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Genres of online COVID-19 information and government information culture: A comparative case study

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ABSTRACT

Information culture is a cultural phenomenon manifested in the organization's values, norms and practices that influence information management and use in the organization. Few studies have explored the relationship between information culture and the application of genres of online government information. This study offers a comparative case study of two provincial governments in China. The findings showed that the genres of the online COVID-19 information disclosed by the two local governments reflect different types of information cultures. In governance-oriented culture, information is regarded as an important tool to actualize good governance and the genres most appropriate for online information dissemination would be adopted to meet citizens' information needs. This kind of information culture is likely to enhance citizens' trust in government and be beneficial for government crisis management and good governance. While, in government-oriented culture, information is regarded as a tool to actualize governmental interest. This kind of information culture poses a risk for government in achieving the goal of building trust between the public and government. The value of this study lies in filling the research gap in the relationship between genre and information culture and providing pragmatic insights for local governments to enhance information disclosure by adopting appropriate genres and cultivating governance-oriented culture.

1. Introduction

The news that COVID-19 can be transmitted from human to human was officially publicized on January 20, 2020 and caused public panic in China. Chinese local governments were required by the central government to publicize real-time COVID-19 information accurately via various channels including traditional channels like TV, radiobroadcast and press conferences, and new channels such as a government website, government app and government WeChat platform. An investigation of public access to COVID-19 information in China in August 2020 (Oliver et al., 2021) found that a government website (41.55%) was one of the top five ways for the public to access information. The other four were the main business websites (e.g. Sohu and Sina, 66.9%), TV (55.63%), the official WeChat account of the government (52.11%) and WeChat comments (47.18%). Overall, almost all the local governments in China had disclosed COVID-19 information online since the end of January 2020, but the genres used were different, reflecting different government information cultures. Hence, the COVID-19 pandemic provides a setting to study how different governments reflecting diverse information cultures adopt different genres to disclose information online in response to a public health emergency.

2. Problem statement

Genre as social action is a kind of social practice, and according to structuration theory, structure is both a medium and outcome of reproduction of practices (Giddens, 1979). Hence, this study argues that government information culture as a structure shapes and is shaped by the information genres taken by the government. A government in a particular information culture tends to invoke a particular genre or genres in response to a recurrent organizational situation, and it has therefore become institutionalized practice for the government. By regularly adopting the genre or genres, the government reaffirms its information culture. But due to the changes to the social contexts, or changes in how the government recognizes and responds to situations, the government as the agent might modify the genre or genres by

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introducing variations in substance and form or even adopt a new genre, and thus might bring changes to the information culture. This ongoing interaction between genres and information culture can be seen as an instance of structuration theory.

Few studies have empirically explored the relationship between information culture and information genres. This study aims to bridge the gap by providing a comparative case study of two provincial governments in China: Shanghai government and Hubei government, and then to provide implications for government information disclosure. The research questions of this study are:

(1) What are the genres of the online COVID-19 information disclosed by the two provincial governments?
(2) What kind of information culture do the genres of the online COVID-19 information reflect? And how does the information culture shape the genres of the online COVID-19 information?

3. Terminology and literature review

3.1. Genre

Traditional genre study views genre as a formal classification system of text or text type, but many researchers have treated genre as a rhetorical and semiotic social construct that reintegrates form with content, text with context, and product with process (Devitt, 1993). For example, Miller (1984) defines genre as "typified rhetorical actions based in recurrent situations" (p.159). Inspired by Miller's (1984) definition, the North American school of modern genre studies understands genre in relation to how people, texts, and activities interact with each other in order to produce meaning and knowledge for action (Andersen, 2008). The idea that views genre as a social construct is suited to this study.

Drawing on Miller's (1984) definition of genre and structuration theory, Yates and Orlikowski (1992) propose the concept "genres of organizational communication," and posit that genre is characterized by similar substance and form. Substance refers to the social motives, themes, and topics being expressed in the communication. Form refers to the observable physical and linguistic features of the communication, including structural features, communication medium, and language or symbol system. Their research provides a theoretical framework for identifying the genres of online government information disclosed by local government in this study.

