fiscal Responsibility Law. Additionally, higher personnel expenditures may signal greater state capacity, resulting in more possibilities for generating timely information. Based on these considerations, the following hypothesis is proposed:

H₆: The greater the municipality's personnel expenditures, the greater its tendency toward timeliness.

The hypotheses presented stem from the understanding that timeliness, as a qualitative accounting characteristic, helps stakeholders obtain timely information to monitor public management and contributes to identifying elements that signal the achievement of qualitative social outcomes. Additionally, timely accounting information supports governments in their pursuit of legitimacy. Thus, elements that reflect public management practices, such as the use of digital technology, transparency, spending on socioeconomic development, personnel expenditures, and financial indicators (net current revenue, investment, budget balance, and tax

effort), constitute important components that stakeholders may use to exert pressure for public accountability, as argued by Bryson (1988).

3 METHODOLOGICAL PROCEDURES

This study is a descriptive, quantitative investigation based on secondary data. The unit of analysis comprises the 853 municipalities of the state of Minas Gerais, located in the Southeast region of Brazil. The decision to focus on these municipalities is justified by the state's geographic extension and demographic, social, and economic diversity, which result in municipalities with distinct profiles (Rocha, 2021).

The information analyzed covers the years 2015 to 2019, which form the temporal scope of the models. The period begins in 2015 because this was the first year in which the Summary Budget Execution Reports (RREO) were made available on the public database of the Brazilian Public Sector Accounting and Fiscal Information System (SICONFI). Before that, the reports were submitted via forms to branches of Caixa Econômica Federal. Furthermore, due to the atypical conditions of 2020 and 2021 resulting from the Covid-19 pandemic, the study period was limited to 2019.

The RREO serves as an instrument of management transparency in Brazil. The report is submitted bimonthly by municipal executive authorities. The dependent variable of the study is timeliness, a construct based on the frequency and speed (Alashi, 2020) with which municipalities disclose their accounting information. Timeliness data were obtained from the dates of RREO approval available in SICONFI.

To construct this variable, the study considered different levels of timeliness, recognizing that a municipality is no longer classified as timely when it delays submission of the RREO by more than 30 days. Because a municipality may be timely or not in each bimonthly period of the year, a scale ranging from 0 to 6 was created for the dependent variable. A score of 0 indicates that the municipality was timely in zero bimonthly periods, meaning it was not timely at any point in the year, whereas a score of 6 indicates that it was timely in all six bimonthly periods. The interpretation follows analogously for the intermediate values, with the score representing the number of bimonthly periods in which the municipality was timely during the year. Table 1 presents the explanatory variables used in the study, along with their descriptions and sources.

Table 1
Independent Variables used in the model, 2015 to 2019

Hypothesis	Variable	Description	Source	Expected Relationship
H_1	*ITGM*	Municipal Management Transparency Index	TCE-MG	+
H_2	*IATDG*	Digital Technology Adoption Index in Municipal Management	TCE-MG	+
H_3	Gas_Educ	*Per capita* Spending on Education	TCE-MG	+
H_3	Gas_San_Bás	*Per capita* Spending on Basic Sanitation	TCE-MG	+
H_3	Gas_Segur	*Per capita* Spending on Public Security	TCE-MG	+
H_3	Gas_Saúde	*Per capita* Spending on Health Activities	TCE-MG	+
H_{4a}	Rec_Corr	*Per capita* Net Current Revenue	TCE-MG	+
H_{4b}	Esf_Trib	Ratio between Tax Revenue and Total Revenue Collected	TCE-MG	+
H_{5a}	IFGF_Inv	Fiscal Management Index related to Investments	Firjan	+
H_{5b}	Eq_Orç	Ratio between Revenue Collected and Expenditures	TCE-MG	+
H_6	Gas_Pess	Personnel Expenditures	TCE-MG	+

Source: Authors' elaboration.

