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## RESEARCH ARTICLE

WILEY

# Assessing the failure of Open Government Data initiatives in Brazil

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## Abstract

While assessing the potential of a particular digital innovation initiative, especially when it has implications for a range of societal stakeholders, it becomes pertinent to understand the possible bottlenecks in its acceptability as well. In this regard, the present study seeks to understand how the Open Government Data (OGD) initiatives in Brazil are being confronted with bottlenecks in terms of their execution and acceptability. This exploratory study adopts a qualitative cross-sectional research approach wherein interviews are being conducted with 11 managers working in public organizations and are directly associated with the OGD initiatives. Findings from the interview responses delineate internal and external factors, resource availability, data maintenance, and lack of knowledge as the key determinants for the bottlenecks associated with the execution and acceptability of OGD initiatives by the societal stakeholders. The study's originality lies in its theoretical contribution towards an understanding of how a novel digital innovation-OGD, in the present case- is fraught with impediments in terms of its execution and acceptability. The study concludes with directions for further research and practitioner implications.

## KEYWORDS

Brazil, failure, flaws, OGD, Open Government Data

## 1 | INTRODUCTION

Digital transformation is a data-driven innovation that has been laid out in various formats (Wiedenhöft et al., 2022)—case in point being the fast-spreading Open Government Data (OGD) initiatives across the globe in the public sector space with a focus on bringing about transparency in administration and collaboration of stakeholders in governance (Dawes & Helbig, 2010; Matheus & Janssen, 2020; Ruijter & Meijer, 2020; Wirtz et al., 2022). For the sustainability of the OGD initiatives that rest their edifice upon the value-creation and innovation by a range of stakeholders through the re-use of datasets published by the government on dedicated portals, strategic and well (Attard et al., 2015; Jetzek et al., 2013; Lim, 2021; Piotrowski, 2017)—planned execution of OGD initiatives is important alongside the acceptability of the same by the stakeholders concerned. There is no gainsaying the fact that the OGD initiatives have immense possibilities in the turnaround of economies (Magalhaes & Roseira, 2020; Ruijter & Huff, 2016; Zeleti et al., 2016), however, the OGD initiatives across administrative levels are encountering impediments in terms of execution (Parycek et al., 2014; Safarov, 2019; Sieber & Johnson, 2015; Wirtz et al., 2016). Also, there are challenges with the acceptability and imbibition of the OGD initiatives by the stakeholders (Evans & Campos, 2013; Harrison et al., 2011) on account of the limited awareness or the poor quality of the datasets (Kucera et al., 2013; Lnenicka & Saxena, 2021; Peled, 2011).

Soliciting responses from 11 managers involved directly with the management of OGD initiatives in Brazil, this qualitative study underlines the reasons for OGD failure subsumed in the determinants of the impediments and flaws in the execution of OGD initiatives and the reasons for

poor acceptability among the societal stakeholders (citizens, professionals, software developers, journalists, etc.), viz., internal and external factors, resource availability, data maintenance, and lack of knowledge. The choice of Brazil as a case study was three-fold: first, the familiarity of the authors with the region; second, the “felt” experience of the nascent growth of OGD initiatives and their buckling down under pressure, and, third, the limited academic thrust on the region's OGD initiatives as also the scant research on the reasons underpinning the failure of OGD initiatives, in general. While a number of studies have underlined the plethora of possibilities of OGD initiatives, a systematic research on understanding the bottlenecks in terms of OGD execution and acceptability by a myriad set of societal stakeholders (citizens, professionals, entrepreneurs, voluntary sector professionals, app developers, journalists, and the like) is starkly lacking. Given that OGD management has been viewed as one of the prime areas for research (Charalabidis et al., 2016), the present study assesses the manner in which OGD management is encountered with challenges in terms of execution and acceptability among the societal stakeholders. The guiding research question for the present study is: “What are the reasons for the failure or pre-empted attempts for the implementation of the OGD initiatives in Brazil?” Besides contributing towards the OGD literature in general, the study is likely to draw the attention of the policy-makers and practitioners in Brazil and other contexts in addition to drawing the attention of the OGD researchers in general.

The remainder of this paper is sequenced as follows: following a brief regarding the literature veering around OGD, the research methodology has been detailed and results have been explained. Thereafter, following a discussion of the results, concluding remarks are provided and implications for practitioners and further research pointers are provided in the tail-end of the paper.