Devitt (1991) develops the concept "genre set," which represents the texts used by a single community in a single field of knowledge and in a single organizational setting. For example, Devitt (1991) contends that the texts in the community of tax accounting and their interactions constitute and govern the tax accounting community and define and reflect the community's epistemology and values. So, the texts used by a local government are also a genre set that defines and reflects the values and epistemology or the culture of the government.

Therefore, genre theory is not primarily concerned with text types, but with how different human activities involving the use of texts become typified as a consequence of the production and use of recorded discourse by different agents (Andersen, 2008).As Bazerman (2000) explains, in recognizing a text type we recognize many things including the institutional and social setting, the activities being proposed, the roles available to writer and reader, the motives, ideas, and ideology.

3.2. Information culture

There are two different perspectives about information culture: one regards information culture as a positive culture for information that responds positively to external information environment and leads to the operational innovation and successful business performance of an organization (e.g. Ginman, 1988; Grimshaw, 1995). The other one defines information culture as a cultural phenomenon which is manifested in the organization's values, norms, and practices that influence information management and use in the organization (Choo et al., 2006; Oliver, 2003). This study adopts the latter concept of information culture, and agrees with the opinion that every organization has a unique information culture whether it is positive or negative, effective or ineffective (Oliver, 2017).

Some analytical frameworks of information culture have been developed and used to analyze organizational information culture. For instance, Choo (2013) proposes a 4R typology of information cultures (TICs): result-oriented, rule-following, relationship-based, and risk-taking. It was adopted to analyze the information culture of university teams and the relationship between information culture and knowledge creation (Vick, Nagano, & Popadiuk, 2015). Oliver and Foscarini (2020) develop a three-level pyramid model of information culture framework (ICF), and this model was used to explore the information culture of universities and companies (e.g. Lian & Oliver, 2020; Lian, Wang, & Oliver, 2022). Based on a series of case studies, Oliver and Foscarini (2020) also identify three diagnostic indicators of information culture: genres, workarounds, and infrastructure. Oliver and Foscarini (2020) state that where the three indicators occur, they provide insight into information culture and can be associated with a particular layer in the information culture model. Zheng (2005) draws on structuration theory to develop a framework of information culture which consists of three interrelated and interactive modalities (see Fig. 1): information literacy, information freedom, and information norms, and used this framework to analyze China's information culture. This framework treats information culture as a structure and the three modalities as structural properties, so it is applicable to this study and was adopted as the framework to analyze the characteristics of information culture of the two local governments in this study.

However, there is scanty research on government information culture except that Svärd (2014) applied the ICF to the investigation on the information culture of three municipalities in Sweden and Belgium and concluded that an information culture that promotes effective creation, use and management of information will be conducive to e-government development. Moreover, Oliver and Foscarini (2020) identify genres as one of the diagnostic indicators of information culture that provide insight into information culture, but there is little empirical research focusing on the relationship between genres and information culture.

In addition, the presentation (especially the visualization) of online government information has been a focus of LIS research. Ansari, Barati, and Martin (2022) used the narrative review method to synthesize the articles on the development and evaluation of open government data (OGD) visualizations in the IEEE Explore, Science Direct, and ACM Digital Library databases. Ansari et al. (2022) found four research streams: articles providing description and evaluation of specific OGD visualization examples, articles providing description and evaluation of general architectures and frameworks for OGD visualizations, articles conducting needs assessments among OGD stakeholders, and articles evaluating the usability of OGD portals and the effects of portal characteristics on user-related outcomes including acceptance and trust in OGD. Lee, Lee-Geiller, and Lee (2020) examined the effect of government information presentation type on citizen perceptions of government website usefulness. Yet few studies treat the presentation and visualization as a part of genre and link it with information culture.

