

Temporality in Social Media Events and Multiples Layers of Accountability

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Abstract

This paper focuses on social media accountability exploring the importance of temporality, in terms of frequency and temporal orientation, in influencing multiple layers of accountability. Relying on the empirical case of the National Museum in Brazil, which changed the social media approach to recover its image in front of stakeholders after a fire accident in 2018, the paper explores temporality (i.e. frequency and temporal orientation) in the digital relationship on social media with multiple forums. Results show the existence of two main layers of accountability operating simultaneously: a dyadic layer between the Museum and each stakeholder that took place outside social media and a dialogic layer between the museums and multiple stakeholders that occurred on social media. The top down, framed, linear, and recursive dyadic accountability evolved into an emergent and ephemeral social media accountability with different temporal dynamics. We didn't observe organizational attempts to integrate them, social media (dialogic layer) is managed by communication staff, and each accountability tie (with Court of Accounts, project funders, University, etc) in the dyadic layer is manage by the accounting staff. Implications are discussed.

Keywords: Temporality. Accountability. Multiple Layers. Digital Transformation. Social Media. Dialogic accountability.

1. Introduction

This study focuses on social media accountability, proposing a view on the existence of multiple layers of social media accountability (i.e., dyadic and dialogic accountability) characterized by different temporality features, such as frequency and temporal orientation.

There is a widespread recognition that public sector organizations are accountable to multiple forums (e.g., Willems and Van Dooren, 2012) and are required to account for their conduct to various forums in a variety of ways (Bovens, 2010). The dilemma of accountable organizations to multiple forums is not new in the accounting and accountability literature. It has attracted widespread attention over the years (e.g., Gebreiter and Hidayah, 2019; Maran and Lowe, 2021).

Yet this accountability debate has been revitalized by the digital transformation shift that has favored the diffusion of novel tools, not developed with accountability purposes but turned into this function. Social media entered this category of digital tools, set in the marketing and communication field mainly to create connections and stimulate interactions in a network of peers, but that rapidly turned into an accountability device. In this respect, some studies have acknowledged the dialogic accounting role of Facebook by analyzing the type of information that organizations disclose on social media (Bellucci

and Manetti, 2017) or the extent to which social media enact action at a distance (Agostino and Sidorova, 2017; Gullberg and Weinryb, 2021). Some other studies have focused on the roles involved in social media accountability by showing the hybridization of roles, moving beyond accountants (e.g., Arnaboldi et al., 2017).

This literature shows the complex nature of social media accountability, ranging from the hybrid roles involved (as journalists and digital marketing-oriented professionals) and the marginal role of accountants. Besides, the obfuscated dynamics behind ratings and social media calculative practices (Begkos and Antonopoulou, 2020) and the reputational implications for an organization (Brivot et al., 2017) have been investigated.

Our study enters this debate on social media accountability, moving beyond recognizing that social media can enhance a dialogic accountability (Bellucci and Manetti, 2017; She, 2021). We acknowledge the existence of multiple layers of accountability, in terms of dyadic and dialogic accountability, that occur simultaneously and that an organization has to manage. Given this context, our study explores the temporal features of multiple layers of accountability and how they eventually are represented in social media (dialogic). We also discuss the organizational implications connected with this multiplicity of layers.

The concept of temporality (Moran, 2015) is here used to analyze the dyadic and dialogic accountability, emphasizing the features of temporality, such as frequency and temporal orientation.

We run a singular case study of the National Museum case in Brazil, which faced in September of 2018 a fire accident that threatened the ability of managers to manage public resources transferred to the organization and preserve the historical and cultural heritage under their care over the years. (*The fire made visible what was invisible for many stakeholders, behind the Museum's organization was the Teaching and Research Organization that sustained its activities*). This trigger event formed the context for the managers to push social media as a central instrument of communication, manage stakeholders' expectations (as visitors, donors, and researchers, for example), and justify its causes. We analyze this case inductively, investigating which characteristics social media communication assumes from a temporality perspective while dealing with this crisis event and the accountability implications connected with this communication.

Results show the emergence of an additional and complementary layer of accountability played by the organization parallelly to the traditional dyadic layer between the Museum and main stakeholders. The traditional layer here, called the dyadic layer, occurs outside social media. The new one, a dialogic layer, appears on social media as the museum shares messages to a broader audience, including multiple stakeholders (those holding current contracts and others without previous formal engagement). The top-down, framed, linear, and recursive dyadic accountability evolved into an emergent and ephemeral social media accountability with different temporal dynamics, such as frequency and temporal orientation (Moran, 2015). The two layers operate simultaneously, demanding strategic effort to integrate both layers into daily routines.

These results are discussed in the paper, which is structured as follows. First, the extant literature on social media and accountability is reviewed. The third section discusses the notion of dialogic and dyadic accountability and introduces the concept of temporality with each characteristic. The following section details the methodology, while the fifth section presents the empirical findings, followed by discussions and conclusions.

2. Literature review

2.1 Social Media and Accountability

This section discusses the accountability challenges in a social media environment, highlighting the current state of the art and the significant implications for public sector organizations.

Accountability is here considered as "*the relationship between an actor and a forum, in which the actor must explain and justify his or her conduct, the forum can pose questions and pass judgment, and the actor may face the consequences*" (Bovens, 2007, pp. 447). One of the main challenges connected with accountability in the public sector is the presence of multiple forums as public sector organizations are scrutinized by numerous stakeholders they serve, ranging from the general public, central governments, professionals or communities (Koppell, 2005; Aleksovska et al., 2022). This multiplicity of forums with divergent objectives renders it difficult for the actor (i.e., the public sector institution) to identify what to report and whom to report.

Several studies have discussed the complexity of an organization being accountable to multiple forums (Willems and Van Dooren, 2012; Schillemans, 2016; Aleksovska et al., 2022), but this topic has gained a renewed attention in a social media environment (e.g., Jeacle and Carter, 2011; Arnaboldi et al., 2017).

Social media have been defined as "*a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0 and allow the creation and exchange of user-generated content*" (Kaplan & Haenlein, 2010, p. 61). The wide adoption of social media by public sector organizations and citizens has rendered these tools not only communication tools but also accountability devices used, voluntarily or not, by organizations to account for their conduct in their forums (e.g., Bellucci and Manetti, 2017). The specific features of social media pose novel challenges for accountability.