## 2 | RELATED RESEARCH

A quick scan of the OGD-focused literature shows that challenges related with the successful implementation of OGD initiatives are closely linked with that on the acceptability of OGD initiatives by the societal stakeholders—this assertion is based on the premise that unless the OGD initiative is properly executed, its acceptability among the stakeholders is also meager because of the haphazard and/or inadequate impetus to generate awareness of the utility of OGD for the stakeholders. Thus, one of the reasons for the lack of awareness among the stakeholders regarding the potential of OGD relates to the development of applications that facilitate the implementation of the OGD initiatives (Attard et al., 2015; Meng et al., 2019). Ubaldi (2013) enlists a couple of policy challenges associated with the implementation of OGD initiatives: disclosure policies limiting data transparency and copyright; conflict between the fundamental right to access information in contrast with the restriction placed on the re-use of OGD in alignment with the copyright and commercial usage issues; maintenance of standards associated with OGD; lack of long- and short-term strategies on the part of the government and policy-makers which “may result in a loss of public interest and use of OGD, as well as missed value creation resulting from the use” (p. 30). Thus, it is implicit that OGD initiatives function as an ecosystem (Bonina & Eaton, 2020; Dawes & Helbig, 2010; Kassen, 2018; Styryn et al., 2017; Zuiderwijk et al., 2014) wherein the multi-faceted nature and scope of relationships between the OGD publishers and the OGD users runs amidst the environmental forces of economy, society, culture, technology, geography, polity, law, and the like (Pollock, 2011). This ecosystemic approach for understanding the OGD initiatives is important for appreciating the “mutual interdependencies” among the determining entities relevant for the demand and supply side of OGD initiatives (Lee, 2014). For an overview of the OGD conceptualization and its progression over the years, the works of Wirtz may be referred (Wirtz et al., 2016; Wirtz et al., 2022).

### 2.1 | OGD-focused research across diverse contexts

It has been underscored that a number of reasons are responsible for the success of the OGD implementation—case in point being the conducive organizational culture which facilitates networking and openness, intrinsic motivation, and perceived risk felt by the personnel (Ruijter & Huff, 2016; Wirtz et al., 2016). Likewise, it has been underlined that instead of implementing OGD initiative for its own sake, a more focused approach should be adopted for OGD publishing (Conradie & Choenni, 2012). Contextually, OGD initiatives have permeated across the globe at all the administrative levels. Taking the case study of Philippines' Digital Strategy (PDS), for instance, which encapsulates the OGD initiative as well with the three-fold objectives of realizing transparency, governance and efficiency, the challenges associated with the capacity in information management, being more supply-driven rather than demand-driven and the issues of digital divide were starkly visible (Pacis, 2017). In another case of Namibia and Tanzania, there is hesitancy on the part of the government to release OGD with a concomitant lack of awareness and low consumption of OGD which is still in its raw form on the portals (Amugongo et al., 2015; Shao & Saxena, 2019). In the Swedish case, a number of challenges related with implementation were underscored ranging from budgetary constraints to lack of policy frameworks, lack of interest or awareness among the administrative agencies regarding OGD initiative, variance in digital access, etc. all of which culminated in lack of awareness among the stakeholders about the potential of OGD (Svard, 2021). In the case of Taiwan, the public servants cited disequilibrium between individual and organizational accountability as major reasons for impediments in execution of OGD initiatives—thanks to the lack of desired administrative behavior for institutionalizing the same (Huang et al., 2020). Likewise, it was indicated in the case of the US healthcare administration agencies that apart from the stakes at hand in terms of funding the overall initiatives, there are tremendous lacunae in the capabilities and resources available with the agencies (Lee & Kwak, 2012). In China's context, the statistical OGD related to the

demographics or budget are released on time but there is a need for furthering accessibility and quality, in the first place (Wang et al., 2018). Furthermore, it was deduced in an OGD project in Hong Kong that apart from the absence of robust OGD legislative framework, the government agencies need to be initiated in the ITC-centric culture with the requisite governance and monitoring arrangements in place as well as the involvement of the private sector entities (Ma & Lam, 2019).

On the other hand, Australian OGD initiatives were successful on account of the proactive public policy entrepreneurs who wished to bring about policy innovation across the government levels (Chatfield & Reddick, 2018). Internal support from the management has been found to be a significant predictor for the success of the OGD initiatives in Canada (Johnson, 2016). In New Zealand, the OGD initiatives' execution is successful owing to the ease of discovery, better data quality, and value-loaded OGD (Cranefield et al., 2014). Likewise, in Taiwan, the government agencies are well-equipped and ready to strategize OGD initiatives apart because they realize the perceived benefits of OGD in the long-term (Wang & Lo, 2016). Lastly, centralized OGD governance is a better option for ensuring the success of OGD initiatives as evidenced in The Netherlands and Sweden (Safarov, 2019). Thus, it may be underscored that despite the overarching possibilities to be unleashed by the OGD initiatives, there are challenges associated with the OGD initiatives' execution across the globe.