The time series, as previously noted, spans the years 2015 to 2019. However, data for the Digital Technology Adoption Index in Municipal Management (IATDG) and the Municipal Management Transparency Index (ITGM) are not available for 2015 and 2016. Therefore, two models were estimated to allow the analysis of these variables without significantly reducing the number of observations. The first model excludes these variables and uses a panel covering 2015 to 2019, while the second model includes them and uses a panel covering 2017 to 2019.

To better understand the influence of development on municipal timeliness, a proxy was constructed to capture the main variables that comprise this dimension. Accordingly, the development expenditure construct, composed of the variables presented in Table 1, is defined by the following equation:

$$Gas\_Desenv_{it} = Gas\_Educ_{it} + Gas\_San\_b\acute{a}s_{it} + Gas\_Segur_{it} + Gas\_Sa\acute{u}de_{it} \qquad (1)$$

Where: *Gas_Desenv$_{it}$* a *proxy* t is the proxy for development expenditure in municipality *i*, in year *t*; *Gas_Educ$_{it}$* is *per capita* spending on education; *Gas_San_bás$_{it}$* is *per capita* spending on basic sanitation; *Gas_Segur$_{it}$* is *per capita* spending on public security; and *Gas_Saúde$_{it}$* is *per capita* spending on health. All variables refer to municipality *i*, in year *t*. The higher these expenditures, the greater the tendency for municipalities to meet public service demands.

Regarding the statistical method, a multinomial logit model was selected because the dependent variable is categorical and ordinal, ranging from 0 to 6, as previously explained. According to Greene (2003), probit or logit models are appropriate when the dependent variable consists of multiple categories, with the probit model being more suitable when there are up to four categories. Therefore, the multinomial logit model was chosen, as it is the most appropriate when, as in this study, the dependent variable comprises seven distinct categories.

Furthermore, for multinomial logit models with panel data, a fixed-effects specification is employed, allowing each category to be associated with a distinct probability (Pforr, 2014). Therefore, the relationships between the timeliness of accounting information in the municipalities of Minas Gerais and the variables that may influence it are represented in the following model:

$$P\left(Temp_{bim_{it}}\right) = \beta_0 + \beta_1 Rec\_Corr_{it} + \beta_2 Gas\_Pess_{it} + \beta_3 IFGF\_Inv_{it} + \beta_4 Esf\_Trib_{it}$$
$$+ \beta_5 Eq_{Or\varsigma_{it}} + \beta_6 Gas_{Desenv_{it}} + \beta_7 IATDG_{it} * + \beta_8 ITGM_{it} * + \varepsilon_{it} \qquad (2)$$

Note: These variables will be used only in the second model, as previously explained.

Where : *P(Temp_bim$_{it}$)* is the probability of the dependent variable representing the number of bimonthly periods in which municipality *i* was timely in year *t*. The explanatory variables are defined as follows: *Rec_Corr$_{it}$* is *per capita* net current revenue; *Gas_Pess$_{it}$* is personnel expenditure expressed as a percentage of net current revenue ; *IFGF_Inv$_{it}$* is the Firjan Fiscal Management Index related to investments; *Esf_Trib$_{it}$* is the municipality's own tax effort, measured as the ratio between tax revenue and total revenue collected*; Eq_Orç$_{it}$* is budget balance, measured as the ratio between revenue collected and expenditures; *Gas_Desenv$_{it}$* represents the proxy constructed for development; *IATDG$_{it}$* is the Digital Technology Adoption Index in Municipal Management*; e ITGM$_{it}$* is the Municipal Management Transparency Index. All variables refer to municipality *i* in year *t*.

The variables employed in the study were systematized using Microsoft Excel®. The statistical analyses and the model estimation were performed with Stata® version 17.0. Regarding outliers, all cases were retained, as each observation is important for assessing the diversity of timeliness among municipalities. Moreover, in the descriptive analyses, no extreme values were identified that altered the results obtained.

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4 RESULTS AND DISCUSSION

### 4.1 Descriptive Analyses of Timeliness and Study Variables

This section presents the descriptive analyses of the variables used in the study, beginning with the dependent variable. Figure 1 illustrates the number of bimonthly periods in which municipalities were timely throughout the sample years (2015 to 2019). It is evident that timeliness increased over the time span analyzed, indicating that municipalities in Minas Gerais became more timely in disclosing their accounting information. This finding is consistent with the notion that governmental actions depend on a process of acceptance by their stakeholders (Lindsay, 2006).

