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# The Digitalisation of Anti-Corruption in Brazil

Scandals, Reforms, and Innovation

FERNANDA ODILLA



# The Digitalisation of Anti-Corruption in Brazil

This book investigates how digital technologies, such as social media and artificial intelligence, can contribute to combating corruption in Brazil.

Brazil, with its long history of scandals and abundant empirical data on digital media usage, serves as a perfect case study to trace the development of bottom-up and top-down digital anti-corruption technologies and their main features. This book highlights the connections between anti-corruption reforms and the rapid implementation of innovative solutions, primarily developed by tech-savvy public officials and citizens committed to anti-corruption efforts. The book draws on interviews with experts, activists, and civil servants, as well as open-source materials and social media data, to identify key actors, their practices, and the challenges and limitations of anti-corruption technologies. The result is a thorough analysis of the digitalisation of anti-corruption in Brazil, with a theoretical framework that can also be applied to other countries. The book introduces the concept of "integrity techies" to encompass social and political actors who develop and facilitate anti-corruption technologies, and discusses different outcomes and issues associated with digital innovation in anti-corruption.

This book will be a key resource for students, researchers, and practitioners interested in technologies and development in Brazil and Latin America, as well as corruption and anti-corruption studies more broadly.

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# Fernanda Odilla



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# 1 Introduction

When Aldous Huxley merged science with literature in his 1932 dystopian novel *Brave New World*, it was difficult to predict the impact his work would have. Although the novel was successful in terms of sales, reviews were consistently negative, with Huxley being accused of being "dry and boring," and his vision of the future was considered irrelevant and unoriginal (Bloom, 2004, p. 12). Over time, however, not only did Huxley's cautionary portrayal of the future become more connected to reality, but his critique of technology as a cure-all for issues stemming from wars and diseases found increasing resonance with his readers. Whether used ironically or not, the phrase "brave new world" is synonymous with a new context, often marked by socio-technological shifts and characterised by uncertainty regarding its potential success or benefit.

One could argue that evoking the phrase "brave new world" when discussing the digitalisation of anti-corruption efforts related to law enforcement and civic action, as is the case in this book, is somewhat clichéd. However, to a significant degree, the development and use of technologies in anti-corruption, especially emerging technologies, can be understood through Huxley's critical approach. This is because anti-corruption technologies represent a scenario where prevailing optimism often outweighs critical views and the necessary caution.

That is why the pages that follow can be seen as an attempt to critically investigate how a wide range of digital technologies, from social media platforms to artificial intelligence (AI) and blockchain applications, has been developed and employed to counter corruption by exploring the case of Brazil. This is a country with a high level of corruption, incremental accountability mechanisms (Da Ros and Taylor, 2022), and the largest number of democratic innovations in Latin America, in particular those designed by governments and civil society alike to enhance citizens' participation in anti-corruption efforts

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and ensure good governance, often through the use of digital technologies (Pogrebinschi, 2018).

This is not to say that the book takes current and future technological developments to their extremes, juxtaposing inventions between insane utopia and barbaric lunacy, as Huxley did when depicting the choices of his characters. There is no need to create a dystopia nor to deny technological advances to maintain a shrewd outlook on technology in the context of anti-corruption efforts. What is necessary, then, is an analysis grounded in empirical evidence to better assess anti-corruption technologies, along with the contexts facilitating their development as well as their outcomes, limits, and risks. Assessments of technologies designed to counter corruption are emerging fields that still lack substantial research.

# What do we know so far about anti-corruption technologies?

It is widely acknowledged that technological advances have led to unprecedented access to many different types of digital (and digitalised) data and innovative digital media that can rapidly be produced and used by various types of actors, located in both the public and private sectors, including citizens' associations and civil society organisations (CSOs). The surge in accessibility to high-volume and diverse micro-level data, combined with the widespread adoption of digital media and new data processing and analytical tools, has heightened expectations concerning the detection, prevention, and countering of corruption, an issue that international organisations have highlighted as a paramount global concern since the early 1990s.

However, it was only in the late 1990s and early 2000s that technologies were specifically used to fight corruption, mostly in the form of e-government projects (Kossow, 2020b). South Korea holds a prominent position in this context, with the Seoul Metropolitan Government implementing e-government reforms from the mid-1990s onwards; later, they were recognised as an effective tool against corruption (Iqbal and Seo, 2008; OECD, 2016). In subsequent years, organisations and researchers have delved into the use of technology in combating corruption, examining the topic broadly (Sturges, 2004; Bertot et al., 2010; Davies and Fumega, 2014; Kukutschka, 2016; Kossow and Kukutschka, 2017; Mattoni, 2017; Adam and Fazekas, 2018, 2021; Kossow, 2020a), or focusing on specific types of technologies such as AI (Aarvik, 2019; Köbis et al., 2022a; Odilla, 2023a), social media (UNDP, 2011; Jha and Sarangi, 2017), crowdsourcing (Noveck et al., 2018; Zinnbauer, 2015), e-government (Andersen, 2009;

Elbahnasawy, 2014), open data (Gurin, 2014), distributed ledger technology like blockchain (Kim and Kang, 2019; Kossow and Dykes, 2018), or specific devices such as mobile phones (Chêne, 2012). In addition, there were fewer attempts to focus on the issues revolving around emerging technologies, such as the corruption risks of AI (Köbis et al., 2022b) or the risk of unfairness when creating AI-based anti-corruption tools (Odilla, 2023b).

Overall, the role of digital technologies in fighting corruption has become a topic that is usually covered by international organisations, such as the U4 Anti-Corruption Research Centre, Transparency International, the Organisation for Economic Co-operation and Development, and the World Bank, to name but just a few. In addition, the academic literature on anti-corruption digital technologies (ACTs) is generally scant; reports and policy papers are more common. It is rarely based on exhaustive empirical research and instead relies heavily on anecdotal evidence. Indeed, in the academic field, publications are mostly based on secondary data (see Köbis et al., 2022a; Mattoni, 2021: Adam and Fazekas, 2021).

There are noteworthy exceptions in terms of empirical data, such as the mapping of Brazilian AI-based tools showcasing data inputs, data processing and outputs, as well as the prevalent types of corruption that these technologies aim to address (Odilla, 2023a), and diagnosis of the unfairness of risk estimation tools for public contracts used by law enforcement agencies in Brazil and the implementation of mitigation measures (Lima and Andrade, 2019). This is also the case in a survey undertaken in Germany by Starke et al. (2023) which scrutinised the best design of an automated Twitter bot to foster collective action. The book Digital Media and Grassroots Anti-Corruption, edited by Alice Mattoni (2024), can also be seen as a significant exception in that it brings together empirical cases presented by different authors from around the world. However, the book focuses only on bottom-up anticorruption technologies, without assessing government tools. Meanwhile, governments have embraced a range of digital tools and applications primarily aimed at verifying public procurement and bidding processes, flagging anomalies in social benefits payments, and bolstering trust while automating financial records and transactions to curb corruption (Odilla, 2023a, 2021).

When discussing anti-corruption technologies in Brazil, most analyses consist of isolated case studies, with the majority focusing on civil society initiatives or specific types of technologies. For example, Odilla (2023a) drew up a list of over 30 bottom-up and top-down cases but concentrated only on those utilising AI. Still, one important finding is

### 4 Introduction

the very low level of concern among developers of anti-corruption tools about risks such as bias and unfairness, as well as about having auditable systems in the anti-corruption realm. Neves et al. (2019), in turn, evaluated how civil servants from one specific government agency, the Federal Court of Accounts, are approaching the digitalisation of anti-corruption law enforcement. In another study, the focus was on the use of social media to promote two anti-corruption grassroots campaigns aimed at passing new legislation to combat corruption, suggesting that a key feature of successful change in public policies is the result of collectively organised agents deploying innovative strategies to exert public pressure, which can sometimes surprise politicians in their electoral cost-benefit analyses (Mattoni and Odilla, 2021).