## 2.2 | OGD-focused research in the Brazilian context

As far as the academic interest on the OGD initiatives of Brazil are concerned, it is noteworthy that Brazil was one of the founding eight members of the Open Government Partnership (OGP). Brazilian Access to Information law (Law 12.527/2011) mandates the observance of transparency in OGD portals' alongside the timely and qualitatively adequate OGD but the same does not get reflected in the portals maintained by the government bodies (Correa et al., 2014). Furthermore, it may be underscored that the volume and quality of OGD via the OGD portals are primary, accessible, and adequate but the machine-processability, completeness and timeliness of the OGD requires attention (Brito et al., 2015; Correa et al., 2017; Oliveira et al., 2016). Furthermore, there are technical issues with the OGD provisioned via the portals along with improper legislative framework to support the OGD initiatives (Craveiro et al., 2013). Brazilian OGD initiatives evince the benchmarks laid down by the first, second, and third star framework (Matheus et al., 2012) but not the fourth and the fifth stage (Berners-Lee, 2023) which gauge the provision of OGD across dedicated portals in machine-readable and nonproprietary formats without any specific license specification. These concerns, viz., technical, legislative, legal, and awareness levels among the users are hindrances towards the adoption and usage of OGD among the users (Albano & Reinhard, 2014; Bittencourt et al., 2019; de Oliveira & Silveira, 2018). There is minimal vertical and horizontal collaboration towards institutionalizing the OGD initiatives in Brazil (Sandoval-Almazan & Steibel, 2013). Finally, there is resistance on the part of the government officials in being proactive as far as the execution of OGD initiatives is concerned (Michener & Ritter, 2017). Nevertheless, Brazilian OGD initiatives are facilitative in terms of the user engagement and trust in the government (de Oliveira & Junior, 2019)—case in point being the perceived usefulness of the Meu Congresso Nacional OGD-based app in influencing the voting behavior of the citizens (Brito et al., 2015). Furthermore, Brazilian government has been in the forefront in terms of providing the citizens with opportunities, that is contests and hackathons, to showcase their innovative products and services made by the reuse of OGD (Matheus et al., 2015). Likewise, OGD-based applications like the Rio Inteligente (Smart Rio) and Cidadão Recife (Recife Citizen) are potential innovations for refurbishing the public service delivery (Brito et al., 2014). Similar possibilities are underlined via the geographic information system based on the Brazilian OGD for countering emergencies like floods (for instance, Azevedo et al., 2015).

## 2.3 | Research question

Two dimensions clearly surface from the foregoing: first, extant literature is silent on the precise reasons as to why are there variances in terms of the execution of OGD initiatives in different contexts and what are the precise differences between the different contexts in terms of the hindrances encountered therein. Second, there is limited literature available regarding the possible reasons as to why there are limited awareness levels of OGD among the societal stakeholders. To address both the dimensions, the present study is an attempt to understand the dampening factors related with the execution of the OGD initiatives and the limited awareness levels regarding the OGD initiatives with a specific focus on the developing country-Brazil. Putting things in perspective, the guiding research question for the present study is: "What are the reasons for the failure or pre-empted attempts for the implementation of the OGD initiatives in Brazil?"

## 3 | METHODOLOGY

Based on a positivist epistemological position seeking to present an objectivist point of view (Neuman, 2007), this exploratory study adopts a qualitative cross-sectional approach wherein the interviewer is well-acclimatized with her environment and is adept in addressing the relevant questions of her context (Strauss & Corbin, 1998), due to the study describes situations and characteristics manifested by the phenomenon under study. The techniques of

data collection and analysis used to define the research as qualitative based on content analysis in semi-structured interviews. Overall, 11 interviews were conducted with the experts. The number of interviewees was chosen based on the practicalities, context, and the extent to which the responses became overly saturated and iterative (Creswell, 2007; Marshall et al., 2013; Yin, 2009). Figure 1 shows the design of the research:

The data collection was performed using a semi-structured instrument developed in English by the researchers and later translated into Portuguese by one of the researchers native to the Portuguese language. Back-translation into English was also done by two linguistic experts to vindicate the correctness of the essence of the questions (Brislin, 1970). The interview script had 11 questions that sought to understand the flaws in government OGD initiatives. The interviewees are named by codes from E1 to E11 and the interviews were conducted online, individually, with each interviewee. The interviews lasted an average of 40 min. Appendix enlists the questions prepared for the interviews.