The first distinctive feature of social media is that they are **open to everyone** and multiple recipients. It means that everyone with a mobile device and a wi-fi connection can be present on social media. This feature poses questions on "who" is the forum, which becomes less identifiable than traditional accountability. A recent study by Karunakaran et al. (2022) acknowledges that with social media, there is a shift from accountability to clearly defined stakeholders to the crowd; in this respect, the authors introduced the notion of "crowd-based accountability" to highlight that "*the constituents are a diverse, dispersed set of actors posting accounts on social media platforms with evaluative criteria that are unclear, in flux, and unspecified, thus imposing uncertain and variable demands on organizations.*" (p. 186).

The issue of accountability to multiple forums reconfigures in a social media environment, introducing a new element: **the difficulty in isolating and clearly identifying each forum**. Traditionally, the multiplicity of forums refers to various stakeholders towards whom the public sector organizations were accountable. Although their multiplicity, they were known and identifiable. The multiplicity of forums remains within a social media environment, but adding the "crowd" dimension renders it challenging to isolate and distinguish who these forums are.

The second distinctive feature of social media is that they prompt **real-time activities** (Gandomi and Haider, 2015). Social media are open 24/7, allowing both the organization and users to post information anytime and react to such information in real-time. This feature pressures social media managers to respond immediately to a request or content published online by users. In accountability terms, this implies a significant

challenge in terms of "when" accountability is exerted. In a traditional environment, the organization decides what to communicate and when the information should be provided in a structured way. The most typical example is represented by annual financial reports that are periodically published by public sector organizations on an annual basis (Walker, 2011). The frequency and cyclicity of the communication are usually defined by the contract or reporting expectations required by the account holder and the organization itself.

On the contrary, the real-time activity of social media pushes organizations to account immediately to a broader audience covering multiple forums, giving users an immediate reply. This aspect has been discussed in the private sector, with scholars acknowledging the pressures for enterprises to react immediately to their customers. For example, Agostino and Sidorova (2017) highlighted how real-time collaboration enhances a process whereby both the customers and the organizations are simultaneously accountable. While the organization uses social media to quantify and measure the customer, also the customer leverages social media to observe and quantify the organization. Following an organizational perspective, other scholars highlighted the emergence of rhetoric social media strategies to react immediately to social media posts to preserve organizational reputation (e.g., Bundi et al., 2021).

The issue of accountability to multiple forums reconfigures again in a social media environment, introducing a new element: "when" accountability takes place on social media, which is an aspect that has received limited attention in the public sector literature. This study enters this field by exploring the temporality dimension of accountability in a social media environment.

The third distinctive feature of social media is the interactivity and the possibility to establish a **dialogic relationship** between the actor and the forum. Social media have been widely claimed as tools that enhance a two-way dialogue between the parties (Bonsón and Ratkai, 2013) and stimulate an online debate and interactions to engage stakeholders in dialogic communication. This dialogic communication has stimulated some reflections on dialogic accounting practices, "*which tries to recognize multiple points of view and refuses to privilege capital markets and investors as "priority" stakeholders. Dialogic accounting rejects the idea of a universal narrative, preferring to think of institutions as being exposed to diverse perspectives and interests from its various stakeholders.*" (Bellucci and Manetti, 2017, p. 875).

In this respect, it has been acknowledged that social media has the potential to support a dialogic accounting system by providing valuable information to stakeholders, ensuring dialogue with them at a lower cost (Bellucci and Manetti, 2017). Notwithstanding this potentiality of establishing a dialogue between the principal and multiple forums, several studies have pointed out that social media are used mainly asymmetrical by organizations to provide information rather than to establish a dialogue with stakeholders (Landi et al., 2022; Grossi et al., 2021)

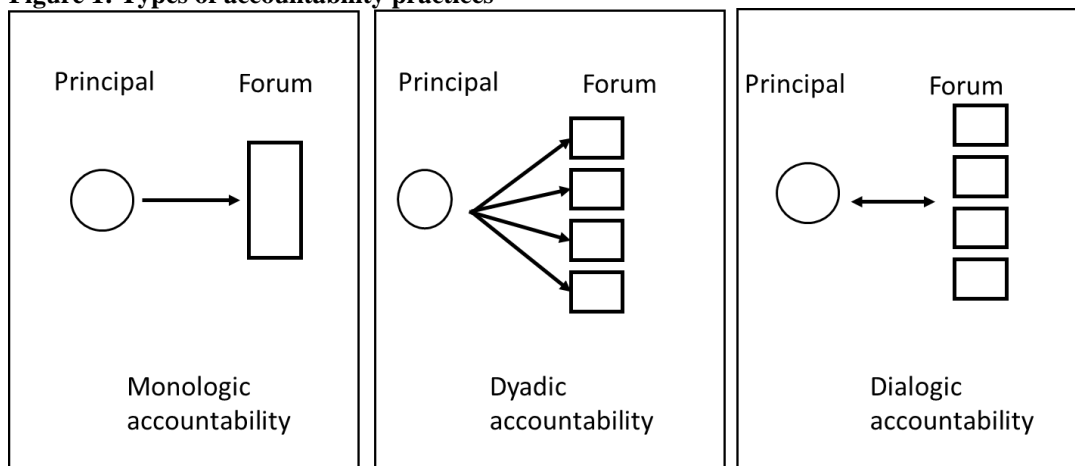
To summarize, these three main features of social media (i.e., openness to everyone, real-time activity, and interactivity) have stimulated novel research questions on social media accountability, which span from the identification of "who" is accountable (Karunakaran et al., 2022), "when" accountability take place (Bundi et al., 2021) and "how" accountability takes places (e.g., Landi et al., 2022). Yet the majority of the studies are focused on private sector institutions (e.g., Arnaboldi et al., 2017), or they explore narrowly social media accountability (e.g., Neu et al., 2019; Bellucci and Manetti, 2017) without considering the implications connected with the coexistence within an organization of traditional accountability practices and social media practices. This study enters this field, investigating the coexistence between multiple accountability layers:

social media accountability and accountability connected with more traditional devices are simultaneously present within an organization.