Freire et al. (2020) and Galdino et al. (2023), in turn, have investigated bottom-up accountability strategies through interventions designed to enhance ordinary citizens' monitoring capacity regarding public services. The former presented experimental evidence that a mobile app (Tá de Pé) provided to citizens did not improve the delivery of school and nursery construction works, while the latter evaluated a related project called *Obra Transparente*, developed by the non-governmental organisation (NGO) Transparência Brasil, formerly part of Transparency International and operating independently in the country since 2007. They concluded that costly mobilisation and monitoring efforts by organised CSOs are more likely to drive significant policy change than less costly projects such as the development of apps that can be used by anyone with a mobile phone connected to the internet. This finding suggests that success is less about the technology itself and more about the mobilising efforts required to bring people together to effectively utilise anti-corruption technology.

Even with the emergence of multiple top-down and bottom-up initiatives aimed at curbing corruption through the use and development of digital technologies, not only in Brazil but also around the globe, we still lack a comprehensive knowledge of how anti-corruption technologies emerge, their main practices and how they bolster the fight against corruption. By focusing on major technological advances experienced by Brazil at the federal level, this book explores the digitalisation of anti-corruption, showing that the country has been rapidly incorporating different types of digital technologies, most of them developed in-house by tech-savvy civil servants and concerned citizens, to deploy in the government's anti-corruption initiatives. This is to be expected, not only because digital technologies play a big role in our lives but also because they can lower costs and barriers to people's engagement and participation in anti-corruption efforts (Earl and

Kimport, 2011; Bennett and Segerberg, 2013) and speed up processes to support human activities given the expectation that machines are immune to fatigue (Köbis et al., 2022a).

However, it is safe to say that it is not sufficient for digital technologies merely to exist within societies for use in anti-corruption efforts. There is much yet to be explored, with important questions needing to be addressed. What circumstances can lead to the emergence of ACTs? Which of the most prevalent elements of ACTs are already in place? How exactly do they function and how can we measure their outcomes? Who are the primary human and non-human actors developing and facilitating the use of digital technologies as tools against corruption? What are their main practices, and what are their principal challenges and limitations? Can ACTs provide an antidote to corruption, or are they more likely to exacerbate discredit, thus fuelling democratic regression rather than creating awareness and prompting indignation (and action)? In seeking to tackle these and other fundamental questions in this burgeoning field of inquiry, this volume examines the significant roles that digital technologies may play in combating corruption, paying heed to both human and non-human actors

## **Decoding key concepts**

Before proceeding further, it is crucial to establish the conceptual groundwork of this book. While new concepts and typologies will be introduced throughout this book, there are key definitions that need to be clarified in advance, starting with corruption. Although corruption is a contested concept, there is growing consensus that it is multifaceted, varying in types and intensity, evolving over time, and it is not exclusive to immature democracies or the Global South. Hence, corruption is understood here as an umbrella concept encompassing various types of conduct related to the misuse of power for private gain at the expense of the collective, incorporating concepts such as clientelism, patronage, patrimonialism, state capture, and particularism (Varraich, 2014). As Michael Johnston (2005, p. 11) defines it, "corruption involves the abuse of a trust, generally one involving public power, for private benefit which often, but by no means always, comes in the form of money."

Despite being a complex problem that still challenges those who aim to understand and curb it, this book assumes that corruption cannot be solved solely through the use of technical solutions. The scant existing research on digital technologies suggests that, despite their often innovative features and, therefore, the considerable media buzz they initially attract, most of these technologies disappear shortly after

their launch (Kukutschka, 2016). Digital technologies are treated here as a diverse array of technological resources, including data, data-processing techniques, software and hardware, deployed to electronically create, distribute, view, and store digital information that governments, activists, and concerned citizens might use to sustain their actions and their communications repertoire (Mattoni, 2017). Digital technologies are recognised as valuable resources in anti-corruption efforts, but it must be acknowledged that they require specific means and capacities, including financial resources, tech literacy and openness to digital innovation, if they are to be developed and employed to support anti-corruption efforts (Odilla, 2024). This view may help to explain why many anti-corruption activists, for example, still rely on analogic actions (Odilla, 2024) and why many anti-corruption technologies are reluctantly embraced by frontline workers in public administration in Brazil (Neves et al., 2019).

ACTs are defined as complex systems designed with the overarching aim of combating corruption, as described by Mattoni (2024). ACTs are assemblages of human and non-human actors who simultaneously pursue immediate and practical anti-corruption objectives, addressing directly or indirectly various levels of corrupt activities ranging from petty to grand corruption-related wrongdoings. The non-human ACTs' components are digital data, algorithms, and hardware, and they do not exist in a void. ACTs also have a human component, including developers, facilitators, and users, each with their own imaginaries on corruption, anti-corruption efforts, and the deployment of technology in combating corruption. While digital technologies are part of the ACTs' material dimension, humans and their social relationships are seen as social, and the symbolic elements are the imaginaries that sustain the creation and use of ACTs in anti-corruption practices (Mattoni, 2024). ACTs, therefore, are not synonymous with digital technologies. They go beyond them.

Thus, this book combines Lascoumes and Le Galès' (2007) insights on the instrumentation of public policy and the definition of ACTs presented by Mattoni (2024) when reflecting on civil society initiatives to assess the top-down and bottom-up ACTs already in place in Brazil. In line with these authors, the assumption here is that ACTs cannot be considered solely as functional instruments or pragmatic solutions for achieving more efficient results because they are neither denaturalised technical objects nor neutral devices. It means that they cannot be considered solely from an instrumental viewpoint because ACTs are a combination of material, social, and symbolic elements, as proposed by Mattoni (2024).

As with corruption, ACTs are embedded in politics and power asymmetries. The aim here is to look at the digital technologies deployed in anti-corruption activities, while at the same time making an effort not to see technologies as isolated or disconnected from humans, or from policymaking and law enforcement. This book, therefore, adds a political dimension to the concept of ACTs, alongside the material, social, and symbolic elements already mentioned. The political dimension encompasses the political context and legal apparatus, as well as their influence on the duties and the agency of those responsible for developing or facilitating the development of digital technologies. These aspects, as well as the importance of agency in socio-technical change, are as important as the technological interventions themselves.

# Humans and non-humans in the "web of accountability"

To guide the analysis of recent technological changes in the anti-corruption domain, this book revisits the "web of accountability" concept (Mainwaring and Welna, 2003). The web of accountability, as defined by Mainwaring and Welna (2003) and Power and Taylor (2011), refers to a network of institutions comprising the mechanisms of accountability, encompassing the interplay among these institutions, as well as the interaction between electoral accountability, intra-state accountability, and societal oversight (Mainwaring and Welna, 2003). Although initially introduced to examine democratic accountability in Latin America and already deployed to explain the accountability system in Brazil (Carson and Mota Prado. 2014: Power and Taylor. 2011; Aranha, 2020), as an analytical approach it is widely applicable, describing the interconnected system through which various actors assume oversight, investigative, and disciplinary roles. Overall, anticorruption systems include a broad range of governmental and nongovernmental actors with complementary and compensatory roles aimed at holding governments, public spending and service delivery, and public officials accountable. I expand this understanding, and consider both human and non-human actors as part of this web.

Accountability is understood here as the answerability and responsibility of public officials (Mainwaring and Welna, 2003). Following O'Donnell's (1999) definition, it assumes horizontal and vertical relationships. Horizontal accountability is seen as

the existence of state agencies that are legally enabled and empowered, and factually willing and able, to take actions that span from routine overseeing to criminal sanctions or impeachment regarding actions or omissions by other agents or agencies of the state that may, presumably, be qualified as unlawful.