4. Methodology

4.1. Case selection

The two provincial governments Shanghai government and Hubei government were chosen as case studies. Shanghai is located in the east of China and is one of largest cities and the financial center in China. Hubei is located in the middle of China, and its capital city Wuhan is the only megacity in the middle of China. The two places have large populations: Shanghai has a population of nearly 25 million, and Hubei

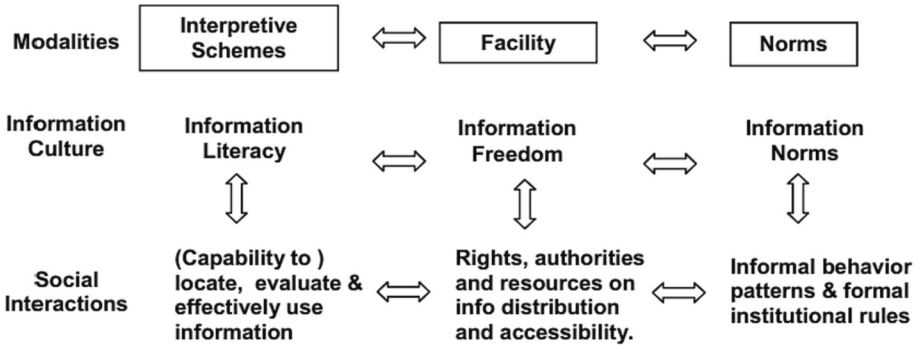


Fig. 1. A structurational framework of information culture (Zheng, 2005).

province has over 58 million. In the event of a public health emergency, disclosing and communicating timely, accurate, and understandable pandemic information in appropriate genres is essential for the local governments to control the emergency. Both governments issued the local regulations on open government information in 2004, three years earlier than the *Regulations of the People's Republic of China on open government information* (hereinafter referred to as the *Regulations on open government information*) enacted by the Central Government of China in 2007. However, according to the *Research report on COVID-19 data disclosure in the provincial governments in China* published by the Digital and Mobile Governance Lab of Fudan University in 2020, from January 20, 2020 to February10, 2020, Shanghai government was at the forefront of disclosing COVID-19 information, while, Hubei government was lagging behind even though COVID-19 first broke out in Wuhan, and the Hubei province had been the hardest hit. The differences in the disclosure of COVID-19 information indicate the differences in their information culture, which can be demonstrated via the genres of online COVID-19 information. Hence, the two cases are highly representative for this study.

4.2. Data collection and analysis

This study collected information about COVID-19 from the official websites of the two local health commissions from January 20, 2020, to April 8, 2020, when Wuhan lifted its lockdown. This period spanned the two key stages in China's fight against COVID-19: the outbreak stage (January 20, 2020 - January 25, 2020), and the emergency stage of epidemic prevention and control (January 25, 2020 – April 8, 2020). On April 8, 2020, China transitioned to regular epidemic prevention and control since from the middle of March 2020, the situation in China has been under control.

There is a section for COVID-19 information on the websites of the two local health commissions, and the COVID-19 information had been grouped into several themes. For example, there were five themes in the section of Shanghai government: report on COVID-19 cases, update on the prevention and control of COVID-19, knowledge on the prevention and control of COVID-19, press conference, notice about COVID-19 prevention and control. In comparison, there were four themes in the section of Hubei government: information release, update on COVID-19 prevention and control, knowledge on the prevention and control of COVID-19, and stories of typical persons on the front line. A web crawler, Houyi Collector, was used to automatically harvest information in every theme. Considering that only the genres of the information created by governments themselves can reflect their information culture, this study just collected the COVID-19 information created by the local governments. Therefore, other information including the stories of typical persons on the front line reported by news media on the website of Hubei government and the information under the themes of update on the prevention and control of COVID-19 and knowledge on the prevention and control of COVID-19 created by other organizations such as National Health Commission (NHC) and news media were excluded. After cleaning the data, based on the characteristics of genre proposed by Yates and Orlikowski (1992), this study identified the genre or genres in every theme according to the topic, motive, structure, and language or symbolic system of online information. The information was first grouped according to the topic and motive, and then the structure and language or symbolic system of the information in the same group was analyzed, and then the typology of genres was identified (see Table 1). Two of the authors first identified the genres of the information under each theme, and then a third author worked with them to compare their findings and determine the typology of the genres.