Furthermore, municipalities that fail to submit the RREO in a timely manner may face sanctions, such as suspension of voluntary transfers and restrictions on contracting credit operations until compliance is achieved. Thus, it can be inferred that the observed increase in timeliness may be related both to the penalties imposed on noncompliant entities and to a growing effort by public officials to legitimize their actions through transparency and public disclosure.

Figure 1
Variation in the timeliness of municipalities in minas gerais between 2015 and2019

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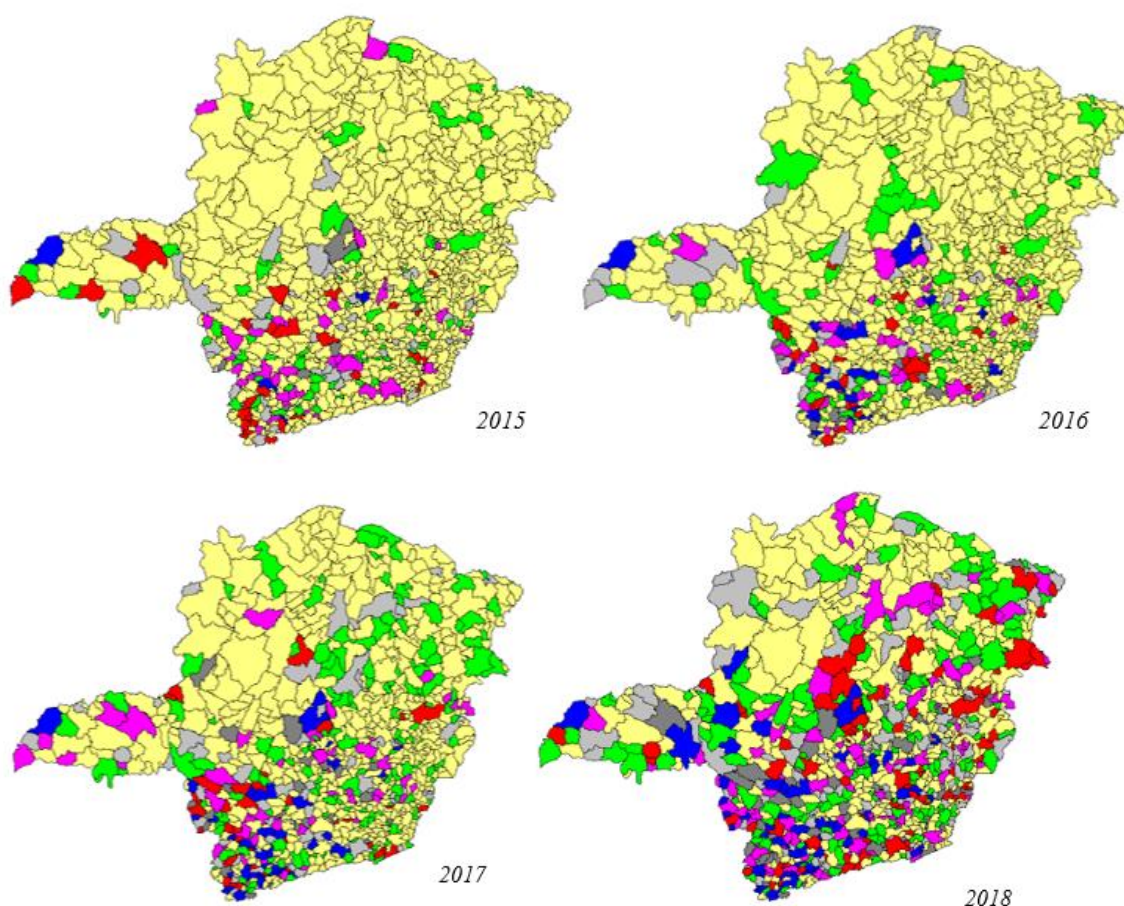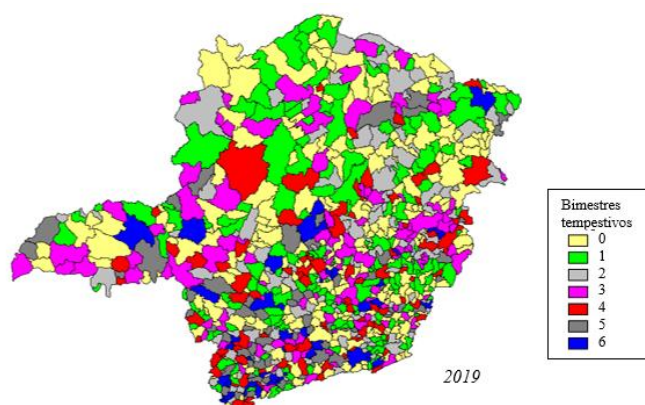
Note. The numbers from 0 to 6 represent the number of bimonthly periods in which municipalities in Minas Gerais were timely during the respective year.
Source: Authors' elaboration with support from the TabWin software.