The research aimed to observe the flaws in government open data initiatives through the analysis of semi-structured interviews with 11 managers of Brazilian public organizations. These public organizations operate in different sectors covering law and justice, information technology, environment, public services, and the like. The choice of public managers is related to the theme of government open data, which were chosen because they worked or have worked with OGD, individually or in conjunction with the teams they lead. Table 1 shows the profile of respondents regarding gender, training, and job position they hold in public organizations that work.

In addition to the previous information, Table 2 presents the profile of the companies and public agencies in which the interviewees work.

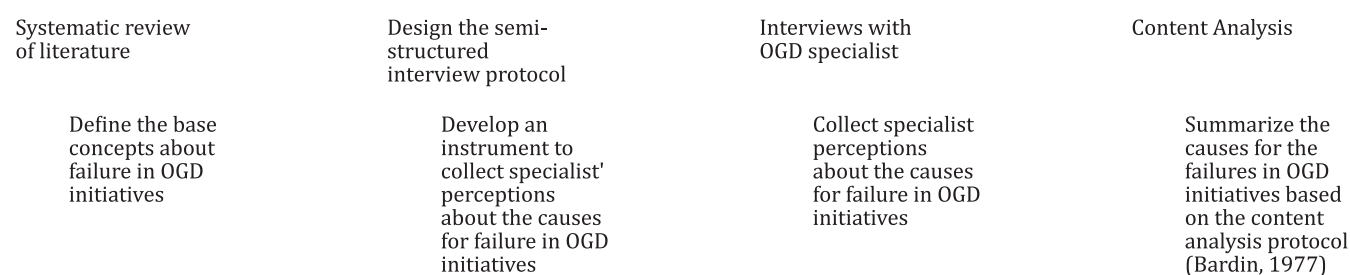
For data analysis purposes, the content analysis technique according to Bardin (1977) was adopted in which the analysis of the corpus of documents was divided into three stages: (1) the pre-analysis; (2) the exploitation of the material, and (3) the treatment of the results, the inference, and the interpretation. Thus, the interviews were recorded and the lines in the videos were transcribed into a text document. Finally, all interviews were inserted in the Atlas.TI<sup>®</sup>, a data qualitative analysis software. Subsequently, segment-by-segment coding of each data identified in the interviews was performed, and, finally, categories were created, in which the corresponding codes were inserted.

## 4 | RESULTS

The coding process used the inductive coding technique, and 19 codes were identified, which represent the expressions with greater frequency, segment by segment, in the interviews. The 19 codes were grouped into four categories, which were defined based on the similarity of meaning between them. Finally, the codes and categories can be understood as the causes of failures in OGD projects and initiatives, according to the interviewees' perceptions. Table 3 shows the frequency of citations by categories and codes.

### 4.1 | Internal and external factors

Some factors within the government and outside it influence OGD projects and initiatives, either positively or negatively. For the social scenario, E2 brings an example of important social actions to assist in OGD projects, such as *hackathons*:



**FIGURE 1** Research design.

**TABLE 1** Respondents' profile.

Gender	Background	Job position
Female (5)	Ph.D. (2)	Director (2)
Male (6)	Master (2)	Head of Sector (3)
	Specialization (5)	Vice Head of Sector (1)
	Graduation (2)	Analyst (4)
		Administrator (1)

**TABLE 2** Company/organization profile.

Name of company/organization	Company/organization description	Number of respondents
Centro de Tecnologia da Informação e Comunicação do Estado do Rio Grande do Sul S.A.—PROCERGS	The company specialized in the development of high-added-value solutions, operates in 100% of the organs of the state executive, and processes daily millions of transactions vital to the proper functioning of the State of Rio Grande do Sul	3
Secretaria da Fazenda do Estado do Rio Grande do Sul—SEFAZ/RS	Secretary of Finance of the State of Rio Grande do Sul, which, among others, has the function of providing the necessary resources to the State, with transparency and fiscal justice, for the benefit of society and the business environment	1
Advocacia Geral da União—AGU	An institution that, directly or through a linked body, represents the Union, judicially and extrajudicially	1
Departamento de Economia e Estatística—DEE—SPGG/RS	It integrates the structure of the Secretariat of Planning, Governance, and Management (SPGG) of the State of Rio Grande do Sul and has the task of providing socioeconomic indicators and conjuncture analyses, with the global and sectoral variables that permeate the economic and social development of the State	2
Secretaria de Segurança Pública—SSP/RS	Responsible for the tasks inherent to public security in the State of Rio Grande do Sul	2
Casa Civil—RS	Responsible for directly advising the Chief of Executive Power in the coordination of government actions	2