(O'Donnell, 1998, p. 11)

While horizontal accountability includes both internal and inter-agency control in the legislature, executive, and judiciary branches, vertical accountability is viewed as an evolving overarching concept encompassing a variety of actions coming from non-state actors. It includes citizens voting based on elected officials' actions in office (electoral accountability); citizen-led monitoring and scrutiny of public and/or private sector performance, including the press and CSOs that investigate and denounce abuses and wrongdoings (societal accountability); and user-centric access and distribution systems for public information and citizen involvement in tangible decision-making related to resource allocation, such as participatory budgeting (social accountability) (Grimes, 2008; Smulovitz and Peruzzotti, 2000).

While acknowledging previous scholarly efforts to define various types of accountabilities, this book adopts a more simplified approach. Thus, accountability is divided into two clusters: top-down and bottom-up. The former refers to the accountability of government actors, and the latter to the accountability of non-government actors (including, but not limited to, individual concerned citizens, CSOs, and journalists), respectively. As digitalisation and automation processes advance, non-human entities also play increasingly significant roles in various phases of the accountability cycle. As emphasised by Mota Prado et al. (2015) and Odilla and Rodriguez-Olivari (2021), the accountability cycle employs three primary functions:

- 1 Oversight involves the active monitoring of activities with a significant risk of corruption in order to promptly prevent and/or identify any suspicious or unusual occurrences.
- 2 *Investigation* is the systematic process of gathering comprehensive information about specific actions or activities once suspicions have been raised.
- 3 *Corrective measures* ensure the enforcement of sanctions in cases where there is conclusive evidence to substantiate misconduct.

While this typology was provided mainly to assess government institutions responsible for horizontal accountability (i.e. control within and among government agencies, as described by O'Donnell, 1998), these functions are equally applicable to the process of bottom-up accountability. In addition, they encompass situations where civil servants,

civil society actors, and their digital technologies provide support to each other's actions or act independently. Here, ACTs are not seen solely as enablers of accountability practices but as part of the web of accountability. We must visualise ACTs as nodes within the web of accountability, where human and non-human actors have overlapping, competing, or complementary roles. ACTs are, in turn, assemblages – sometimes temporary, sometimes more long-lasting – of social, symbolic, material, and political elements. The responsibilities and goals of both digital technologies and their developers and facilitators may vary depending not only on the primary function of their actions but also on how technologies are imagined. designed, developed, and used. This implies that various law enforcement agents and CSOs, for example, have distinct priorities and dedicated responsibilities, which may lead them to concentrate on specific or broader anti-corruption actions. Similarly, the digital technologies they deploy may serve single or multiple purposes. This rationale guided both the gathering and analysis of the data collected in this study.

### Research design, methods, and data analysis

The research for this book was conducted using the framework developed by the BIT-ACT (Bottom-Up Initiatives and Anti-corruption Technologies) project. Methodologically, the monograph follows the project's qualitative approach, which combines constructivist grounded theory with situational analysis (Charmaz, 2006; Clarke, Friese and Washburn, 2015; Mattoni, 2020). This methodological approach places value on the perspective of activists, concerned citizens, and civil servants who have been engaging in anti-corruption efforts, mainly by developing and supporting the creation and use of digital technologies to combat corruption. The focus is on ACTs, which have served as a sensitising concept (Bowen, 2019) for the empirical research in this book, as well as for the aforementioned BIT-ACT project. This is why the analysis is guided through the lens of ACTs, as both this book and its empirical research are firmly rooted in the research project.

Brazil is seen here as the context where the creation, development, and use of ACTs occur. Context matters and, therefore, the research process has employed several steps to capture its nuances. The first step was to conduct desk research and expert interviews to understand how corruption manifests itself, who the main actors fighting corruption are, and which ACTs are already in place in Brazil; indeed, it is worth stressing that it was the search for anti-corruption initiatives in which ACTs had a relevant role that guided the selection of case studies and the subsequent fieldwork that was undertaken.

The second step involved the creation of situational maps based on specific initiatives and their digital technologies. These situational maps depicted key human, non-human, material, symbolic, social, and discursive elements in the situations of concern (Clarke et al., 2015). The situational analysis approach was especially valuable for gaining initial insights into how different actors were interacting, and which types of technologies have been deployed. Situational maps were also employed to choose the initial set of case studies and to position them within the various arenas, each in its specific context, as well as to identify who should be invited to participate in this study.

The third step involved gathering data on the first group of selected case studies by carrying out in-depth semi-structured interviews, participant online and offline observations, by collecting other materials such as visuals, reports, news media articles, and by social media scraping. These data underwent an initial round of qualitative analysis following the core principles of grounded theory, which involved a combination of open and focused coding (Charmaz, 2006). The analytical process was complemented by the theoretical sampling of the initial data, whereby subsequent rounds of data gathering and analysis were conducted based on the findings that emerged from the data already collected (Glaser and Strauss, 1967). These rounds involved the collection and analysis of additional data. The MAXQDA Plus 2020 software package was used for the analysis, as well as all the different types of coding.

This interactive fieldwork approach proved invaluable for selecting and then excluding a few initially selected cases, including new ones, exploring emerging research topics, and enhancing the data collection. The case studies selected for investigation are outlined in Chapters 3 and 4 and summarised in the online Appendix.<sup>2</sup> They offer significant variations that are valuable for obtaining a more comprehensive view of how anti-corruption efforts evolve and/or adapt digital technologies from both the bottom-up and the top-down, going beyond simply anecdotal evidence. The case studies vary in terms of the type and ownership of the digital technologies employed, ranging from existing social media platforms to emerging technologies such as AI and blockchain developed for specific purposes. They also differ in terms of the type of corruption targeted, the point when these technologies began to be utilised, and the types of actors involved in the anti-corruption initiatives.

The overall aim here is not to map all the existing initiatives in Brazil but to present some representative case studies in order to

conduct an in-depth analysis of the multifaceted employment of digital technologies in anti-corruption efforts. The resulting sample contains, in some cases, specific ACTs as the unit of analysis, such as the X (Twitter) bots Rui from the media outlet JOTA and Rosie from Operação Serenata de Amor (Operation Love Serenade). In other cases, not only are the ACTs considered but also CSOs, such as Transparência Brasil and Operação Política Supervisionada, as well as law enforcement agencies, such as the Corregedoria Geral da União (Office of the Comptroller General), the Tribunal de Contas da União (Federal Court of Accounts), and the Receita Federal (Revenue Service) due to the significant number of digital technologies they have been developing. Some cases started offline and later incorporated digital tools in order to pursue their goals, some cases were born digital and presented a co-evolutionary path interplaying with technology developments, some cases simply make use of social media or were embedded in the most popular technology at the point when they were created (e.g. chatbots on specific social media platforms, transparency portals, desktop and mobile oversight applications), or even more innovative experiences that deploy blockchain and AI-based ACTs.<sup>3</sup>

The case studies selected follow suggestions by Odilla (2023) and Köbis et al. (2022) that there should be separate approaches for civil society and government-led anti-corruption technologies. For analytical purposes, we do not consider the size or cost of the initiatives as criteria for clustering the case studies. The focus is exclusively on the actors responsible for developing and/or adapting digital technologies to be deployed in anti-corruption efforts. Therefore, the selected case studies can be divided into two main categories, as shown below.

# Bottom-up anti-corruption efforts

These are initiatives led by CSOs, collective actors, or concerned citizens, who develop their own digital technologies or utilise existing platforms (like social media) to advance their anti-corruption agendas.

Among the bottom-up initiatives there are two main types of case studies. First, there are movements or collective actions that have employed digital technologies to raise awareness and mobilise people to counter corruption through online and offline demonstrations and broad campaigns that seek to produce change at the executive and legislative level and, hence, obtain policy outcomes. These initiatives follow a logic of collective actions to pursue their goals and integrate digital media to increase citizen participation and campaign visibility. Second, there are informal groups of citizens and NGOs gathered around specific anti-corruption initiatives that use digital technologies

intended to augment the monitoring capabilities of people, primarily through the use of open public information about corrupt practices or related misconduct. These initiatives follow a logic of connective actions (Bennett and Segerberg, 2013) which put individuals connected through digital media at the centre of anti-corruption initiatives.