Other materials including news reports and citizens' comments on government official WeChat accounts, that is Shanghai Fabu and Hubei Fabu were also collected to understand more context information about the disclosure of COVID-19 information online by the two local governments and to detect the relevance between the modification of genre (s) or the emergence of a new genre and the public comments. The two governments simultaneously disclosed the information on COVID-19 cases on their WeChat official accounts: Shanghai Fabu and Hubei Fabu. Citizens' comments on the disclosed information were collected by a crawler tool, Fiddler. After data cleaning, 10,486 pieces of comments on Shanghai Fabu were collected and arranged according to the date. SnowNLP, a Python-based sentiment analysis tool library, was used to perform sentiment analysis of the comments to understand the citizens' attitude towards the disclosed information. There were no comments on Hubei Fabu from January 20, 2020, to April 8, 2020.

Table 1
Themes and genres of the online information on COVID-19 disclosed by Shanghai government and Hubei government.

Government	Theme	Genre
Shanghai government	report on COVID-19 cases	Report on the statistics of COVID-19 cases
		Report on the statistics of cured and discharged cases
		Announcement on the districts and the places that confirmed cases had visited
	Update on the prevention and control of COVID-19	Report on COVID-19 prevention and control measures
	Knowledge on the prevention and control of COVID-19	COVID-19 prevention and control guidance
	Press conference	Press conference
	Notice about COVID-19 prevention and control	Notice about COVID-19 prevention and control
Hubei government	Information release	Notification on COVID-19 cases
	Knowledge on the prevention and control of COVID-19	COVID-19 control and protection guidance

5. Findings

The genres of online COVID-19 information disclosed by Shanghai government were generally very concise and factual: report on the statistics of COVID-19 cases, report on the statistics of cured and discharged cases, announcement on the districts and the places that confirmed cases had visited, report on COVID-19 prevention and control measures, COVID-19 prevention and control guidance, press conferences, and notices about COVID-19 prevention and control. Genres on the Hubei health commission website included notification on COVID-19 cases, and COVID-19 prevention and control guidance. These genres constituted the genre set of online COVID-19 information of the two governments (see Table 1). The genres of disclosing COVID-19 cases and COVID-19 prevention and control guidance in the two governments were different, and the other genres in Shanghai's website were absent in Hubei's website.

5.1. Genres of disclosing COVID-19 cases

The motive of disclosing COVID-19 cases is mainly to keep government transparency so that the public can get timely and accurate information about COVID-19 cases. The genre used by Shanghai government to disclose COVID-19 cases can be named as "report on the statistics on COVID-19 cases," and as the pandemic unfolded, Shanghai government modified the structure and the symbolic system of this genre. The genre adopted by Hubei government can be labelled as "notification on COVID-19 cases," and the structure and the symbolic system of the genre remained unchanged.

5.1.1. Report on the statistics on COVID-19 cases in Shanghai government

The headline announcing COVID-19 cases in Shanghai was straightforward, highlighting the number of new cases. For example, on Jan 21, 2020 the headline was "There are 4 new COVID-19 cases in Shanghai." Shanghai government disclosed COVID-19 case statistics twice a day until March 17, 2020 when the situation was under control and there had been no new local cases for two weeks. The time span was added to the headline from February 15 to March 17, for example, there were two pieces of information about COVID-19 cases on February 19, 2020, so the headlines were "From 12pm to midnight yesterday, there were no new COVID-19 cases in Shanghai" and "From midnight to 12pm today, there were no new COVID-19 cases in Shanghai," respectively.

The structure and the symbolic system of the report on the statistics on COVID-19 cases changed over time (see Table 2):

5.1.1.1. January 20, 2020–January 26, 2020. The structure consisted of two parts: The first part showed the number of new cases with demographics of gender, age, and the information about whether the cases had been to Hubei or lived in Hubei or had close contact with confirmed cases. The second part showed the cumulative number of confirmed cases, suspected cases and excluded suspected cases. During this period, the symbolic system of the genre was just words (see Fig. 2).