2.2 Multiple accountability layers: Monologic, Dyadic and dialogic accountability

Our research acknowledges that organizations' adoption of social media not only prompts social media accountability practices but also stimulates the emergence of multiple accountability layers. When an event occurs, an organization is pushed to give evidence of such event on social media pages (prompting social media accountability practices) and on more traditional media, such as annual reports or ad hoc documents for stakeholders. In this respect, we argue here that **multiple layers of accountability** exist simultaneously, and an organization is required to manage all of them. This multiplicity of layers can be associated with a variety of accountability practices, ranging from monologic accountability, dialogic accountability, and dyadic accountability.

Figure 1: Types of accountability practices



Source: the authors.

The more traditional view is **monologic accountability** (Bown and Dillard, 2015). Financial numbers dominate, and a unique view of the organization is communicated to everyone without distinguishing the needs of the different stakeholders. According to this view, financial numbers are objective and uncontestable, they speak for themselves, and financial reports provide truth and fair representation to stakeholders. Monologic accounting is said to serve everyone; alternative perspectives are not considered because they distract from the main objective to provide investors with the expected financial information. It is said that "*monologic accounting is portrayed as providing a neutral framework within which different stakeholders can pursue their interests*" (Brown, 2009, p. 316). From a relational perspective, monologic accountability is associated with a unique flow of information from the actor to the forum, where the forums are expected to be interchangeable. This monological view of accountability has been criticized for being too positivistic and not representative of a democratic context (e.g., Brown, 2009, Aleksandrov et al., 2018).

Dialogic accounting "*is based on ideas of democracy and opposed to the traditionally narrowly focused financial annual report*" (Manetti et al., 2021, pp. 265). Dialogic accounting entails the establishment of a dialogue between the organization and its stakeholders moving beyond a two-way communication and enhancing shared solutions to problems (Bebbington et al., 2007). A dialogic process of accountability entails the creation of an accountability relationship where the typical role of the actor

and the forum is more fluid since the two parties exchanges views, opinions, and multiple perspectives are considered (Bebbington et al., 2007). A dialogic system requires an iterative and mutual learning process to promote transformative actions (Bellucci and Manetti, 2017, p. 875).

Current literature highlights two main features of dialogic accountability. The first feature refers to the existence of **heterogeneity of discourses**. (Bebbington et al. 2007). Language, narratives, and discourses are heterogeneous, and this contraposes the monolithic and unique information provided in traditional accountability. There is a change in the narrative, from a unique narrative "*to widen the number and kinds of stories that get told and the actors who tell them*" (Olson, 1996, p. 3). There is a shift from universal to multiple narratives, which may lead to the emergence of the opposite view, and we could find narratives and counter-narratives (Everett, 2004).

The second feature refers to the **existence of a multilayered community**. Dialogic theorists acknowledge the existence of a multilayered community rather than a whole community (Taylor, 1994). There are plural identities intended as polyvocal citizens' perspectives (Gray et al. 1997). Following this view, accounting is intended to give each stakeholder a voice within the organization and engage stakeholders in projecting and developing novel accounting tools.

Given the existence of multiple forums with divergent views, values, and perspectives, there is a need to account for them differently (Brown, 2009). Information should be provided in multilayered ways, also in formats that are accessible to non-experts (Rose-Ackerman, 1988). This view changes the role of the expert, moving from monopolization of accounting by experts to a process where accounting information is created by everyone. This is particularly true on social media since users can provide their comments, opinion, and perspective online, blurring the distinction between the principal and the forum (Agostino and Sidorova, 2017). From a relational perspective, there is a flow of information from the organization to multiple recipients, where these stakeholders are clearly identified and interact with the organization.

Dialogic accountability has received renewed attention with the rise of social media. Several studies acknowledge the potentiality of social media to enhance dialogue between the parties (e.g., Bellucci and Manetti, 2017). Yet empirical evidence showed that social media are mainly used for monologic communication (Bellucci and Manetti, 2017), as a self-legitimizing tool rather than a tool to stimulate dialogue (She and Michelon, 2019).

A further layer of accountability is dyadic accountability (Olsen, 2013). **Dyadic accountability** entails the existence of a dyadic relationship built bilaterally between the actor and each multiple forum. The interaction between the parties occurred privately and confidentially, without giving evidence to the crowd of this exchange. This dyadic accountability occurs outside social media channels, contributing to establishing a bilateral relationship between the agent and each forum. It is important to notice that the type of information exchanged can be different, moving from one bilateral relationship to another.

Dyadic accountability differs from dialogic accountability, which occurs instead multilaterally between the principal and the forum. This is the accountability that takes place on social media, where the content is public, visible to anyone at any point in time, and used to create a reputation, get support, and legitimate the manager's actions. We argue here that dyadic and dialogic accountability represent multiple layers of accountability that an organization is required to manage in a social media environment. Both of them are relevant to establishing and maintaining a relationship with stakeholders. While dialogic accountability is the accountability that takes place on social

media channels, dyadic accountability is connected with more traditional accountability practices. Yet both of them are simultaneously present in an organization. We use the concept of temporality and its features to understand and compare dyadic and dialogic accountability.

2.3 Dyadic and dialogic accountability and their temporality features

The notion of temporality is grounded in the organizational study, which considers temporality as socially organized (Granqvist & Gustafsson, 2016). Temporality is not neutral, but, following this view, it plays an active (or performative) role in organizational life by creating spatial representations of a phenomenon (Hernes, 2014). In this study, we leverage six main features of temporality to explore how multilayered social media accountability is performed (see Table 1).

Table 1: Temporal features of Dialogic and Dyadic Accountability

	Access	Duration	Frequency	Rhythm/cycle	Time orientation
Dyadic	Private (maybe publicized)	Defined by the contract	Annual	Ex-ante defined, cyclic	Past
Dialogic	Open to public	Undefined	Daily	Follow events, no cyclic	Past and future

Source: the authors.

Access refers to the availability of something, and it has been defined as a precondition of a relationship between two parties (Moran, 2015). a dyadic relation attends to the expectations of a contractual relationship (by law or by a private agreement) that defines one part as accountable to another and delineates an accountability forum. The relation is one-to-one and usually not open to external observers. Differently, in the broad audience of the dialogic accountability in social media, those holding contractual expectations are also at the same time observed and prospected by other multiple stakeholders. Without accessibility, a relationship cannot exist. We expect dyadic accountability to occur privately without engaging other actors but establishing unique access to the conversation between the agent and the forum. Eventually, the exchange of information can be publicized on social media channels, but the interaction between the parties occurs privately. On the contrary, when dialogic accountability takes place, accessibility is public since everyone can access that relationship. This happens, for example, on a social media conversation, which is publicly accessible, and posts can be read by everyone.