## Top-down anti-corruption efforts

These are initiatives led by state actors, primarily civil servants working for anti-corruption and other law enforcement agencies, that involve the development and deployment of digital technologies to automate and accelerate procedures that can help humans to make decisions and conduct their daily tasks or that can offer citizens channels for accessing public information, receiving information on corruption, or reporting instances of corruption.

There are three main types of case studies among the top-down anti-corruption efforts. First, there are systems, most of them automated, that are used to monitor, identify, or predict suspicious cases. The type of corruption they target is directly related to the duties of the agencies where these digital technologies were developed or are being deployed. Second, government initiatives interact with ordinary citizens to crowdsource information and/or offer anti-corruption-related services. Third, some top-down initiatives are undertaken that favour bottom-up actions. State actors, many of them law enforcement authorities, engage in grassroots anti-corruption efforts in different capacities, such as volunteering training on how to use open data, organising events such as hackathons or workshops with civil society actors, and leading campaigns to improve the legal anti-corruption apparatus.

Top-down initiatives do not necessarily involve large and expensive projects, as will be shown. They benefit from previous more cost-conscious governmental initiatives that have digitised public data and made them accessible in machine-readable formats, with most of them – the open public data – also serving as raw material for bottom-up initiatives. As will be explored, most bottom-up and top-down initiatives do not outsource their solutions. In Brazil, digital anti-corruption initiatives are mainly an "in-house" innovation process, undertaken by tech-savvy and non-tech-savvy individuals alike, all of whom are more open to digital transformation.

The participants, therefore, were selected based on their roles in each type of initiative. There were six different types of interviewees:

### References

Aarvik, P. (2019). Artificial Intelligence: A promising anti-corruption tool in development settings? U4 Report, 1–38. Retrieved from

https://www.u4.no/publications/artificial-intelligence-a-promising-anti-corruption-tool-in-development-settings.pdf.

Adam, I., and Fazekas, M. (2018). Are emerging technologies helping win the fight against corruption in developing countries? Pathways for Prosperity Commission Background Paper Series No. 21. Oxford University Press.

Adam, I., and Fazekas, M. (2021). Are emerging technologies helping win the fight against corruption? A review of the state of evidence. Information Economics and Policy, 57, 100950.

Andersen, T.B. (2009). E-Government as an anti-corruption strategy. Information Economics and Policy, 21(3), 201–210.

Ang, Y.Y. (2020). China's Gilded Age: The Paradox of Economic Boom and Vast Corruption. Cambridge University Press.

Angwin, J., Larson, J., Mattu, S., and Kirchner, L. (2016). Machine bias: There's software used across the country to predict future criminals. and it's biased against blacks. ProPublica. Retrieved from https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing.

Aranha, A.L. (2020). Lava Jato and Brazil's Web of Accountability Institutions: A Turning Point for Corruption Control? In P. Lagunes and J. Svejnar (Eds.), Corruption and the Lava Jato Scandal in Latin America. Routledge.

Avritzer, L., a Filgueiras, F. (2011). Corrupção e controles democráticos no Brasil. Ipea.

Bauhr, M., and Grimes, M. (2014). Indignation or resignation: The implications of transparency for societal accountability. Governance, 27(2), 291–320.

Benjamin, T., and Couto, F. (2016, December 9). Here's what happened when Brazil banned corporate donations in elections. World Economic Forum. Retrieved from https://www.weforum.org/agenda/2016/12/here-s-what-happened-when-brazil-banned-corporate-donations-in-elections/.

Bennett, W.L., and Segerberg, A. (2013) The Logic of Connective Action: Digital Media and the Personalization of Contentious Politics. Cambridge University Press.

Berryhill, J., Heang, K.K., Clogher, R., and McBride, K. (2019). Hello, World: Artificial Intelligence and its use in the public sector. OECD Working Papers on Public Governance 36. Organisation for Economic Co-operation and Development. Retrieved from

https://www.ospi.es/export/sites/ospi/documents/documentos/Tecnologias-habilitantes/IA-Public-Sector.pdf.

Bertot, J.C., Jaeger, P.T., Munson, S., and Glaisyer, T. (2010). Social Media Technology and Government Transparency. Computer, 43(11), 53–59.

Bloom, H. (2004). The story behind the story. In H. Bloom (Ed.), Bloom's Guides: Aldous Huxley's Brave New World. Chelsea House Publishers.

BNDES. (2002). Compras governamentais eletrônicas no Brasil: como funcionam os principais sistemas em operação. Informes BNDES, 39, April.

Bonini, T., and Trerè, E. (2024). Algorithms of Resistance: The Everyday Fight against Platform Power. MIT Press.

Bosi, L., and Uba, K. (2009). The outcomes of social movement. Mobilization, 14, 4, 405–411.

Bowen, G.A. (2019). Sensitizing Concepts, In P. Atkinson, S. Delamont, A. Cernat, J.W. Sakshaug, and R.A. Williams (Eds.), SAGE Research Methods Foundations. Manchester University Press.

Brelàz, G., Crantschaninov, T.I., and Bellix, L. (2021). Open Government Partnership in São Paulo City and the São Paulo Aberta program: Challenges in the diffusion and institutionalization of a global policy. Cad. EBAPE.BR, 19(1), Jan./March.

Bresser-Pereira, L.C. (1998). Uma reforma gerencial da Administração Pública no Brasil. Revista do Servico Público, 49(1), 5–42.

Brito, J.R. (2009). Breve Histórico do Controle Interno do Poder Executivo Federal: Origem, Evolução, Modelo Atual e Visão de Futuro. Revista de Negócios, 7, March. Retrieved from

http://judiciary.unifin.com.br/Content/arquivos/20111006173058.pdf.

Bucci, N. (2023, July 7). Robodebt royal commission final report: What did it find and what will happen next? The Guardian. Retrieved from https://www.theguardian.com/australia-news/2023/jul/07/robodebt-royal-

commission-final-report-what-did-it-find-and-what-will-happen-next.

Bulla, B., and Newell, C. (2020). Sunlight Is the Best Disinfectant: Investigative Journalism in the Age of Lava Jato. In P. Lagunes and J. Svejnar (Eds.), Corruption and the Lava Jato Scandal in Latin America. Routledge.

Carson, L., and Mota Prado, M. (2014). Mapping Corruption & its Institutional Determinants in Brazil. Retrieved from https://www.brazil4africa.org/wp-content/uploads/publications/working\_papers/IRIBA\_WP08\_Mapping\_Corruption\_and its Institutional Derminants in Brazil.pdf.

Castro Neves, O.M. (2013). *Evolução das políticas de governo aberto no Brasil.* VI Congresso Consad de Gestão Pública. Centro de Convenções Ulysses Guimarães Brasília/DF,April 16, 17 and 18.

Ceva, E., and Jiménez, M.C. (2022). Automating anti-corruption? Ethics Inf Technol 24, 48.

Chakraborty, A. (2024). Potentialities and affordances of grassroots civic tech platforms as effective anti-corruption tools: Decoding the story of I Paid a Bribe, India. In A. Mattoni (Ed.), Digital Media and Grassroots Anti-Corruption. Edward Elgar.

Charmaz, K. (2006). Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis. SAGE.

Charoensukmongkol, P., and Moqbel, M. (2014). Does Investment in ICT Curb or Create More Corruption? A Cross-Country Analysis. Public Organization Review, 14(1), 63.

Chemim, R. (2017). Mãos Limpas e Lava Jato: A corrupção se olha no espelho. Citadel Grupo Editorial.

Chen, S. (2019, September 22). Is China's corruption-busting AI system "Zero Trust" being turned off for being too efficient? South China Morning Post. Retrieved from https://www.scmp.com/news/china/science/article/2184857/chinas-corruption-busting-ai-system-zero-trust-being-turned-being.

Chêne, M. (2012). Use of Mobile Phones to Detect and Deter Corruption. Department for International Development. Retrieved from https://www.gov.uk/dfidresearch-outputs/use-of-mobile-phones-to-detect-and-deter-corruption.