5.1.1.2. January 27, 2020–March 4, 2020. The structure still consisted of two parts. The first part showed the number of new cases, but without any further demographic breakdown. From January 29, 2020, a diagram was included to show geographic distribution and the number of new cases. The second part showed cumulative case numbers together with statistics relating to gender, age, and whether the cases had been to Hubei or lived in Hubei or had close contact with confirmed cases and included a diagram to show the geographic distribution and the number of the accumulative cases. The cumulative case numbers were also further broken down to show the number of stable cases, severe cases, discharged cases, and deaths.

From February 6, 2020 the number of the discharged cases was added to the diagram. Geographic distribution was initially limited to the districts of Shanghai, but then divided into two categories from January 28, 2020: one was the geographic distribution of cases from places outside Shanghai (shown as Hubei and everywhere else), the other showed the geographic distribution of local cases in Shanghai (see Appendix).

Table 2
The structure and the symbolic system of COVID-19 case statistics disclosed by Shanghai government (from Jan. 20, 2020 to April 7, 2020).

Time	Structure	Symbolic system
Jan.20-Jan. 26	two parts: 1) the number of new cases, with demographics of gender, age, and the information about whether the cases had been to Hubei or lived in Hubei or had close contact with confirmed cases; 2) the number of accumulative confirmed cases, suspected cases and excluded suspected cases.	words
Jan.27-March 4	two parts: 1) new case numbers without any additional detail; 2) cumulative number of cases, with demographics of gender, age, and the information about whether the cases had been to Hubei or lived in Hubei or had close contact with confirmed cases.	1) words; 2) diagram showing the geographic distribution and the number of new cases; 3) diagram showing the geographic distribution and the number of the accumulative cases.
March 5–April 7	three parts: 1) the two parts identified above, plus; 2) information about the cases from overseas including nationality, country of residence, departure place, arrival time, and the date diagnosis was confirmed.	1) words; 2) diagram showing the geographic distribution and the number of new cases at home; 3) diagram showing the geographic distribution of new cases from overseas; 4) diagram showing the geographic distribution and the number of cumulative cases domestically and internationally

5.1.1.3. March 5, 2020–April 7, 2020. The structure changed during this period because there were cases from overseas. Besides the two parts identified above, the information about the cases from overseas included nationality, country of residence, departure place, arrival time, and the date when diagnosis was confirmed, and a corresponding diagram showing the geographic distribution of the cases from overseas was added. A third column showing the geographic distribution and the cumulative case numbers and cured cases from overseas was added to the diagram showing the geographic distribution and domestic cumulative case numbers (see Appendix).

5.1.2. Notification on COVID-19 cases in Hubei government

From January 21, 2020 to January 25, 2020, the headline for the text in Hubei was the same; "The health commission of Hubei Province's bulletin on COVID-19 cases." This headline is the standard title of an official record in Chinese government agencies, which comprises the name of the government agency that issues the record, the main topic that the record is about and the type of the record. The headline changed beginning on January 26, 2020: "bulletin" was replaced with "update," and the date was added. For example, the headline on January 26, 2020 was "Update on COVID-19 cases in Hubei province on Jan 25, 2020."

The structure of the genre remained very similar. It consisted of three parts: the first part provided the number of new cases, new deaths and newly discharged cases in the whole Hubei province and the cities under its jurisdiction; the second part showed cumulative case numbers in the whole Hubei province and the cities under its jurisdiction. Cumulative case numbers were further broken down to show numbers of active cases, severe cases, discharged cases, and deaths. The third part



Fig. 2. Report on the statistics on COVID-19 cases in Shanghai on January 21, 2020.

provided numbers of close contacts (see Appendix). Before January 25, 2020, the second part and the third part were combined into one part.

Notification on COVID-19 cases in Hubei was mainly restricted to overall numbers without any statistics about gender, age, or geographic distribution. The information was disclosed once daily, and there were no diagrams illustrating the information.

5.2. COVID-19 prevention and control guidance

The difference in the genres of COVID-19 prevention and control guidance created by the two governments lies in the symbolic system. The guidance created by Shanghai government was in the form of words and pictures, while the guidance of the Hubei Provincial government was mainly in the form of words. Moreover, different colors of fonts and bold fonts were used in the guidance of Shanghai government to highlight key contents.