Duration refers to the length of time of the interaction between the parties. Concerning accountability, duration entails how much time the interaction between the principal and the forum lasts. When dyadic accountability is in place, the duration of the interaction is typically contractually defined. This means that a contract regulates and limits the time the principal should provide information to the forum. On the contrary, when dialogic accountability is in place on social media, the duration of the accountability is undefined as posts and information can be posted anytime on social media and without any contractual constraints.

Frequency refers to the rate at which the interaction occurs between the actor and the forum (Orlikowsky & Yates, 2002). It can be daily, weekly, or monthly, and this frequency articulates the structure of the relationship between the parties. The frequency of interaction between the parties is expected to affect organizational actions; for

example, a quarterly report may be associated with the need to achieve quarterly targets (Orlikowsky & Yates, 2002). Dyadic accountability is expected to have a slower pace with interactions between the actor and the forum that can occur annually. This is coherent with the traditional annual reports used to account for stakeholders about financial and non-financial performances. On the contrary, when dialogic accountability takes place, the pace is daily since conversation happens real time on social media channels and is immediate.

Rhythm refers to the pattern at which the relations between an actor and a forum can occur; periodicity creates it (Weik, 2019). This is grounded in the traditional dichotomy between linear and cyclical time. A linear view of time is related to the more traditional timing view (Crossan et al., 2005). On the contrary, a cyclical view starts from the assumption that the past can occur and occur again, and cyclical stages can happen, like the seasons or business cycles. Dyadic accountability is connected with a cyclical view of time as information is exchanged between the actor and the forum on a periodical basis. Therefore, an accountability cycle is established with deadlines that enhance the exchange of periodical information. Dialogic accountability, instead, does not have this cyclicity, but it is expected to occur linearly as the dialogue between an actor and its forum can be unique and cannot happen in the future on a cycle basis.

Temporal orientation refers to the time window at which the accountability refers. Dyadic accountability is typically associated with a past orientation with information exchanged between the principal and the forum mainly related to the previous accounting period. For example, annual reports can be exchanged in a dyadic accountability relationship, referring to last year's performances. On the contrary, dialogic accountability on social media does not have a clearly defined orientation. The information posted on social media can be related to past events and future expectations.

We state that dyadic and dialogic accountability interact and are both presents when an organization establishes a social media presence. Dyadic and dialogic accountability differs with reference to the temporality features. On the one hand, dyadic accountability occurs between two parties, typically in a private format with an exchange of contractually defined information, on an annual or quarterly basis and mainly considering past data. On the other hand, dialogic accountability takes place between multiple parties that at the same time have access to the same typology of information. There is public access to information, with a continuous exchange of information provided in real-time on social media at an undefined rhythm and looking both at past events and future activities.

Given this background, this study explores the temporal features of multiple diverse layers of accountability and how they eventually are represented in social media (dialogic). We also discuss the organizational implications connected with this multiplicity of layers.

3. Methodology

This paper relies on a qualitative and inductive methodology (Reichertz, 2014) based on a single high-impact case (Paton, 2014) of a digital transformation process on the accountability of a state-owned organization of science and culture. The case observed the amplification of the accountability process that occurred during the recovery of a fire accident in the Brazilian National Museum.

The National Museum is a natural history and anthropology museum currently managed by a federal-owned university. The organization had a significant event in its current past (2018), a fire accident, which pushed the entire organization to reconsider its

accountability strategy. The choice of the National Museum at Rio de Janeiro is an exemplary case of a state-owned organization of culture and science facing a digital transformation process. In this case, the digital transformation was intensified by a fire accident that forced the Museum to amplify the presence of digital media to justify, engage and interact with a multiplicity of stakeholders. It poses a challenge to the organization, which has to deal with the coexistence of multiple layers of interaction.

As we explain later, initially, the organization counted on a traditional accountability posture reporting to fiscal authorities, such as Courts of Accounts. After the fire accident, the Museum adopted a proactive strategy to interact with multiple stakeholders counting on digital media adding other layers of accountability with different features and dynamics.

3.1 Brief description of the organization

The National Museum is a state-owned organization, the oldest scientific organization in Brazil, created in 1818 for the Portuguese Royal Family and opened to visit in 1821. It was incorporated into the University of Brazil (currently Federal University of Rio de Janeiro) in 1946, becoming autonomous, but subordinated to the Ministry of Education. The Museum, as an academic unit of the University Federal of Rio de Janeiro, has been running Ph.D. programs, including the prestigious program on Social Anthropology, since 1968. The teaching and research activities are maintained by 213 civil servants and 87 lecturers and professors in the academic departments of Anthropology, Botany, Entomology, Geology and Paleontology, Vertebrates, and Invertebrates (Nacional Museum, 2020).

The fire accident significantly compromised its collection with more than 20.000 objects of Natural History and Anthropology, including the most significant Egyptian collections in Latin America. The mapping, restoration, and recovery of the main building and objects of the collections demanded accountability from many different stakeholders, as those projects were supported by crowdfunding campaigns and private and public organizations. Among the new accountability, claimants are the Ministry of Education, UNESCO, Federal University of Rio de Janeiro, Federal Deputies of Rio de Janeiro, Government of Germany, Brazilian agency for graduate education (CAPES), Carlos Chagas State funding agency of Rio de Janeiro (FAPERJ), and the Association of Friends of the National Museum.

3.2 Data sources and data analysis

Data sources comprise mainly secondary data circulated by the organization in social media posts (Facebook, Instagram, and Youtube), annual reports, and media commentaries. We also run interviews with the communication department and with the general secretary of the Museum to reconstruct their strategy to deal with the fire accident and how they organize the social media communication. Our key informant was in charge of the communication strategy during the fire accident.

Social media posts were particularly precious in grasping the type of information the Museum offered to the general public and the timing of this communication. Overall, we collected and analyzed about 1092 social media posts between 2018 and 2021.