Clarke, A., Friese, C., and Washburn, R. (Eds.). (2015). Situational Analysis in Practice: Mapping Research with Grounded Theory. Left Coast Press.

Couldry, N. (2012). Media, Society, World: Social Theory and Digital Media Practice. Polity Press.

Coutinho, G.L. (2012). Aniita: Uma abordagem pragmática para o gerenciamento de risco aduaneiro baseada em software. Prêmio de Criatividade e Inovação da RFB. Retrieved from

https://repositorio.enap.gov.br/bitstream/1/4607/1/Mencao%20honrosa%20do%20 11%C2%BA%20Premio%20RFB.pdf (accessed on April 23, 2021).

CPMI. (2006). Relatório dos Trabalhos da CPMI das Ambulâncias. Senado do Brasil. Retrieved from

https://www.senado.leg.br/comissoes/CPI/Ambulancias/CPMI\_RelatorioParcial\_1.p df.

Cristóvam, J.S.S., Saikali, L.B., and Sousa, T.P. (2020) Governo Digital na Implementação de Serviços Públicos para a Concretização de Direitos Sociais no Brasil. Següência (Florianópolis), 84, 209–242.

Da Ros, L., and Taylor, M.M. (2022). Brazilian Politics on Trial: Corruption and Reform under Democracy. Lynne Rienner.

Davies, T., and Fumega, S. (2014). Mixed incentives: Adopting ICT innovations for transparency, accountability, and anti-corruption. U4 Issue (4). Retrieved from http://www.cmi.no/publications/file/5172-mixedincentives.pdf.

Department of Justice. (2016). Odebrecht and Braskem Plead Guilty and Agree to Pay at Least \$3.5 Billion in Global Penalties to Resolve Largest Foreign Bribery Case in History. US Department of Justice Office of Public Affairs. Retrieved from https://www.justice.gov/opa/pr/odebrecht-and-braskem-plead-guilty-and-agree-pay-least-35-billion-global-penalties-resolve.

Earl, J., and Kimport, K. (2011). Where We Have Been and Where We Are Headed. InDigitally Enabled Social Change: Activism in the Internet Age. MIT Press.

Edler-Duarte, D. (2021). The Making of Crime Predictions: Sociotechnical Assemblages and the Controversies of Governing Future Crime. Surveillance & Society, 19(2): 199–215.

Elbahnasawy, N.G. (2014). E-Government, Internet Adoption, and Corruption: An Empirical Investigation. World Development, 57, 114–126.

Elliott-Negri, L., Jabola-Carolus, I., Jasper, J., Mahlbacher, J., Weisskircher, M., and Zhelnina, A. (2021). Social Movement Gains and Losses: Dilemmas of Arena Creation. Partecipazione e Conflitto, 14(3).

Fernández-Vázquez, P., Barberá, P., and Rivero, G. (2015). Rooting out corruption or rooting for corruption? The heterogeneous electoral consequences of scandals. Political Science Research and Methods, 4(2), 379–397.

Figueiredo, A.C. (2010). The Collor Impeachment and Presidential Government in Brazil. In M. Llanos and L. Marsteintredet (Eds.),Presidential Breakdowns in Latin America: Causes and Outcomes of Executive Instability in Developing Democracies. Palgrave Macmillan.

Filgueiras, F. (2023). Designing artificial intelligence policy: Comparing design spaces in Latin America. Latin American Policy, 14(1), 1–17.

Filgueiras, F., and Almeida, V. (2021). Governance for the Digital World: Neither More State nor More Market. Palgrave Macmillan.

Folha de S.Paulo. (2000, September 30). Entenda o caso da feira de Hannover. Retrieved from https://www1.folha.uol.com.br/folha/brasil/ult96u7405.shtml.

Folha de S.Paulo. (2003, July 27). Privatização das teles foi seguida por escândalos. Retrieved from

https://www1.folha.uol.com.br/folha/dinheiro/ult91u70988.shtml.

Folha de S.Paulo. (2009, August 20). Câmara terá de entregar notas fiscais sobre gastos da verba indenizatória à Folha. Retrieved from

https://www1.folha.uol.com.br/folha/brasil/ult96u612372.shtml.

France, G. (2019). Brazil: Setbacks in the legal and institutional anti-corruption frameworks. Transparency International. Retrieved from

https://www.transparency.org/en/publications/brazil-setbacks-in-the-legal-and-institutional-anti-corruption-frameworks.

Freire, M. (2015, April 1). Conheça dez histórias de corrupção durante a ditadura militar. UOL. Retrieved from https://noticias.uol.com.br/politica/ultimas-noticias/2015/04/01/conheca-dez-historias-de-corrupcao-durante-a-ditadura-

militar.htm.

Freire, D., Galdino, M., and Mignozzetti, U. (2020). Bottom-up accountability and public service provision: Evidence from a field experiment in Brazil. Research and Politics, 7(2), 1–8.

Freitas, J. (1987, May 13). Concorrência da ferrovia Norte-Sul foi uma farsa. Folha de S.Paulo. Retrieved from

https://www1.folha.uol.com.br/folha/80anos/marcos do jornalismo-03.shtml.

Friend, C. (2024). Social Contract Theory. Encyclopedia of Philosophy (online).

Retrieved from https://iep.utm.edu/soc-cont/ (accessed on March 4, 2024).

Gaetani, F. (2005). Estratégia e Gestão da Mudança nas Políticas de Gestão Pública. In E. Levy and P.A. Drago (Eds.),Gestão pública no Brasil contemporâneo. FUNDAP.

Gainty, C. (2023, January 16). From a "deranged" provocateur to IBM's failed Al superproject: The controversial story of how data has transformed healthcare. The Conversation.

Galdino, M., Mondo, B.V., Sakai, J.M., and Paiva, N. (2023, November 3). The Civil Society Organizations effect: A mixed-methods analysis of bottom-up accountability in Brazilian public policy. SocArXiv. Retrieved from https://doi.org/10.31235/osf.io/s82dn.

Gaspar, M. (2020). A Organização: A Odebrecht e o esquema de corrupção que chocou o mundo. Companhia das Letras.

Glaser, B.G., and Strauss, A.L. (1967). The Discovery of Grounded Theory. Aldine. Gohn, M.G. (2014). A sociedade brasileira em movimento: Vozes das ruas e seus ecos políticos e sociais. Caderno CRH, 27(71), 431–441.

Gomes, C.F.S., and Costa, H.G. (2015). Aplicação de métodos multicritério ao problema de escolha de modelos de pagamento eletrônico por cartão de crédito. Production, 25(1), 54–68.

Governo do Brasil (2023, June 16). Gestão apresenta propostas de expansão da plataforma GOV.BR a secretários estaduais de administração. Retrieved from https://www.gov.br/gestao/pt-br/assuntos/noticias/2023/junho/gestao-apresenta-propostas-de-expansao-da-plataforma-gov-br-a-secretarios-estaduais-de-administração.

Graft, A., Verhulst, S., and Young, A. (2016). Brazil's open budget transparency portal: Making public how public money is spent. Report Gov Lab – Open Data's Impact. Retrieved from https://odimpact.org/files/case-study-brazil.pdf.

Grimes, M. (2008). The conditions of successful civil society involvement in combating corruption: A survey of case study evidence.QoG Working Paper Series, 22.

Gurin, J. (2014). Open Governments, Open Data: A New Lever for Transparency, Citizen Engagement, and Economic Growth. The SAIS Review of International Affairs, 34(1), 71–82.

Higgins, E. (2021). We Are Bellingcat: An Intelligence Agency for the People. Bloomsbury.

Holdo, M. (2019). Cooptation and non-cooptation: Elite strategies in response to social protest. Social Movement Studies, 18(4), 444–462.

Huss, O. (2020). How Corruption and Anti-Corruption Policies Sustain Hybrid Regimes: Strategies of Political Domination Under Ukraine's Presidents in 1994–2014. Columbia University Press.