The spatial distribution over the years reveals the evolution of timeliness among municipalities in Minas Gerais, as well as geographic characteristics underlying this distribution. For example, a significant portion of the municipalities that were most timely in 2019 (timely in five or six bimonthly periods) are concentrated in the southern region of the state.

However, it is also evident that, even in 2019, many municipalities were not timely in most bimonthly periods. Notably, only a small portion of municipalities (approximately 4.8 percent) were timely throughout the entire year, whereas a large share (approximately 76.3 percent) were timely in only up to three bimonthly periods. The low level of timeliness is further confirmed by the mean of the dependent variable across the panel, which is only 1.3, indicating that, on average, municipalities in Minas Gerais were timely in roughly one bimonthly period per year between 2015 and 2019.

Regarding the independent variables, their descriptive statistics for the municipalities of Minas Gerais from 2015 to 2019 are presented in Table 2..

Table 2

Descriptive statistics of the explanatory variables, 2015 to 2019

Variable	Mean	Standard Deviation	Minimum	Maximum	Number of Observations
*ITGM**	0.761	0.191	0.166	1	2356
*IATDG**	0.651	0.172	0.142	1	2374
Gas_Desenv	BRL 789.32	BRL 409.54	BRL 21.28	BRL 15,296.00	4258
Rec_Corr	BRL 2,842.44	BRL 1,408.59	BRL 1,026.78	BRL 23,947.14	4255
Esf_Trib	6.74	5.71	0.48	55.66	4265
IFGF_Inv	0.409	0.246	0.008	1	4209
Eq_Orç	101.38	7.35	61.13	153.83	4265
Gas_Pess	52.26%	5.04%	4.10%	83.96%	4249

Note. These variables have available data only for the period from 2017 to 2019.
Source: Authors' elaboration.

It is evident that the range of the variables is large, meaning there is a significant difference between their minimum and maximum values, which indicates substantial, particularly economic, disparities among the municipalities of Minas Gerais. The proxy for development expenditure also stands out due to the discrepancy between its maximum and minimum values when compared to the municipal average. Based on these data, it is possible to observe that municipalities in Minas Gerais spend on development-related elements in a heterogeneous manner, as expected.

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4.2 Explanatory Factors of Timeliness in Municipalities of Minas Gerais

Before presenting the logit results, a Variance Inflation Factor (VIF) test was conducted to identify potential multicollinearity issues. According to Hair et al. (2009), values up to 10 are acceptable for each variable. However, Fávero and Belfiore (2014) argue that VIF values above five may indicate multicollinearity concerns. Table 2 presents the test results and shows that no variable exceeded the threshold established in the literature, indicating the absence of multicollinearity in the model. The correlations among the independent variables were also low, all below 0.50.

To estimate the model, a multinomial logit specification was chosen due to the categorical and ordinal nature of the dependent variable. The results are presented in Table 3, using category zero as the reference group, for the number of timely bimonthly periods per year in the municipalities of Minas Gerais between 2015 and 2019.