**TABLE 3** Frequency of citations by codes and categories.

Categories <sup>a</sup> N = 173	Codes <sup>a</sup> N = 173	Frequency of citations by category (%)
Internal and external factors (73)	Negative social scenario (02)	42.20
	<b>Lack of political interest (20)</b>	
	Absence of citizen participation (07)	
	Administrative barriers (19)	
	Influence of customs (14)	
	Legal influences (07)	
	Non-monitoring of citizen participation (04)	
Resource availability (36)	Negative economic aspect (02)	20.81
	Lack of qualified staff (09)	
	<b>Lack of financial resources (16)</b>	
	Lack of technological resources (09)	
Data maintenance (33)	Lack of data refresh (05)	19.08
	Discontinuity of open data projects (04)	
	<b>Not making data available (11)</b>	
	Lack of organizational structure of OGD project (04)	
	Data security and protection (02)	
	Lack of data processing (07)	
	Lack of knowledge (31)	
	<b>Lack of access to information (25)</b>	

Note: The codes with the higher frequency of citation within the categories are in bold.

<sup>a</sup>The number of evidence coded.

It should have more actions, such as a hackathon, calling the population to be able to implement projects with this imprint. For, as I have commented, PROCERGS works for the government and, directly, for government agencies. So it's on-demand from every organ that we work with. Sometimes social actions and actions of certain programs serve the population. (E2).

Internally, political interest can weigh on the continuity and effectiveness of open data projects, since it needs this support for the maintenance and evolution of these projects. In the analysis of the interviews it is possible to identify two situations: the first related to the subordination of the continuity and effectiveness of projects to political interests, which is the speech of E4, and the second about the transience of governments, as in the speech of E6:

I believe that other interests may weigh on the authorization to publish these data (E4).

Today, all public agencies are composed of transient entities, because they occupy elective positions and as human beings are afraid (E6).

An external factor verified in the analysis of the interviews is the participation of the citizen, that is, the citizen's engagement in open data projects. For E1, this possible failure of civic engagement is more related to the government that does not act to increase this participation than on the part of the citizen.

Therefore, there is still a lack, I believe worldwide, of offering services that seek civic engagement, that is, I think the problem is much more for the side of the government than for the citizen's side. (E1).

Administrative issues can also influence the success of open data projects, as E4 exemplifies, citing the issues of structure and size of the organization and budget volume:

Yes, I think all these issues are related: to the size of the organization, the volume of budget it has, and the structure it has to do that. So I think these issues are all related to the effectiveness or not of the disclosure of open data. (E4).

Cultural issues are well cited by the interviewees as barriers to data projects and it is important to highlight the statements of two interviewees who address cultural issues about different verses. E10 simply views the cultural issues of government and the citizen as obstacles and E5 explains that actions are needed to create culture:

... have structural, cultural barriers of government, of citizens... (E10).

For me it is the same logic: if you don't have the availability of the data, of course, you won't create a culture for it. (E5).

As for legal issues, E10 provides an example of the amount of legislation that regulates the same things, which creates difficulties in applying the rules imposed and can hinder open data projects.

... it is too much law, could leave leaner and deal with various topics in it, by the very theme there of data issue. (E10).

## 4.2 | Resource availability

Economic aspects and financial issues were cited as difficulties to boost OGD projects and initiatives. As for the economic aspects, E3 exemplifies a situation of prioritizing an important activity as a manager or a demand for various information, defining with a much more economic than a financial issue:

Come on, for example, you as a manager are needing to provide for social security a tabulation of data, if not you are prevented from having the social security voucher in the state. So you're tabulating the data, exactly that layout the government asked for. Then all of a sudden, there comes a demand, via the Access to Information Act, asking you for a lot of things, what are you going to do? (E3).

It's more economical than financial, no doubt. (E3).