5.3. Report on the statistics of cured and discharged cases

Disclosing the statistics of cured and discharge cases is mainly to transmit positive information and boost the public confidence in fighting COVID-19. Shanghai government had been disclosing information about cured and discharged cases since January 24, 2020. The headline was direct and positive. For example, the headline on February 15, 2020 was "34 confirmed cases were cured and discharged today including two children! There have been 124 cured and discharged cases till now." A list was provided showing individual discharged cases, by surname, gender, the reason why the case came to hospital, and the date when the case was confirmed (see Appendix).

5.4. Announcement on the districts and the places that confirmed cases had been to

Announcing the districts and the places that confirmed cases had been to is mainly to keep the public informed and reassure the public. Since February 7, 2020, the districts and the places that confirmed cases had been to were disclosed by Shanghai government. The headline was also straightforward, and there were two parts: the first part listed name of the districts and the places, but no personal information about the confirmed cases was disclosed; the second was a note to tell the public that the close contacts had been quarantined, and the districts and the places had been disinfected. For example, there was one new case on February 25, 2020, and the headline was "Shanghai disclosed the districts and the places that recently confirmed cases on Feb. 25 (0-24 hours) had been to" and in this instance the detail was "Qinpu district: Qinglong village at Baihe town" (see Appendix).

5.5. Press conferences

Press conferences are an important channel for government to directly disclose information, interpretate policies and regulations and respond to the issues that the public care about (Tian & Ouyang, 2020). From January 25, 2020 to April 7, 2020, the Shanghai government held press conferences every day.

Information provided online about press conferences in Shanghai consisted of two subgenres: a bulletin on COVID-19 prevention and control plus the transcription record of the questions and answers component (Q and A). The title of the bulletin was straightforward and included the date and the type of the record. For example, the title of the bulletin on March 16, 2020 was "The bulletin on COVID-19 prevention and control in Shanghai on March 15." The structure of the bulletin consisted of a list of the measures announced in the press conferences that Shanghai government had taken to control and prevent COVID-19. The title of the transcription record of the press conference was also straightforward, for example, the title of the record on March 16, 2020 was "The record of the Q and A of municipal government press conference (March 15, 2020)," and the structure consisted of a list of all questions and responses. The Hubei website did not provide any information about press conferences, even though they had been conducted since January 23, 2020.

In addition, there were the genres of "Report on COVID-19 prevention and control measures" and "Notices on COVID-19 prevention and control" in Shanghai. The former was to report the latest measures taken by Shanghai government, and different colors of fonts and bold fonts were used in the report to highlight key contents; the latter was to publicize the notices issued by Shanghai Health Commission on COVID-19 prevention and control.

6. Discussion

The genres used by the two provincial governments provide insight into the information cultures of the two governments.

6.1. Characteristics of government information culture

According to the framework proposed by Zheng (2005), information literacy, information freedom, and information norms are discussed in turn.

6.1.1. Information literacy

Information literacy here refers to the capability of government to acquire, process, and provide information to meet the public's needs. When an emergency takes place, especially when the emergency is totally new to the public, the public usually need to know what the emergency is, what they should do, and how the government deals with the emergency. These public information needs are mutually related. The survey conducted of public access to COVID-19 information in China in August 2020 (Oliver et al., 2021) also found that the COVID-19 information needed by the public consisted of: (1) information about COVID-19, including "what is COVID-19," "how to prevent COVID-19";

(2) information about the current situation, including "what is the current situation in the place where I live," "what has the government done to prevent and control COVID-19," and "what effects the measures have had." The information provided by the Shanghai government as represented by the genre set demonstrates that the Shanghai government identified the public's need and met the needs by providing more genres of information. COVID-19 prevention and control guidance is meant to meet the first public's information need, and the other genres are mainly to meet the second information need (see Table 3). In contrast, in Hubei, several genres that were present in Shanghai were missing, including those genres that reported press conferences and announced the district and the places that confirmed cases had visited, as well as COVID-19 prevention and control notices, which might restrict the ability of individuals to acquire adequate and complete information.