Huxley, A. (1932). Brave New World. Penguin.

Iqbal, M.S., and Seo, J.W. (2008). E-governance as an anti-corruption tool: Korean cases. Journal of the Korean Association for Regional Information Society, 11(2), 51–78.

Jambreiro Filho, J. (2015a). Artificial Intelligence in the Customs Selection System through Machine Learning (Sisam). Retrieved from

https://www.jambeiro.com.br/jorgefilho/sisam\_mono\_eng.pdf (accessed on September 29, 2022).

Jambreiro Filho, J. (2015b). Inteligência Artificial no Sistema de Seleção Aduaneira por Aprendizado de Máquina. In Prêmio de Criatividade e Inovação da RFB, 14th edn. Receita Federal do Brasil, Escola de Administração Fazendária.

Jambreiro Filho, J. (2019). Artificial Intelligence Initiatives in the Special Secretariat of Federal Revenue of Brazil. Retrieved from

https://www.jambeiro.com.br/jorgefilho/AI\_Brazil\_Federal%20Revenue%20\_2019.p df (accessed on September 29, 2022).

Jefferson, B.J. (2018). Predictable Policing: Predictive Crime Mapping and Geographies of Policing and Race. Annals of the American Association of Geographers, 108(1), 1–16.

Jha, C.K., and Sarangi, S. (2017). Does social media reduce corruption? Information Economics and Policy, 39, 60–71.

Johnston, M. (2005). Syndromes of Corruption: Wealth, Power, and Democracy. Cambridge University Press.

JOTA. (2019, September 10). JOTA lança aprovômetro de projetos legislativos. Retrieved from https://www.jota.info/dados/jota-lanca-aprovometro-de-projetos-legislativos-10092019.

Kim, K., and Kang, T. (2019). Will Blockchain Bring an End to Corruption? International Journal of Information Systems and Social Change, 10(2), 35–44. Knaus, C., and Henriques-Gomes, L. (2023, May 3). How two reporters exposed Centrelink's robodebt injustice and gave voice to the victimised. The Guardian. Retrieved from https://www.theguardian.com/media/2023/may/04/how-two-reporters-exposed-centrelinks-robodebt-injustice-and-gave-voice-to-the-victimised. Köbis, N., Starke, C., and Edward-Gill, J. (2022a). The Corruption Risks of Artificial

Intelligence. Working Paper.Transparency International. Retrieved from https://knowledgehub.transparency.org/assets/uploads/kproducts/The-Corruption-Risks-of-Artificial-Intelligence.pdf.

Köbis, N., Starke, C., and Rahwan, I. (2022b). The promise and perils of using artificial intelligence to fight corruption. Nat Mach Intell, 4, 418–424.

Kossow, N. (2020a). Digital Anti-Corruption: Hopes and Challenges. In A. Mungiu-Pippidi and P. Heywood (Eds.),A Research Agenda for Studies of Corruption. Edward Elgar.

Kossow, N. (2020b). Digitizing Collective Action: How Digital Technologies Support Civil Society's Struggle against Corruption. PhD Dissertation, Hertie School, Germany.

Kossow, N., and Dykes, V. (2018). Bitcoin, Blockchain and Corruption: An 106 Overview. Transparency International. Retrieved from

https://knowledgehub.transparency.org/helpdesk/bitcoin-blockchain-andcorruption-an-overview.

Kossow, N., and Kukutschka, R.M.B. (2017). Civil society and online connectivity: controlling corruption on the net? Crime, Law and Social Change, 68(4), 459–476. Kukutschka, R.M.B. (2016). Technology against corruption: the potential of online corruption- reporting apps and other platforms. U4 Anti-Corruption Centre. Retrieved from https://www.u4.no/publications/technology-against-corruption-the-potential-of-online-corruption-reporting-apps-and-other-platforms.

Lagunes, P., Michener, G., Odilla, F., and Pires, B. (2021a). President Bolsonaro's Promises and Actions on Corruption Control. Revista Direito GV, 17(2).

Lagunes, P., Odilla, F., and Svejnar, J. (2021b). Corrupção e o escândalo da Lava Jato na América Latina. Editora FGV.

Lascoumes, P. and Le Galès, P. (2007). Introduction: Understanding Public Policy through Its Instruments – From the Nature of Instruments to the Sociology of Public Policy Instrumentation. Governance, 20(1), 1–21.

Latinobarometro. (2020). Online analysis. Retrieved from

https://www.latinobarometro.org/latOnline.jsp.

Lima, O.D.W., and Andrade, N. (2019). Fairness in Risk Estimation of Brazilian Public Contracts. Symposium on Knowledge Discovery, Mining and Learning, KDMILE 2019–Applications Track. Retrieved from

https://sol.sbc.org.br/index.php/kdmile/article/view/8789/8690.

Long, W. (1988, April 26). Peril for Democracy: Brazil Reels Under Tales of Corruption. Los Angeles Times. Retrieved from

https://www.latimes.com/archives/la-xpm-1988-04-26-mn-1595-story.html.

Lopes, A.A.L. (2018). A Evolução do SIAFI Enquanto Sistema de Controle Interno do Governo Federal. Revista Científica Multidisciplinar Núcleo do Conhecimento, Ano 03, 7(4), 40–50.

Mainwaring, S., and Welna, C. (Eds). (2003) Democratic Accountability in Latin America. Oxford University Press.

Matais, A.et al. (2016, December 12). Anões do Orçamento fizeram Odebrecht mudar estratégia no Congresso, diz delator. O Estado de S.Paulo. Retrieved from https://noticias.uol.com.br/ultimas-noticias/agencia-estado/2016/12/12/anoes-do-orcamento-fizeram-odebrecht-mudar-estrategia-no-congresso-diz-delator.htm.

Mattoni, A. (2017). From data extraction to data leaking: Data-activism in Italian and Spanish anti-corruption campaigns. Partecipazione e Conflitto, 10(3), 723–746.

Mattoni, A. (2020). The grounded theory method to study data-enabled activism against corruption: Between global communicative infrastructures and local activists' experiences of big data. European Journal of Communication, 35(3), 265–277.

Mattoni, A. (2021). Digital Media in Grassroots Anti-Corruption Mobilizations. In D.A. Rohlinger and S. Sobieraj (Eds.),The Oxford Handbook of Sociology and Digital Media. Oxford University Press.

Mattoni, A. (2024). Digital Media and Anti-Corruption Technologies from the Grassroots: an Introduction. In A. Mattoni (Ed.), Digital Media and Grassroots Anti-corruption. Edward Elgar.

Mattoni, A., and Odilla, F. (2021). Digital media, activism, and social movements' outcomes in the policy arena. The case of two anti-corruption mobilizations in Brazil. Partecipazione e Conflitto, 7623(14), 1127–1150.

McCormack,C.(2016). Democracy rebooted: The future of technology in elections. Atlantic Council. Retrieved from https://www.atlanticcouncil.org/in-depth-research-reports/report/democracy-rebooted-the-future-of-technology-in-elections-report/.

Mendes, L. (2022, September 17). Lei da Ficha Limpa barra ao menos 185 candidaturas. Poder 360. Retrieved from

https://www.poder360.com.br/eleicoes/lei-da-ficha-limpa-barra-ao-menos-185-candidaturas/.

Meneghetti, D. (2017, October 20). A origem de 35 expressões populares brasileiras. Super Interessante. Retrieved from

https://super.abril.com.br/especiais/nao-marque-touca-a-origem-de-35-expressoes-populares/https://super.abril.com.br/especiais/nao-marque-touca-a-origem-de-35-expressoes-populares/.

Ministério da Transparência e Controladoria-Geral da União. (2018) Transparency Against Corruption: The Brazilian Experience. Retrieved from https://repositorio.cgu.gov.br/handle/1/27534.

Monaco, N., and Woolley, S. (2022). Bots. Polity Press.