With regard to financial issues, it is perceived that they are more related to the costs that OGD projects can generate for governments and thus hinder support for these projects, as E2 says:

... ends up assuming this cost of storing and making available the data on the portal of your responsibility ... (E2)

The lack of qualified personnel is also a lack of resources addressed by the interviewees, as the E5 says:



A second point, which I would put, is the people—the people involved—know how hard it is to find in the market today, ... market... if you were to put it on the job market, ... how difficult it is to find qualified people in the sense of data processing, IT, you know how valued this branch is there. (E5)

In conclusion, the technology mentioned by the interviewees, we can say as a lack of investments in this area by the government, not preventing, but hindering the work of disseminating open data, as exemplified by E4:

... the difficulties that we faced, early on, in this study group, was the difficulty in the software that the company makes available converge in terms of data. (E4)

### 4.3 | Data maintenance

The approach to data by the interviewees brought up some points that can characterize the possible flaws in open data initiatives, as in the case of the availability of data that interferes with the lack of knowledge of the citizen regarding open data, because even if the data is available, it is useless if the citizen does not know about the existence of the data, as in the speech of the E7:

So I think this is going to bring more knowledge, because often what I notice is that the citizen is unaware that there is this information, for example, some government data I know exists because I work with this data. But, I see that it is not much publicized to the citizen. (E7).

Next, we can talk about the monitoring of citizen participation, that is, monitoring their access to open government data, pointed out by E9 as the situation that has not yet been verified in open data projects:

So, in terms of site, I'm sincere in saying that we don't have an effective follow-up and a survey of those hits. (E9).

Another difficulty pointed out in the speech of E1, regarding the updating of the data, which is necessary to keep the data accessible:

The problem is not only putting on the new ones but also, updating the ones I have, leaving them updated and accessible. (E1).

Another problem mentioned by E5 is related to the discontinuity of open data projects, i.e., insecurity about project maintenance, which makes it difficult to make the data available:

So the first difficulty I would tell you is this, is continuity, to have security in the continuity of the availability of this data. (E5).

The organizational structure for open data is also mentioned as necessary for the maintenance of projects, as E3 said, it does not need to be very large, but that helps in governance, given the quantity and complexity of the data:

I don't know if it's going to structure, ... But, you need to have some structure, not too big, but to do governance of it, because the data is diverse... (E3)

The security and protection of some data can also hinder some open data projects, as explained by E9, in case of the impossibility of making available personal data and even addresses, which made impossible a project with municipalities for mapping crimes in certain locations.

There are sensitive data that are protected by law, which is those data that can focus on identifying people or even addresses, which we end up, supported by the standard, not providing and that often, for example, in terms of public security work, today we are developing some projects with the municipal departments exactly to make the exchange of this data, because what we disclose on the site often serve as data for studies of municipalities and municipal security departments, but that does not allow them, for example, to do a georeferencing because they do not have the supply of the place of occurrence with latitude and longitude, which would facilitate for them to develop mapping work, do what we call more heat zones to identify certain crimes and combat this crime effectively. (E9).

Finally, the processing of the data is related to their complexity of them, that is, to make the data clearer and accessible to the citizen/user, as exemplified by E8:

That's because, in the source, the data is... have a little more difficult access, sometimes, for example, I remember the case of config data, which were compiled data collection of ICMS for the economy of the states. They quoted an HTML page, which was too bad to download, you had to... or make a robot to be able to read that data or keep copying and pasting in the hand, it was pretty bad. (E8).

#### 4.4 | Lack of knowledge of information

Knowledge of the information was addressed as important for government open data initiatives so that the citizen knows that these data exist and that they are available. E1, for example, stated:

[...]Not only the data available but also the data dictionary, people have to know the least amount of information.[...].

Education and lack of knowledge were the two codes defined for the category of knowledge of information, and education was addressed as the support of the school, as mentioned in E1:

[...] The big issue of citizen education is related to education, for example, in school, I had moral and civic class, today, as far as I know, school curricula, is there not something that teaches what it is to be a citizen? What are your rights, what is a public budget? What does it mean that I vote and give legality to someone to represent me? What are the spheres of power? Who represents me and does what? The tools do I have to charge someone I voted for in the Legislature? What are available to me and how do I charge access to these tools? That I might be co-creating, that I might be voting, that I can give ideas. I think you go through education a lot.[...].

On the other hand, the lack of knowledge is addressed about the lack of access to information, where the citizen/user of the data is not aware of what it is and whether OGDs, at all, available. As E6 said:

[...]You know I think our society still suffers a lot from it. We have little knowledge, unfortunately, we still have little demand, and little knowledge.[...].

That is, there is a need for the citizens to know about OGD for the success of OGD initiatives.