The data analysis phase followed this data collection activity. We started to explore what would be the layers of accountability for the National Museum. Secondly, our analysis compared the messages and information content shared in both layers of

accountability, (i) traditional, and (ii) examined social media posts' content comparing layers of accountability.

Our coding emerged inductively. We started our analysis by examining the social media posts to identify emerging patterns (Braun & Clarke, 2006) and themes (Bowen & Bowen, 2008). Four landmark events were recurrently mentioned in the discursive material recollected from organizational communication actions from 2018-to 2021, representing the resumption of organizational life after the traumatic event of September 2018.

To observe how different accountability perspectives occur and take place, we categorized the discursive material (social media posts and annual reports) covering these four landmark events on which type of accountability, if there was financial support, and the duration of the event in time (Table 2).

Table 2: Discursive material per type of accountability

Event	Duration	Type of accountability (# posts)	Financial Support?
Stakeholders support reconstruction	Set/2018 - Current	Dyadic (5) Dialogic (31)	Yes
Deputies financially support the reconstruction	Oct/2018- Current	Dyadic (4) Dialogic (30)	Yes
Resumption of academic and scientific events	Set/2018 - Current	Dyadic (5) Dialogic (276)	No
Collection' rescue	Set/2018 - Apr/2021	Dyadic (4) Dialogic (165)	Yes

Source: the authors.

To support the analysis, we select the secondary data and some quotations. The following quotations indicate the used source from videos (Vid#), newspaper articles (Rep#), posts on social media (Post#), annual reports (Ar#), or management reports (Mr#).

4. Results

The empirical analysis focused on the temporal features of multiple diverse layers of accountability. We first briefly describe the two types of accountabilities and their temporal features, and how they eventually are represented in social media (dialogic accountability). This analysis is performed considering four selected events that characterized the management of the fire accidents. The four events selected for empirical analysis occurred after the accident in 2018, and they are a chordal synthesizing the Museums' effort to reconstruct itself, related to a reconstructing project oriented to the future. Each event mobilizes engagement and awareness of different stakeholders.

4.1 Streams and locus of accountability

As we describe following, we observed the emergence of a second layer of accountability, complementing the traditional dyadic layer played by the accounting department to attend to legal compliance. The communication department assumed a prominent role from the fire accident to engage stakeholders and report achievements to the general public. Currently, the set of accountability initiatives at the National Museum is carried out by two departments: the accounting area and the communication area. The first deals with a dyadic accountability practice, including accountants and financial

statements, oriented to report bilaterally financial issues to public authorities and private donors. The second one deals with a dialogic accountability practice, run by journalists and marketing-literacy teams, oriented to nurture and manage social media and press releases to traditional media. There is an 'organizing' regarding accountability, communication, and accounting area in this organization. They have a shared understanding of which type of information and report they would and have to deal with. As highlighted by the head of the communication hub, "*there is a demand for transparency, and we are transparent using specific channels to speak to specific audiences.*", and "*performance data [related to specific contracted deliverables] is sent directly to those specific partners.*"

There are at least three groups dealing with accountability in the case studied. At the Museum, (i) the accounting department, (ii) the communication area, (iii) a temporary committee for the reconstruction project, and at the Museum's NGO, the accounting area of the NGO. Such NGO was created to support the Museum in the past, but recently (2014/2015) was recognized by the University as a legitimate partner. Three of four actors enact dyadic reports (see Table 3). Regarding accounting or financial figures, the communication department deals just with figures already consolidated by other departments in the Museum, as stated by our interviewee, "*when we get the [financial] data for dissemination, it is because these data were already consolidated in higher instances.*" On the contrary, the accounting department is directly in charge of producing financial and non-financial figures.

4.2 The dyadic layer

The Museum, as an academic unit of the Federal University of Rio de Janeiro for decades, reported budgetary figures for the central administration of the University, was part of the University's annual budget, tickets for visitor's entrance were not a relevant source of revenues, the staff was paid directly by the University, and has few demands for being accountable to external audiences. A very early initiative to change this weak accountability posture comes one year before the fire accident with the current administration. Just before the accident, due to the social pressure on the Museum's administration, the Museum nurtured the main narrative in which recurring budget reductions in the past by the federal government downplayed the organizational capacity to maintain and develop fire prevention programs. For this reason, it defended over time that it was the government's responsibility to sustain the reconstruction and invited other stakeholders to become partners in this process.

The dyadic accountability took place following the previous "traditional" approach through which annual and periodical reports were delivered to the general public or specific stakeholders. Table 3 presents four frequent digital reports (colored, pdf files) recently presented by the Museum or its NGO (before the fire accidents in 2017 and 2018, and after the fire in 2019, 2020, 2021). The reports consolidate past activities and achievements, and financial figures. One of them is fully oriented to legal compliance but comprises the activities played by the NGO to support the Museum.

The two accounting departments at the Museum and the NGO deal with financial statements, collecting data and commenting on them. However, other forms of dyadic reports emerged, related to specific projects or campaigns. Yet, the need to preserve and manage the museum reputation after the fire led to the emergence of a novel accountability layer that integrates the dyadic one: the dialogic accountability layer.

Table 3– Dyadic reports

Reports	Elaborated by	Frequency	Past covered period	Coverage period	Main feature
Financial Report	Museum (Accounting department)	Annual	Jan/Dec (2018); Sept/Out (2019;2020)	12 months	<ul style="list-style-type: none"> - No predefined frame (consolidated in the University's report) - Activities and achievements - Summarized and simplified financial figures (revenues and expenses) - Main audience: University's Council and Court of Accounts
Reconstruction Project ("Museu Nacional Vive")	Museum (committee for reconstruction)	Annual	Mar/Dez (2021)	12 months	<ul style="list-style-type: none"> - No predefined frame - Activities and achievements for reconstruction - Summarized and simplified financial figures covering the funds for reconstruction (revenues and expenses) - Main audience: broad audience
Financial Report	Non-profit association of Museum	Annual	Jan-Dec (2017, 2018, 2019, 2020, 2021)	12 months	<ul style="list-style-type: none"> - Frame and content are driven by NGO legal compliance - Audited Financial reports (balance sheet, income statements, cash flow) - Main audience: Broad audience and Court of Accounts
Summary of Campaign SOS National Museum	Non-profit association of Museum	Annual	Sept/Out (2019); Sept/May (2021)	14/21 months	<ul style="list-style-type: none"> - No predefined frame - Summarized and simplified financial figures covering campaign funds (revenues and expenses) - Main audience: broad audience
Ongoing projects and actions	Non-profit association of Museum	None	2013 to Oct (2019)	81 months	<ul style="list-style-type: none"> - No predefined frame - Activities and achievements - Summarized and simplified financial figures covering the ongoing projects (revenues and expenses) - Main audience: broad audiences

Source: Non-profit association of Museum (2022), Project 'Museu Nacional Vive' website (2022), National Museum website (2022).