Table 3

Results of the first multinomial logit model, hypotheses 3 to 6

Variable	Temp_bim=1	Temp_bim=2	Temp_bim=3	Temp_bim=4	Temp_bim=5	Temp_bim=6
Gas_Desenv	0.0015*** (0.0006)	0.0014* (0.0008)	0.0042*** (0.001)	0.0041*** (0.001)	0.0078*** (0.0014)	0.0092*** (0.0021)
Rec_corr	0.0014*** (0.0002)	0.0025*** (0.0003)	0.0025*** (0.0003)	0.0031*** (0.0003)	0.0031*** (0.0004)	0.003*** (0.0006)
Esf_Trib	0.041 (0.0384)	0.0795 (0.0564)	-0.0026 (0.0618)	0.1022 (0.0713)	0.1229 (0.0853)	0.1954** (0.0958)
IFGF_Inv	-0.337 (0.2772)	-0.9232** (0.3939)	-1,0744** (0.4264)	-0.6805 (0.4861)	-0.2176 (0.6078)	-0.5992 (0.7139)
Eq_Orç	0.0027 (0.0105)	-0.0081 (0.0141)	0.0051 (0.016)	-0.0279 (0.0187)	0.0124 (0.024)	0.0157 (0.0298)
Gas_pess	0.0628*** (0.0191)	0.0941*** (0.0246)	0.0751** (0.03)	0.0648** (0.0313)	0.1096*** (0.0404)	0.1462*** (0.0486)

Note. (i) Standard errors in parentheses; ***p<0.01; **p<0.05; *p<0.1; (ii) Observations: 3.456; *Pseudo* R^2 = 0.1617; Prob>chi^2 = 0.0000. VIF(s) Values: Rec_Corr (3,12); Gas_Pess (1,39); IFGF_Inv (1,03); Esf_Trib (1,13); Eq_Orç (1,42); Gas_Desenv (3,02).
Source: Authors' elaboration.

Development expenditure was significant and positive across all categories of the dependent variable. This indicates that the greater the expenditure on development (represented here by spending on education, basic sanitation, public security, and health), the higher the probability that a municipality will be timely throughout the year, which supports hypothesis 3. Thus, it can be inferred that municipalities with better conditions in health, education, security, and basic sanitation tend to exhibit greater timeliness, which may be associated with stronger managerial capacity or more effective public administration. Furthermore, Carmeli (2008) shows that communities with stakeholders experiencing improved socioeconomic development influence the operationalization of financial information. In alignment with this, Bryson (1988) demonstrates that public organizations direct their efforts toward actions that are important to stakeholders. According to stakeholder theory, the perspectives of interested parties are essential for organizational development and continuity (Freeman & Reed, 1983), which also relates to the political sustainability or continuity of a governing party.

The variable net current revenue was found to be significant across all categories of the dependent variable, indicating that it influences the probability that a municipality will be timely in any number of bimonthly periods per year. Moreover, this influence is slightly stronger for the

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most timely municipalities (dependent variable values closer to six). Thus, hypothesis 4a is not rejected.

Personnel expenditures show a positive and significant relationship with municipal timeliness in all categories of the dependent variable. Based on the analyzed sample, it can therefore be stated that higher personnel expenditures increase the probability of a municipality being timely, supporting hypothesis 6.

Regarding the IFGF investment index, the results indicate significant influence only on the probability that a municipality will be timely in two or three bimonthly periods per year. This influence is negative, meaning that the higher the Firjan Fiscal Management Index related to investments, the lower the probability that a municipality will be timely throughout the year, which leads to the rejection of hypothesis 5a.

It is relevant to recall that this variable measures the share of total municipal revenue allocated to investments aimed at generating social well-being and improving the business environment (IFGF, 2021). Based on the sample analyzed, higher investment shares reduce the likelihood of municipal timeliness, contradicting the expectation of a positive influence. This may occur because investments may be directed toward areas unrelated to timeliness, given that social well-being may be tied to social rights or to initiatives that do not immediately affect stakeholder expectations. According to Bryson (1988), public organizations focus on criteria used by stakeholders to assess organizational performance. Alternatively, this result may reflect the lengthy nature of public investment processes, as well as inefficiencies in execution (spending more than anticipated), which could lead managers to prefer less transparent disclosure—an impression management behavior among stakeholders.