## 5 | DISCUSSION

From a broad perspective of Brazilian society and from the observation of the interviewees' statements, it is possible to glimpse many local demands for the development of open data initiatives, considering that initiatives for open data and transparency are already imposed by legal obligations generated from the Access to Information Law (da União, 2013). Therefore, despite the barriers and difficulties regarding open data projects and initiatives, it's possible to see the existence of a movement that corroborates with initiatives to promote access to information, development of public services based on data, and incentive to social participation in the cycle of public policies. However, these actions are not yet structured through concrete policies and strategies. These findings match the ones in other contexts too- case in point being those of China where barriers linked with the institutional, data quality, user engagement, and data integrity are being underlined (Huang et al., 2017) or the UK where the implementation barriers as well as the usage barriers are identified (Martin, 2014; Wang et al., 2019). Furthermore, interviews' analysis reiterates the hitherto-identified barriers, viz., technical, legal, organizational, and social, in the extant literature for the streamlining and smooth execution of OGD initiatives (Shao & Saxena, 2019). Similarly, cultural impediments in terms of the risk-averse cultures and insularity on the part of the stakeholders to adopt novelty become a cause of alarm for all. Thus, in line with the assertion of one of interviewees, OGD initiatives are found to be lacking in sustainability given that they are considered as one-time pilot ventures (Zuiderwijk & de Reuver, 2021).

Similarly, it has been attested in the extant literature that resource constraints impede OGD initiative's execution (Janssen et al., 2012). For instance, budgetary constraints are a major cause of concern in governments. Likewise, in line with the results from the present study, it has been underlined that given the lack of support from the senior management which is very critical for any public innovation's success (Tan, Cater-Steel & Toleman, 2009), even the organizational structure is flawed in terms of the allocation of roles and responsibilities among the personnel as to how the OGD initiative is to be planned and executed-this issue gets even more complicated when the personnel is not aware and experienced regarding the publishing process of OGD (Kassen, 2018). Lack of expertise on the part of the personnel and the limited or negligible efforts at

developing the requisite skills of the personnel act as barriers in OGD initiative's execution (Safarov, 2019). This last aspect is also linked with the motivation and morale of the personnel to learn and broaden their understanding about the overarching aims of OGD initiatives. Resistance towards the OGD initiatives' proper execution may also be a factor of the perceived risks, low individual and organizational accountability, hierarchical structuring or the typical bureaucratic set up of the government bodies (Huang et al., 2020; Wirtz et al., 2016).

Likewise, the internal as well as the external stakeholders are unaware about the OGD initiatives and their potential (Mutambik et al., 2021). There is limited or negligible engagement of the citizens and other stakeholders in the OGD adoption and re-use owing to their being unaware of OGD initiatives or the potential value creation and innovation opportunities that accrue from OGD initiatives. These facets are linked with the limited availability, low interaction, and, hence less data usability by the potential stakeholders (Magalhaes & Roseira, 2020). Finally, there are legal issues pertaining to the access and reproducibility of OGD (Tsiavos et al., 2013) that leads to bottlenecks in terms of OGD initiative's optimal execution thereby resulting in the failure of the OGD projects.

## 6 | CONCLUSION

The purport of the present study was to understand how the implementation failure pertaining to the OGD initiatives is associated with the technical, social, legal, political, and administrative bottlenecks apart from the limited awareness levels among the societal stakeholders apart from underlining the factors accounting for the same as internal and external factors, resource availability, data maintenance, lack of knowledge, etc. These factors were a derivative of the exploratory study conducted with the interview protocol adopted for garnering perspectives from 11 managers directly involved in the management of the OGD initiatives in Brazil. The study underlined the flaws and tensions in the execution of OGD initiatives alongside the allied issues of limited or negligible awareness about the same among the societal stakeholders in the Brazilian context. For empirical validation, interview scripts were subjected to computational text analysis and inferences were drawn therewith. It has been underscored that "... In many studies, particularly qualitative studies, small samples might preclude generalizability of findings to other populations; however, integrating the findings with other similar research studies reported in the literature can be useful for positioning the study within the knowledge of the discipline... In this way, smaller studies can contribute to theory that can be applied and evaluated in other settings and populations" (Ferguson, 2004, p. 20) and the synthesis and comparison of our findings with the extant literature (in the preceding section) makes our study a robust one.