Montevechi, C. (2021). Ativismo Anticorrupção no Brasil e a Teoria dos Movimentos Sociais. Revista Brasileira de Ciência Política, 34(235262), 1–37.

Morris, S. D. (2021). The Corruption Debates: Left vs. Right–and Does It Matter–in the Americas. Lynne Rienner Publishers.

Mota Prado, M., and Cornelius, E. (2020). Institutional Multiplicity and the Fight Against Corruption: A Research Agenda for the Brazilian Accountability Network. Rev. direito GV, 16(3).

Mota Prado, M., Carson, L.D., and Correa, I. (2015). The Brazilian Clean Company Act: Using Institutional Multiplicity for Effective Punishment. Osgoode Legal Studies Research Paper No. 48/2015. Retrieved from

https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=2673799.

Munqiu-Pippidi, A., and Fazekas, M. (2020). How to define and measure

Mungiu-Pippidi, A., and Fazekas, M. (2020). How to define and measure corruption. In A. Mungiu-Pippidi and P. Heywood (Eds.),A Research Agenda for Studies of Corruption. Edward Elgar.

Murray, A., David-Barrett, E., and Ceballos, J.C. (2023). Country Insights Brief Brazil. Insights Series 03, February. IACA. Retrieved from www.iaca.int/measuring-corruption/wp-

content/uploads/2023/02/GPMC\_Brazil\_Insights\_Brief\_20022023\_online\_1.pdf. Neves, F., and Silva, P.B. (2023). From Paper to Digital: e-Governments' Evolution and Pitfalls in Brazil. In C. Gaie and M. Mehta (Eds.), Recent Advances in Data and Algorithms for e-Government, vol. 5, AISSE, p. 193.

Neves, F., Silva, P.B., and Carvalho, H.L.M. (2019). Artificial Ladies against Corruption: Searching for Legitimacy at the Brazilian Supreme Audit Institution. Revista de Contabilidade e Organizações, 13, 31–50.

Nishijima, M., Ivanauskas, T.M., and Sarti, F.M. (2017). Evolution and determinants of digital divide in Brazil (2005–2013). Telecommunications Policy, 41(1), 12–24.

Noveck, B. S., Koga, K., Garcia, R. A., Deleanu, H., and Cantú-Pedraza, D. (2018). Smarter Crowdsourcing for Anti-corruption: A Handbook of Innovative Legal, Technical, and Policy Proposals and a Guide to their Implementation. Inter-American Development Bank. Retrieved from

https://publications.iadb.org/en/smarter-crowdsourcinganti-corruption-handbook-innovative-legal-technical-and-policy-proposalsand.

Word cloud in black and white displaying, G. (1998). Horizontal accountability and new polyarchies. Lua Nova: Revista de Cultura e Política, 44, 27–54.

O'Donnell, G. (1999). Horizontal accountability in new democracies. In A. Schedler, L. Diamond, and M. Plattner (Eds.), The Self-Restraining State: Power and Accountability in New Democracies. Lynne Rienner.

Odilla, F. (2020a). Oversee and Punish: Understanding the Fight Against Corruption Involving Government Workers in Brazil. Politics and Governance, 8(2), 1–13.

Odilla, F. (2020b). Oversee & Punish: Understanding the fight against corruption involving government workers in the federal executive branch in Brazil. PhD Thesis. King's College London.

Odilla, F. (2023a). Bots against corruption: Exploring the benefits and limitations of Al-based anti-corruption technology. Crime Law Soc Change 80, 353–396.

Odilla, F. (2023b). *Unfairness in AI anti-corruption tools: Main drivers and consequences*. Working Paper. Presented at the 2023 ECPR General Conference, September 4–8, Prague.

Odilla, F. (2024). From concerned citizens to civic bots: The bottom-up fight against corruption in Brazil from a longitudinal perspective. In A. Mattoni (Ed.)Digital Media and Grassroots Anti-Corruption. Edward Elgar.

Odilla, F., and Rodriguez-Olivari, D. (2021). Corruption control under fire: A brief history of Brazil's Office of the Comptroller General. In J. Pozsgai-Alvarez (Ed.)The

Politics of Anti-Corruption Agencies in Latin America. Routledge.

Odilla, F., and Mattoni, A. (2023). Unveiling the layers of data activism: The organising of civic innovation to fight corruption in Brazil. Big Data & Society, 10(2). Odilla, F., and Veloso, C. (2024). Citizens and their bots that sniff corruption: Using digital media to expose politicians who misuse public money. American Behavioral Scientist.

Oliveira, L.G.L. (2017). Dez anos de CNJ: Reflexões do envolvimento com a melhoria da eficiência do judiciário brasileiro. Revista do Serviço Público, 68(3), 631–656.

Organisation for Economic Co-operation and Development(OECD). (2016). The Korean Public Procurement Service Innovating for Effectiveness. Retrieved from https://www.oecdilibrary.org/governance/the-korean-public-procurementservice 9789264249431-en.

Organisation for Economic Co-operation and Development(OECD). (2020). Going digital in Brazil. Retrieved from https://www.oecd-ilibrary.org/sites/c5840db0-en/index.html?itemId=/content/component/c5840db0-en#biblio-d1e22611.

Otranto Alves, L.C., Soares Silva, A., and da Fonseca, A.C.P.D. (2008). Implicações da Adoção do Modelo de Merchant na Avaliação do Uso da TI para Controle Gerencial do Serviço Público: Análise do Portal Comprasnet. Contab. Vista & Rev., 19(1), 83–108.

Pedrozo, S. (2013). New Media Use in Brazil: Digital Inclusion or Digital Divide? Online Journal of Communication and Media Technologies, 3(1).

Pereyra, S. (2019). Corruption Scandals and Anti-Corruption Policies in Argentina. Journal of Politics in Latin America, 11(3), 348–361.

Petherick, A. (2015, August 14). Brazil and the Bloodsuckers. Foreign Policy. Retrieved from https://foreignpolicy.com/2015/08/14/brazil-and-the-bloodsuckers-corruption-lottery/.

Picci, L. (2024). Rethinking Corruption. Cambridge University Press.

Pires, B. (2022, July). Farra ilimitada. Revista Piauí. Edição 190.

https://piaui.folha.uol.com.br/materia/farra-ilimitada/.

Piven, F.F., and Cloward, R. (1979). Poor People's Movements: Why They Succeed, How They Fail. Knopf Doubleday Publishing Group.

Pogrebinschi, T. (2018). Experimenting with Participation and Deliberation: Is Democracy Turning Pragmatic? In T. Falleti and E. Parrado (Eds.), Latin America Since the Left Turn. University of Pennsylvania Press.

Portela, M. (2022, February 7). CGU identifica fraude de R\$ 809,9 milhões no auxílio emergencial. Correio Braziliense. Retrieved from

https://www.correiobraziliense.com.br/economia/2022/02/4983309-cgu-identifica-fraude-de-rs-8099-milhoes-no-auxilio-emergencial.html.

Power, T.J., and Taylor, M.M. (2011). Introduction: Accountability Institutions and Political Corruption in Brazil. In T.J. Power and M.M. Taylor (Eds.), Corruption and Democracy in Brazil: The Struggle for Accountability. University of Notre Dame. Praça, S. (2011). Corrupção e reforma institucional no Brasil, 1988–2008. Opinião Pública, 17(1), 137–162.

Praça, S., and Taylor, M.M. (2014). Inching Toward Accountability: The Evolution of Brazil's Anticorruption Institutions, 1985–2010. Latin American Politics and Society, 56(2), 27–48.

Rezende, C. (2021, June 29). Governo Bolsonaro pediu propina de US\$ 1 por dose, diz vendedor de vacina. Folha de S.Paulo. Retrieved from https://www1.folha.uol.com.br/poder/2021/06/exclusivo-governo-bolsonaro-pediu-propina-de-us-1-por-dose-diz-vendedor-de-vacina.shtml.