4.3 The emergence of a dialogic accountability layer

While the dyadic accountability had a predefined frequency, as detailed in Table 3, the need to recover soon from the fire accident and preserve the Museum's reputation led to an (involuntary) emergence of a dialogic layer that took place on social media. To describe the dialogic layer, we emphasize four specific events that occurred just after the fire, and, per each of them, we describe the main temporality features that affect dialogic accountability.

Event 1: Stakeholders start to support the reconstruction. After the fire accident, Museum's administration engaged in discursive actions in the blame game nurtured by the federal government regarding the responsibility for the accident. One message from the Museum's administration was, *"Let people be indignant about what happened here because here, yes, it is the federal government's responsibility. (...) the federal government, which has the necessary resources, should help the National Museum rebuild its history."* (Director, 2018; Vid1).

After this initial period, the Ministry of Education announced support for the reconstruction. Social media posts were widely used to report on the "crowd" initiatives in place. The Ministry of Education committed to carrying out *"immediate transference of 10 million reais for emergency work, even to guarantee the physical structure and for safety, 1 million to restore the facade of the Palace, and 5 million reais for the development of the executive project of the reconstruction"* (Rosseli Soares, 2018; Rep35), adding in his speech that *"We have time and urgency to start these recovery steps"* (Rosseli Soares, 2018; Rep35).

The federal engagement was publicized first on the social media day after the announcement by the Ministry of Education. The post celebrated the federal budgetary allocation and highlighted the amount and the associated deliverable: *"we would also like to thank the support of the Ministry of Education, which yesterday, 09/03, announced the release of R\$ 10 million for the adoption of emergency measures for the security of the National Museum Palace and R\$ 5 million for the elaboration of an executive project of museum recovery"* (Post73, 2018)." Three months later, another post up to date the support, announcing additional funds. The executed activities regarding those funds were reported (using text format) by the Museum's administration in the 2018 annual report, mentioning how part of the resources was used for a temporary ceiling to the damaged building structure, including a contract with UNESCO to design the palace reconstruction. An official visit from the Ministry of Education was announced on social media, and the Museum celebrated a new budgetary allocation for the next year. From this evidence, it is interesting to see how social media posts anticipated accounting figures and numbers that were only later reported on annual reports. Hence, social media dialogic accountability focused on real-time and future-oriented data, unlike dyadic accountability, which mainly looked at past results.

The budgetary support from the federal government publicized in social media recognize the administration's efforts and compromises the federal government to the support. As the facts and events emerge, it is mainly textual, narrative, and oriented to the present. However, they were reflected on dyadic reports just superficially.

Other stakeholders decided to support the Museum, such as the Deutsch government, private companies and banks, and the state assembly of Rio de Janeiro. The Museum used the same strategy, announcing the support, for instance, of the German support: *"today, 12/10, the National Museum presented to the press a part of the collection found during the rescue work (...) the Consul General of the Federal Republic*

of Germany, Mr. Klaus Zililikens, delivered a check for 180 thousand and 800 euros to the Association of Friends of National Museum, referring to the first installment of the support of up to one million euros that must be allocated to the institution" (Post153, 2018). The annual reports inform support from stakeholders, received amounts and expectations, for instance, in 2018: "The German Government has already released 756,106.60 from a pledge of one million euros, used to rescue *objects that are still in the ruins of the palace.*" (Ra, 2018). But on social media posts, the director of the Museum reconstructs the narrative, bringing past information and connecting them to respond to the need of that moment, for instance: "*Today I decided to write a slightly different text and make a special thanks to a group that helped us a lot. I have always praised UNESCO, the Vale Foundation, BNDES, IPHAN, and the German Government, the main partners in this arduous but necessary task of rebuilding the National Museum... Today I would like to pay a simple tribute to the bench of federal deputies of Rio de Janeiro. In 2018, still in the Temer government, at a time when the institution was totally devastated after the fire, these deputies were extremely sensitive and allocated an imposing parliamentary amendment worth R\$ 55 million to the Museum.*" (Post578, 2020).

Event 2: Deputies financially support the reconstruction.

Significant support from University's budget funded the visit of the Museum's staff to the Chamber of Deputies in Brasília one month after the accident, during the preparation of the federal budget for 2019. The Museum expected to convince the federal deputies to prioritize the reconstruction process, presenting financial data to explain the vulnerabilities of the Museum (Vid3, 2018). This political action significantly influenced obtaining financial support of R\$ 55 million (Ra, 2018). The commitment was published on social media, looking for the public engagement to oversee the transfer of the resource: "*we received the parliamentary amendment of R\$ 55 million obtained by the bench of federal deputies of Rio de Janeiro, intended for the beginning of the physical restructuring of the Museum*" (Ra5, 2018), but transfer details only appeared in 2019 "*the first installment (R\$43 million) was credited in June, and the last (R\$12 million) was released in October*" (Ra6, 2019). As for the previous events, the social media communication followed the contingencies and events, anticipating accounting data without following a predefined and contractual regime.

In the following years, the Museum maintained the strategy of announcing support received. They highlighted "*the fundamental contribution from the Federal Deputies of Rio de Janeiro, who in 2018, through an imposing parliamentary amendment, provided the basis for us to install the academic area on land ceded by the Union*" (Post544, 2020; Post631, 2021), and individual initiatives of deputies that together donate more than R\$ 1.7 million (between 2019 and 2020) to support the reconstruction. (Ra7, 2020).