The present study concurs with the assertion that OGD initiatives' failures may result in untoward consequences like "monetary loss, damaged reputations, and reduced public trust on government" (Lee & Kwak, 2012, p. 493). While appreciating the developing economy's context, such impediments are understandable. The study contributes to the extant literature veering around OGD initiatives with specific focus on the failure of OGD initiatives (Zuiderwijk & de Reuver, 2021) with specific focus on a developing country, that is, Brazil. Besides, the present study clinches the arguments presented earlier regarding the benefits and challenges associated with the execution and acceptability of the OGD initiatives among the stakeholders (Janssen et al., 2012). Furthermore, OGD adoption may be facilitated by the institutionalization of a fortified legal environment and an open organizational and receptive organizational culture (Ruijter & Huff, 2016) conducive for the growth of the OGD initiative alongside increased professional engagement and drawing cues from the leading examples of successful OGD initiatives (Roa et al., 2020). Putting things in perspective, OGD initiatives' success may be considered to be a factor of the "motivated stakeholders, innovative leaders, proper communication, an existing OGD portal, external funding, and agile development" (McBride et al., 2019, p. 88).

This leaves significant insights for the government and policy-makers to undertake steps for streamlining the OGD initiatives by ensuring that the internal and external dimensions associated with the administrative divisions responsible for the OGD initiatives are in being factored into consideration and taken care of- case in point may be referred the "best" practices of the countries with robust OGD initiatives. Steps need to be taken for engaging the stakeholders concerned in the OGD initiatives right from the inception stage so that value creation and innovation happens by the re-use of OGD.

### 6.1 | Further research pointers

A number of strands emerge from the present study vis-a-vis further research. For instance, an appreciation of the manner in which the OGD initiatives across the administrative levels and among the administrative agencies vary across developed and developing countries shall drive home the underpinning best practices in OGD initiatives' implementation. Likewise, an analysis of the awareness drives and initiatives regarding the OGD initiatives may be conducted to understand the manner in which the pitches might be the same or different in different contexts. For instance, awareness drives and initiatives among the stakeholders might also show a marked variance in terms of the pitch which would be definitely different for a journalist than that for an entrepreneur. A replication study of the one conducted by Wang and her colleagues in the UK is also feasible wherein the publishing of open data "information" is attested but not open "data" (Wang et al., 2019). The present study's findings are pathways to understand the reasons for not only preempting the failure of OGD initiatives but also ensuring the success of OGD initiatives in

different contexts. Finally, further academic interest is called for towards developing an understanding of the manner in which OGD initiatives might become sustainable across diverse contexts would vary in terms of the strategic outlook, infrastructural standards, cultural variations, and the like.

## 6.2 | Implications for practitioners

The present study has implications for policy makers and bureaucrats. Apart from the fact that there is a need to have a strategic will and direction to execute the different processes entailed in the value chain of the OGD initiative, it is important that the bureaucracy get acclimatized with the OGD initiative and its aims and objectives for overall growth and development of the country. Cultural insularity and risk-aversion to digital administrative innovations may be gradually overcome by initiatives on the part of the government to making the latter more acceptable among the stakeholders. Likewise, the onus lies on the government and policy-makers to develop the required will to strategize and impress upon the administrative departments to build an organizational culture that retains positivity and control-and-feedback mechanisms regarding the OGD initiative.

### DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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## APPENDIX A: SEMI-STRUCTURED QUESTIONNAIRE

- Thank you for your kind gesture by agreeing to be my guest this hour! As an ice-breaker I may I know about the OGD initiative that is being spearheaded by you and your team, please?
  - Despite the international call, what are the reasons as to why the OGD initiative has not been able to take-off optimally in our country?
  - Could you throw some light on the politico-administrative reasons for the OGD initiative failure?
  - It has been observed that any OGD initiative mandates the involvement of the users/stakeholders/citizens-what are the challenges in this regard? Have the users been forthcoming in this regard till now?

- How do you track the involvement of the users/stakeholders/citizens in the OGD initiative? What are the challenges you face in this regard?
  - What are your views regarding the social landscape as far as the success of the OGD initiative is concerned?
  - Can you give us some example/s where you encountered difficulties regarding the OGD initiative and its implementation?
  - Has the OGD initiative percolated across the length and breadth of your administrative scope? How and why?
  - What are the challenges regarding the legal stipulations that impinge upon the success of the OGD initiative?
  - How do you perceive the technological impediments to the successful launch and progress of the OGD initiative?
  - Please tell me if there are any economic/financial bottlenecks with regard to the OGD initiative's launch and implementation.
  - Are there any impediments with regarding your organizational structure and functioning that need to be tackled for ensuring the success of the OGD initiative? What more needs to be done from your organization's side?
  - Please tell me about the future prospects of OGD in your department. How can this country succeed in the OGD drive?

In bold