Rich, J. (2019). State-Sponsored Activism: Bureaucrats and Social Movements in Democratic Brazil. Cambridge University Press.

Rich, J. (2020). Organizing Twenty-First-Century Activism: From Structure to Strategy in Latin American Social Movements. Latin American Research Review, 55(3), 430–444.

Rodrigues, F. (2014June 16). Conheça a história da compra de votos a favor da emenda da reeleição. Blog do Fernando Rodrigues, Brasília. Retrieved from https://fernandorodrigues.blogosfera.uol.com.br/2014/06/16/conheca-a-historia-da-compra-de-votos-a-favor-da-emenda-da-reeleicao/ (accessed on April 10, 2020). Rodrigues, F., and Lobato, E. (1999, May 25). FHC tomou partido de consórcio no leilão das teles. revelam fitas. Folha de S.Paulo. Retrieved from

https://www1.folha.uol.com.br/fsp/brasil/especial/sp7.htm (accessed on April 19, 2020).

Rose-Ackerman, S. (1996). Democracy and "Grand" Corruption.In R. Williams (Ed.), Explaining Corruption: The Politics of Corruption. Edward Elgar.

Rose-Ackerman, S. (2021). Corruption and Covid-19. Eunomía. Revista en Cultura de la Legalidad, 20, 16-13.

Rothstein, B. (2021). The Social Contract and the Indirect Approach to Anti-Corruption. In Controlling Corruption: The Social Contract Approach. Oxford University Press.

Sadek, M.T.A. (2019). Combate à Corrupção: novos tempos. Revista da CGU, 11(20), 1276–1283.

Saldanha, P. (2022, April 6). Governo Bolsonaro destina R\$ 26 mi em kit robótica para escolas sem água e computador. Folha de S. Paulo. Retrieved from https://www1.folha.uol.com.br/poder/2022/04/governo-bolsonaro-destina-r-26-mi-em-kit-robotica-para-escolas-sem-agua-e-computador.shtml.

Sano, H. (2020). Laboratórios de Inovação no Setor Público: mapeamento e diagnóstico de experiências nacionais. Cadernos Enap 69.

Saraiva, A. (2018). A implementação do SEI–Sistema Eletrônico de Informações. Enap Casoteca de Gestão Pública.

Savaget, P., Chiarini, T., and Evans, S. (2019). Empowering political participation through artificial intelligence. Science and Public Policy, 46(3), 369-380.

Schwarcz, L. (2019). Sobre o Autoritarismo Brasileiro. Companhia das Letras. Senne, F. (2021). Beyond connectivity: Internet for all. Internet Sectoral Overview, 2(June).

Siegel, E. (2018February 19). How to Fight Bias with Predictive Policing . Scientific American (blog). Retrieved from https://blogs.scientificamerican.com/voices/how-to-fight-bias-with-predictive-policing/.

Smulovitz, C., and Peruzzotti, E. (2000). Societal Accountability in Latin America. The Journal of Democracy, 11(4), 147–158.

Starke, C., Kieslich, K., Reichert, M., and Köbis, N. (2023January 13). Algorithms against Corruption: A Conjoint Study on Designing Automated Twitter Posts to Encourage Collective Action. SocArXiv.

Sturges, P. (2004). Corruption, transparency and a role for ICT? International Journal of Information Ethics, 2(11).

Taylor, M.M., and Buranelli, V.C. (2007). Ending up in Pizza: Accountability as a Problem of Institutional Arrangement in Brazil. Latin American Politics and Society, 49(1), 59–87.

Transparency International. (2012). 15th International Anti-Corruption Conference closes with an urgent call to end impunity. Retrieved from

https://www.transparency.org/en/press/20121110-15th-international-anti-corruption-conference-closes-with-an-urgen.

Tribunal de Contas da União (TCU). (2014). TCU e a Informatização. In Brasil, Tribunal de Contas da União. Tribunal de Contas da União: Evolução histórica e administrativa. TCU. Retrieved from https://portal.tcu.gov.br/centro-cultural-

tcu/museu-do-tribunal-de-contas-da-uniao/tcu-a-evolucao-do-controle/tcu-e-a-informatizacao.htm (accessed on August 18, 2023).

Tribunal de Contas da União (TCU). (2016). Fiscobras: 20 anos. Tribunal de Contas da União. TCU, Secretaria-Geral de Controle Externo. Retrieved from https://portal.tcu.gov.br/data/files/93/C4/3D/41/F6DEF610F5680BF6F18818A8/Fis cobras 20 anos.pdf .

Tribunal de Contas da União (TCU). (2022). Acórdão 1139/2022. Retrieved from https://pesquisa.apps.tcu.gov.br/#/documento/acordao-completo/666220218 PROC/%2520/DTRFLEVANCIA%2520desc%252C%2520/DTRFLEVANCIA%2520desc%252C%2520/DTRFLEVANCIA%2520desc%252C%2520/DTRFLEVANCIA%2520desc%252C%2520/DTRFLEVANCIA%2520desc%252C%2520/DTRFLEVANCIA%2520desc%252C%2520/DTRFLEVANCIA%2520desc%252C%2520/DTRFLEVANCIA%2520desc%252C%2520/DTRFLEVANCIA%2520desc%252C%2520/DTRFLEVANCIA%2520desc%252C%2520/DTRFLEVANCIA%2520desc%252C%2520/DTRFLEVANCIA%2520desc%252C%2520/DTRFLEVANCIA%2520desc%252C%2520/DTRFLEVANCIA%2520desc%252C%2520/DTRFLEVANCIA%2520desc%252C%2520/DTRFLEVANCIA%2520desc%252C%2520/DTRFLEVANCIA%2520desc%252C%2520/DTRFLEVANCIA%2520desc%252C%2520/DTRFLEVANCIA%2520desc%252C%2520/DTRFLEVANCIA%20/DTRFLEVANCIA%20/DTRFLE

completo/666220218.PROC/%2520/DTRELEVANCIA%2520desc%252C%2520N UMACORDAOINT%2520desc/0/%2520.

TSE. (2014). Conheça a história da urna eletrônica brasileira, que completa 18 anos. Retrieved from

https://www.tse.jus.br/comunicacao/noticias/2014/Junho/conheca-a-historia-da-urna-eletronica-brasileira-que-completa-18-anos.

United Nations Development Programme(UNDP). (2011). Study on the Role of Social Media for Enhancing Public Transparency and Accountability in Eastern Europe and the Commonwealth of Independent States: Emerging Models, Opportunities and Challenges. UNDP Regional Office for Eastern Europe & the CIS. Retrieved from

https://issuu.com/undp\_in\_europe\_cis/docs/social\_media\_report\_-\_external. Urquhart, C. (2013). Grounded Theory for Qualitative Research. SAGE. van Bekkum, M., and Borgesius, F.Z. (2021). Digital welfare fraud detection and the Dutch SyRI judgment. European Journal of Social Security, 23(4), 323–340. van Diick, J., Poell, T., and De Wall, M. (2018). The Platform Society: Public

Values in a Connective World. Oxford University Press.

Varraich, A. (2014). Corruption: An Umbrella Concept. Retrieved from https://qog.pol.gu.se/digitalAssets/1551/1551604\_2014\_05\_varraich.pdf.

Vieira, J., and Miranda, L.F. (forthcoming). When corruption strikes back: how is congress reversing anti-corruption reforms in Brazil. In F. Odilla and K. Tsimonis (Eds.) Corruption and Anti-Corruption Upside Down: New Perspectives from the Global South. Palgraye Macmillan.

Wickberg, S. (2018). The role of mediated scandals in the definition of anticorruption norms. In I. Kubbe and A. Engelbert (Eds.), Corruption and Norms. Springer.

Zinnbauer, D. (2015). Crowdsourced Corruption Reporting: What Petrified Forests, Street Music, Bath Towels, and the Taxman Can Tell Us About the Prospects for Its Future. Policy & Internet, 7(1), 1–24.