In 2019 the Legislative Assembly of the State of Rio de Janeiro (ALERJ) announced the donation of R\$ 20 million for the Museum. The event was disclosed superficially in at least thirty Facebook posts: "*good news from the Legislative Assembly of the State of Rio de Janeiro (ALERJ), which committed to a donation of R\$ 20 million to start the restoration of the facade and roofs of the Palace*". (Ra6, 2019), and "*signing the donation term of R\$ 20 million made by the ALERJ*" (Post530, 2020; Post535, 2020; Post537, 2020; Ra7, 2020). Those donations were reported in the annual reports (Ar1, 2019; Ar2, 2020).

Event 3: The resumption of academic and scientific events. The fire also destroyed teaching facilities, laboratories, and research equipment in the main building. Initially, teaching activities were resumed in the remaining buildings (Post160, 2018). A festival

was organized in front of the destroyed Palace to celebrate that the Museum decided to react despite the fire (Post94, 2018; Vid4, 2018). They presented pieces rescued from the fire and objects that had not been affected by the fire during this celebration.

Graduate classes (Post98, 2018) and the extension project "Girls with Science" (Post103, 2018) were resumed right after the fire (Post97, 2018; Post97, 2018) as a way of demonstrating to the stakeholders the organization hadn't lost its capacity to generate knowledge. To reinforce its academic weeks, mini-courses, lectures, and participation in scientific events were also gradually resumed and underlined in two hundred and seventy-six posts and in annual reports from 2018 to 2021. The frequency and rhythms of these posts were not regular or cyclical, but, on the contrary, these posts were characterized by heterogeneous temporal features. Sometimes communication was daily, while some other times weekly, underlying the non-cyclical approach of dialogic communication. Moreover, posts were not focused on past activities but mainly reported "real-time" teaching activities that were taking place or future appointments.

The collections exhibition activities were also restarted and accomplished in other spaces in the city, such as cultural centers (Post171, 2019; Post190, 2019; Post392, 2019; Post596, 2020; Post895, 2021; Post1091, 2021). More than demonstrating that the organization had not wholly stopped its activities, the new exhibition gave transparency to the rescue actions and legitimized the organizational strategies to deal with the crisis.

Communication is launched propaganda based on concepts such as 'resilience': "*The first exhibition after the fire demonstrates the institution's resilience.*" (Ra6, 2019). To reinforce this resilience, the Museum highlights in the 2020 report that "*the number of degrees and the expressive production achieved by the Museum's graduate courses (851 scientific contributions among articles in journals, books, chapters, etc.), in addition to the organization of exhibitions and scientific events, continue to corroborate the institutional excellence in knowledge production. and training qualified personnel.*" (Ra8, 2020).

The disclosures of the academic and scientific events followed a present-future temporal orientation. Besides demonstrating to stakeholders that in that present moment, the Museum still operates, they shared expectations about the future: "*R\$5 million was destined to UNESCO to elaborate on two projects: the executive project of the internal reconstruction of the palace and the conception of the new exhibitions.*" (Ra5, 2018). In the annual report publications, no public sector accounting jargon was used where those activities were mentioned. Specific reports are elaborated semi-annually for some stakeholders, considering the donation agreement signed from 2018 to 2020.

Event 4: the rescue of the main collection. The activity that gained centrality after the fire was rescuing objects from the rubble. The rescue lasted about 500 days (from September 2018 to April 2021). It opened the opportunity to share and reverberate a hundred and sixty-five posts on social media, 2400 minutes of lives on YouTube, comments in newspaper journals and interviews, four annual reports referred to this activity, and a short film documentary.

The Museum's staff, including professors and administrative employees, jointly created the rescue teams to plan and execute the process of excavating. The process counted on the support of specialized professionals from Unesco and was partly financed by the German Consulate in Brazil. The "*German Ministry of Foreign Affairs offered one million euros to support the rescue and made available two experts from the Cologne Municipal Archives.*" (Dirk Augustin, 2021; booklet).

The Museum organized an exhibition, "Museu Nacional Vive – Archeology of the Rescue," aiming to give a "*great demonstration to the public of the rescue's*

achievements" (Post196, 2019) and *"to present to the public some of the pieces recovered after the fire"* (Post190, 2019). The documents are public and available on social media. It is important to notice that there was no integration between the annual reports and communication taking place on social media, further underlying that even though both annual reports and social media posts serve an accountability function, the two departments in charge of these activities were not aligned in the management and integration of these activities.

The first results of the activity were presented by the director in a press conference to journalists three days before the Ministry of Education (MEC) released its balance about the reconstruction process. *"Today, 12/10, the National Museum presented to the press a part of the collection found during the rescue work that has been carried out by technicians from the institution within the Palace"* (Post153, 2018; Vid14, 2018). After that, the Museum posted, *"the Ministry of Education (MEC) released this Thursday, 12/18, the balance of the National Museum's rescue process, in addition to new initiatives to support the institution, such as the amount of 5 million reais for the recovery of the Museum, in the 2019 budget."* (Post156, 2018). No information about these new initiatives is in the annual reports or recent posts.

The rescue of works has always been anchored on the future. It would be as if the rescue activities conveyed an image of commitment, dedication, and resilience on the part of the organization. With that, they would be able to attract support and legitimize their efforts toward reconstruction. We identify public sector accounting jargon only in the annual and financial reports where the financial resources are reported. Specific reports are elaborated semi-annually for the Germany Consulate, considering the donation agreement signed in 2019.

5. Discussion

The empirical analysis at the National Brazilian Museum showed how a more traditional dyadic accountability layer is complemented by a dialogic layer of accountability that takes place on social media. While the dyadic layer was in place before the fire, the dialogic layer flourished significantly from the fire accident pushed the accountability practices related to the need to collect funds, social legitimacy, and political support. This dialogic layer complemented an existing but fragile dyadic layer. The fire accident enacted the second layer, but they emerged segregated. The organizing didn't help such integration. Such a second layer mainly appears after the fire as a reaction to legitimate the organization to multiple stakeholders. Before the fire, accountability was focused on just one layer, the dyadic, timidly operated by the accounting area.