Municipal tax effort has a significant effect only for category six of the dependent variable, meaning it influences only municipalities that are fully timely throughout the year. This relationship is positive, indicating that greater tax effort increases the probability of a municipality being timely in all six bimonthly periods. This suggests a capacity effect, whereby municipalities able to maintain full-year timeliness also tend to exhibit stronger fiscal effort.

Budget balance, in turn, was not significant in any category of the dependent variable, leading to the rejection of hypothesis 5b. Its lack of significance may be explained by the fact that, unlike the private sector—as discussed by Alkhatib and Marji (2012)—the relationship between revenues and expenditures does not appear to be a determining factor for timeliness in the public sector. This may occur because, regardless of the balance between these components, municipalities continue performing their institutional responsibilities, even if not optimally, resulting in no significant effect of this variable on timeliness.

In summary, several variables were found to influence the timeliness of municipalities in Minas Gerais from 2015 to 2019. As previously discussed, the second model includes the technology and transparency variables highlighted in the literature as important for analyzing timeliness. These variables were incorporated only in the second model to avoid a substantial reduction in the number of observations, since the data are available only for the years 2017 to 2019 (Table 4).

Table 4
Results of the second multinomial logit model, Hypotheses 1 to 6

Variable	*Temp_bim*=1	*Temp_bim*=2	*Temp_bim*=3	*Temp_bim*=4	*Temp_bim*=5	*Temp_bim*=6
ITGM	0.3757 (0.4581)	0.6177 (0.6341)	-0.2953 (0.7121)	0.9946 (0.8023)	1,2047 (1,0151)	1,4945 (1,3553)
IATDG	0.3903 (0.5059)	1,2296* (0.6956)	-0.3863 (0.7553)	0.1003 (0.8569)	1,0109 (1,0321)	2,633* (1,4664)
Gas_Desenv	0.0004 (0.0008)	0.0002 (0.0011)	0.0027* (0.0015)	0.0029* (0.0015)	0.0053*** (0.002)	0.0047 (0.0032)

Rec_corr	0.0008***	0.0016***	0.0021***	0.0019***	0.0015***	0.0018**
	(0.0003)	(0.0004)	(0.0005)	(0.0004)	(0.0006)	(0.0009)
Esf_Trib	-0.0146	0.0667	-0.07	-0.0023	-0.071	0.0567
	(0.061)	(0.0836)	(0.1069)	(0.1138)	(0.1277)	(0.1687)
IFGF_Inv	0.3326	0.5037	0.0579	1,4261**	2,9344***	1,3741
	(0.4707)	(0.6355)	(0.7264)	(0.7242)	(0.9382)	(1,2495)
Eq_Orç	0.0136	0.0157	-0.0066	-0.0107	0.0459	-0.0164
	(0.0171)	(0.0215)	(0.0247)	(0.0278)	(0.0355)	(0.0467)
Gas_pess	0.0294	0.0719*	0.0542	0.0386	0.0966	0.1104
	(0.0325)	(0.0402)	(0.0447)	(0.0508)	(0.0632)	(0.0848)

Note. (i) Standard errors in parentheses; ***p<0.01; **p<0.05; *p<0.1; (ii) Observations: 1.737; *Pseudo* R^2 = 0.0975; Prob>chi^2 = 0.0000. VIF(s) Values: Rec_Corr (3,12); Gas_Pess (1,39); IFGF_Inv (1,03); Esf_Trib (1,13); Eq_Orç (1,42); Gas_Desenv (3,02); IATDG (1,12); ITGM (1,07).
Source: Authors' elaboration.

The results for this model are qualitatively similar to those presented in Table 3. Net current revenue remains significant and positive across all categories of the dependent variable, indicating that higher municipal net current revenue increases the probability of timeliness throughout the year.

In contrast to the first model, personnel expenditures show a change in significance, becoming significant only in the second category of the dependent variable. This change is likely due to the inclusion of the IATDG variable, the Digital Technology Adoption Index in Municipal Management, which captures the extent to which municipalities use digital technologies in their administrative activities.

As municipalities invest more in digital technologies and rely increasingly on digital tools, personnel-related expenditures may decrease because many services can be optimized through technological solutions. Consequently, personnel expenditures may lose significance in the model. The IATDG itself, however, is not significant across all categories of the dependent variable; it is significant only for the second and sixth categories. Even so, for the analyzed sample, greater use of digital technologies increases the probability of municipal timeliness, supporting hypothesis 2. Operational stakeholders benefit from improved work processes, which may enhance timeliness for stakeholders who consume the information. This result aligns with findings from Carmeli (2008), Sandria et al. (2021), and Salles and Boente (2024), as municipalities that were timely in all RREO submissions exhibited greater digital technology adoption.

Regarding the IFGF investment index, it continues to be significant in only two categories, although in this model these are the fourth and fifth categories. Unlike the previous model, the relationship is positive, which does not reject hypothesis 5a. Thus, the higher the IFGF— measuring the municipality's capacity to generate well-being and competitiveness through investment—the greater the probability of being timely.

Tax effort does not show significance in any category of the dependent variable. Likewise, budget balance continues to exhibit no significant effect on timeliness. These results may stem from the fact that, as noted by Massardi and Abrantes (2015), the gap between municipal own-source revenues and required expenditures is offset by intergovernmental transfers. This condition affects the fiscal circumstances municipalities would otherwise face if they were solely responsible for closing their fiscal gaps.

Development expenditure displays significant influence only in the third, fourth, and fifth categories of the dependent variable, supporting hypothesis 3, as in the first model. However, its lack of significance in the remaining categories may indicate that investment in digital technologies (a variable introduced in this model) absorbs part of the effect previously attributed to development expenditure, similar to what was observed for personnel expenditures.

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The municipal transparency index (ITGM), contrary to expectations, is not significant in any category of the dependent variable, leading to the rejection of hypothesis 1. In the analyzed sample, transparency does not influence the probability of municipal timeliness. This lack of influence may be due to the fact that municipalities often engage in retroactive transparency, rather than disclosing information in a timely manner. It may also reflect impression management behavior, whereby public managers strategically disclose favorable information while withholding unfavorable information, thereby preserving informational asymmetry.

Overall, timeliness in the submission of RREO reports still requires improvement. Despite the sanctions imposed by the Fiscal Responsibility Law, many municipalities in Minas Gerais do not meet this qualitative requirement of accounting information. The quality of accounting information is an institutionalized mechanism intended to provide stakeholders with more reliable and timely information. Therefore, attention must be directed to the factors that contribute to informational quality, particularly timeliness. The explanatory variables identified in this study are associated with investments in areas that tend to attract stakeholder attention, as highlighted by Bryson (1988).

Thus, the relationship between stakeholders, public organizations, and their surrounding environment emerges as a key factor in understanding the execution of timeliness in accounting information. Stakeholders play a decisive role in maintaining or removing a political party from power, and when their interests are disregarded, organizations tend to lose influence (Freeman & Reed, 1983). For this reason, public authorities must direct efforts toward identifying the opportunities and threats that shape their institutional context (Bryson, 1988). Therefore, it appears necessary to foster among stakeholders a stronger demand for greater transparency and higher-quality information concerning public administration.

Although untimely submission of the RREO is subject to sanctions, the evidence shows that such penalties have not yet succeeded in ensuring that all municipalities comply with timeliness requirements. Nonetheless, a clear improvement in RREO submission timeliness can be observed among municipalities over time.

Moreover, studies that incorporate economic, financial, budgetary, political, and social determinants are inherently susceptible to endogeneity in their modeling. This occurs because there may be reciprocal or antagonistic causality between the dependent variable and its determinants (Pickup & Evans, 2013).