The **dyadic accountability** was presented before the fire accident and remains timid even after the fire. This layer entails a top-down, framed, linear, and recursive accountability between the Museum (the principal) and each accounting forum, such as the University central administration and the Courts of Account. This dyadic accountability relationship is built bilaterally between the Museum and each stakeholder it interacts with, such as Audit Courts, Government organizations, Donors, and partnerships. The communication between the principal and each forum follows a private and confidential format no one can see (the traditional one). The content and frequency of the interaction focus on what they have awaked previously, required by the contract and expectations between both parts, following a cyclical rhythm, with simple repetition intervals. The accounting department of the Museum is in charge of such accountability type, and it sends periodically annual reports and performance reports to these forums.

The **dialogic accountability** is the second layer that emerged with the fire accident and the changed logic behind social media usage. This layer is built multilaterally between the Museum and all stakeholders interested in the organization (breadth of scope) disposed of in a broader audience in social media spaces. The shared content is public, visible to anyone at any point in time, and used to create a reputation, get support, and legitimate the manager's actions. The frequency of interaction is daily, following alternated rhythms of informational disclosure layers entail a continuous and daily interaction between the principal and multiple forums. Following this approach, the Museum is accountable to multiple accountants, not using the predefined or framed structure, but is dialogic oriented to many stakeholders. The central accountability discourse is constructed post by post in the social-digital accountability forum. Each media posting complements the former one, and they form a narrative of being accountable cumulatively.

These results support two main areas of discussion. The first is the **temporality features** that characterize these multiple layers. These features differentiate the dyadic from the dialogic accountability practices, including access, duration, frequency, rhythm, and orientation. While dyadic accountability is associated with private, contractual-based, annual, cyclical, and past-oriented accountability, dialogic accountability is connected with public, real-time, daily, ephemeral, and future-oriented accountability.

Additionally, it is crucial to understand whether the dynamics are associated with daily events in an organization. The dyadic relationship connected to authorities and donors has a defined frequency, and it is cyclic. It is not instantiated by the events emerging daily (such as expositions and museums' research achievements) but by the deadline of contracted deliverables in the past (e.g., proper use of public resources, deadlines in building reconstruction). The dialogic layer connects to a broader audience, covers ongoing facts and events, has no predefined frequency, and is instantiated with

events perceived as relevant by the communication department to engage stakeholders and society.

These temporality features enhance our understanding of dialogic accounting practices in a social media environment. Current literature widely recognizes the potentialities of social media to favor dialogic accountability practices between an organization and its forums (e.g., Manetti and Bellucci, 2017). Our study enlarges this view, identifying the temporality features that characterize dialogic accountability and posing the emphasis on "events" as points in time that activate the communication between an organization and its forum. The event gives rhythm, frequency, and temporal orientation to accountability. Some events are not predefined by a stakeholder, are not conceived by the communication department, they may emerge from other museums' departments as they enact their roles (e.g., organizing expositions), but they are publicized on social media to justify, report and account the organizational conduct in an emerging narrative to the "crowd." This impossibility to plan in advance such events requires an organization to jointly manage different organizational logic, roles, and activities to account both on traditional media and social media. The ability to manage two accountability layers with very different temporal features requires internal alignment between the actors involved, which is connected to the second area of discussion about the roles involved.

The second area of discussion is related to **the roles involved** in coordinating the two layers. While dyadic accountability is mainly in charge of the accounting department, results showed that dialogic accountability is mainly in charge of social media managers. Accounting and communication departments run the accountability initiatives segregated. The accounting department takes care of financial issues, ex-post in dyadic relations, and communication takes care of other dimensions in dialogic type. The two departments do not plan a complementarity from different types of accountability, therefore, stakeholders may not access a complete set of information. The communication department does not consider its role as associated to accountability, as the head of the communication center comments: "*accountability is handled by Friends of the National Museum Association (SAMN). It is in the annual reports that accountability to society is prioritized.*" (Fernanda Guedes, 2021). The communication department produces content on social media mainly about the occurrence of events (past, present, or future) rather than the performance of those events, additionally without necessarily rebuilding the past (passive communication).

Regarding the organizing of such types, we didn't observe organizational attempts to integrate them, social media (dialogic layer) is managed by communication staff, and each accountability tie (with Court of Accounts, project funders, University, etc.) in the dyadic layer is managed by the accounting staff. To some extent, the frequent and real-time dialogic layer feeds the dyadic layer at the end of the year or when a funded project is concluded. The dialogic layer also reverberates reports from the dyadic layer. Temporarily manifest differently into those layers. To access many stakeholders, for instance, to explain and be accountable for the fire accident and the recovering process, such dialogic layer played a relevant role in developing broad sensemaking and protecting the organization from critics.

6. Preliminary conclusions

This study focuses on social media accountability, emphasizing the temporal dimension of accountability. Drawing on the National Brazilian Museum's empirical case, which entirely changed the social media strategy to face a fire accident in 2018, the

paper identifies the existence of two accountability layers that present different temporality features.

The traditional accountability layer, here called the dyadic layer, is the accountability that takes place outside social media and entails a bilateral relationship between an organization and each stakeholder. Dyadic accountability is the realm of accountants, and the rhythm and frequency of the information exchange are contractually defined with information that is mainly past-oriented.

The need to manage the communication about the fire event was associated with the emergence of a new accountability layer, a dialogic layer, on social media. This layer is mainly managed by communication staff with information and communication to stakeholders oriented by the department's emerging expectations about how they should react to drive the narrative about the organization without following predefined paths or timing. Therefore, ongoing events and actions from other departments drive the communication and the information exchange. Results underlined that the two layers operate separately by different departments without interacting with each other to maintain alignment in the communication.

These results support the recognition that dialogic accountability on social media occurs simultaneously with dyadic and more traditional accountability. These two layers have different time, frequency, and rhythm, and while the former is driven by events, the latter is driven by contracts.

These results contribute to the current knowledge on social media accountability at two levels. On the one hand, this paper introduces the temporality features as relevant dimensions to explore dialogic accountability (Manetti and Bellucci, 2017), emphasizing the erratic and non-cyclical path driven by events and the need to answer real-time to specific events. On the other hand, this paper highlights the current debate on the roles of accountants engaged in social media practices, underlying the need to create liaisons or interactions between communication specialists in charge of dialogic accountability and accountants in charge of dyadic accountability. In particular, this study emphasizes how dialogic accountability is managed by communication specialists rather than by accounting experts.

These results can enhance further investigations on the organizational micro-dynamics connected with the management of the two layers and the effects on stakeholders.

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