To control and/or address potential endogeneity within econometric models, the use of lagged models or mean-centered models is widely recommended to compare against initial model estimates and assess robustness (Pickup & Evans, 2013). Lagged values and variable means help reduce temporal effects across the model and minimize reverse causality between dependent and independent variables.

Given this context, the present study did not account for endogeneity in its models nor did it assess the robustness of the results. This decision is justified by the econometric structure of the multinomial logistic regression model, the short time span of the data, the infeasibility of constructing cycles for mean calculations, and the relatively recent availability and applicability of multinomial logit models with panel data in statistical software. Consequently, all mechanisms for controlling or addressing potential endogeneity were unsuitable for the conditions of this study.

5 FINAL CONSIDERATIONS

The results made it possible to identify several variables that influence the timeliness of municipalities in Minas Gerais. Drawing on stakeholder theory, the study demonstrates that civil society constitutes a key stakeholder group in public management. Although research in Brazil applying stakeholder theory to the public sector remains limited, recognizing citizens as stakeholders strengthens the discussion about the need for public managers to provide

accountability and for government actions to be accepted and legitimized by civil society as an interested party.

The findings reveal an increase in the number of timely municipalities over the study period, likely due to the sanctions imposed on entities that fail to meet timeliness requirements, but also to a growing effort by public officials to legitimize their actions through enhanced public disclosure.

The results are consistent with stakeholder theory, as the variables that exert the greatest influence on timeliness are elements that tend to draw stakeholder attention. According to Freeman (1984) and Bryson (1988), organizations act to satisfy and balance the interests of their stakeholders, thereby reducing opportunities for conflict. Among the mechanisms that mitigate conflicts between these actors, timeliness emerges as an important factor for reducing informational asymmetry and demonstrating the absence of misuse or misappropriation of public resources by government authorities.

Based on the findings, this study presents several implications: (i) for municipal managers, as well as managers of other governmental entities, the results highlight the importance of disclosing information in a timely manner in order to provide stakeholders with data on public management and reduce informational asymmetry; and they identify factors that influence municipal timeliness; (ii) for policymakers, the results suggest the need for measures that enhance timeliness among municipalities in Minas Gerais, which, despite improvements during the study period, still require refinement to meet the RREO submission deadlines established by the 1988 Federal Constitution; and (iii) for academia, the findings contribute by placing emphasis on timeliness in the public sector, an area that remains underexplored in Brazilian research, and by identifying factors that influence timeliness in public administration, while also applying stakeholder theory to demonstrate that civil society must be understood as an essential stakeholder in public management.

The limitations of this study are as follows: (i) the absence of databases containing RREO information prior to 2015, which restricted the initial year of analysis, and the impact of the Covid-19 pandemic on the data for 2020 and 2021, both of which reduced the size of the sample; (ii) the lack of data on digital technology adoption in municipal management and on management transparency for 2015 and 2016, which required the segregation of models in order to preserve a panel with a larger number of observations; and (iii) the sample was limited to the municipalities of Minas Gerais. Nevertheless, these limitations do not invalidate the study.

For future research, it is suggested that the sample and the time series be expanded in order to assess whether the influence of the variables and the timeliness of municipalities underwent changes due to the Covid-19 pandemic.

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CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest regarding this submitted work.

DATA AVAILABILITY

The dataset supporting the results of this study is not publicly available.

ACKNOWLEDGMENT

AUTHOR CONTRIBUTIONS

Roles	1st author	2nd author	3rd author	4th author
Conceptualization	♦	♦	♦	♦
Data Curation	♦	♦	♦	♦
Formal Analysis	♦	♦	♦	♦
Funding Acquisition	♦	♦		♦
Investigation	♦	♦	♦	♦
Methodology	♦	♦	♦	♦
Project Administration	♦	♦		♦
Resources	♦	♦		♦
Software	♦	♦	♦	♦
Supervision	♦	♦	♦	♦
Validation	♦	♦	♦	♦
Visualization	♦	♦	♦	♦
Writing – Original Draft	♦			
Writing – Review and Editing	♦	♦	♦	♦