Moreover, that the structure of the genre "report on the statistics on COVID-19 cases" in Shanghai government changed over time it could better meet the public information needs at different times. The straightforward language of this genre, especially the headline directly highlighting the number of new cases, enabled the public to know the current situation just by reading the headline. Further, using diagrams to show the statistics of cases enhanced the understandability of information. Whereas the structure of the genre "notification on COVID-19 cases" in Hubei government was unchanged, the headline of this genre was stereotype, and the public could know the situation only by reading the full text. The text was descriptive, but there were no images or diagrams to help the public understand the information. So, the Shanghai government can be considered to have a higher level of information literacy than Hubei government.

6.1.2. Information freedom

The Hubei government did not commence disclosing information about COVID-19 until January 21, 2020. In addition, they failed to report the epidemic in the Network Direct Reporting System of Infectious Diseases and Public Health Emergencies which was built after SARS in 2003. The purpose of this system is to allow hospitals all over the country to directly report infectious diseases and public health emergencies to the National Health Commission (NHC) so that effective measures can be taken immediately. Meanwhile, the whistleblowers such as the two doctors Wenliang Li and Feng Ai at Wuhan Centre Hospital were punished for spreading information on COVID-19. This reflects the Chinese traditional bureaucratic culture in Hubei government. On the one hand, the local government attempted to cover up bad news from the central government for fear that it would be thought to be incapable. On the other hand, the local government attempted to maintain social stability by punishing the so-called rumourmongers since social stability is the primary concern for Chinese government. Influenced by this traditional bureaucratic culture, the government tends to keep information secret rather than to actively disclose information, and even if the government is required by laws or regulations to disclose information, it tends to disclose basic information to respond to the requirement. For example, a set of laws and regulations on the openness of the information on public health emergency have been enacted in China including *Law on the protection and treatment of infectious disease*, *Law on response to emergencies*, *Regulations on open government information*, *Regulations on the urgent handling of public health emergencies,* and *National overall emergency plan for public emergencies*, but the laws and the regulations do not stipulate clearly what and how information should be disclosed. As shown in Table 1, seven types of genres were created by Shanghai government, while just two types of genres were created by Hubei government. Though the Hubei government held press conference since January 23, 2020 the information about press conferences was not disclosed online. Moreover, the structure of notification on COVID-19 cases in Hubei was very simple and mainly restricted to overall numbers without any statistics about gender, age, or geographic distribution.

Table 3
The public's information needs and genre sets of the two governments.

The public's information needs	Genre set of Shanghai government	Genre set of Hubei government
Information about COVID-19 Information about current situation	COVID-19 prevention and control guidance Report on the statistics on COVID-19 cases Report on the statistics on cured and discharged cases announcement on the district and the places that confirmed cases had been to report on COVID-19 prevention and control measures press conference notices on COVID-19 prevention and control	COVID-19 prevention and control guidance notification on COVID-19 cases

The Shanghai government adopted new genres and modified existing genres to respond to public information needs. For example, the Shanghai government used the announcement genre to communicate "the districts and the places that confirmed cases had been to" since February 7, 2020. After looking through the citizens' comments in Shanghai Fabu, we found that a lot of citizens asked for this information on Shanghai Fabu before February 7, 2020. Similarly, before Shanghai government used diagrams to illustrate the statistics of COVID-19 cases, some citizens suggested that the government should use diagrams to clearly show the statistics in Shanghai Fabu. There were no comments on Hubei Fabu. The absence of any comments on Hubei Fabu could be attributed to the fact that the citizens' comments were withheld or forbidden by the government, which also indicated the lack of interaction between government and citizens in information openness.

6.1.3. Information norms

The mayor of Wuhan argued that the reason for not disclosing epidemic information at the start of the outbreak of COVID-19 was that according to the *Law on the protection and treatment of infectious diseases* and the *Regulations on the urgent handling of public health emergencies*, it was the National Health Administration's responsibility to disclose information about infectious disease, and when necessary, it could authorize the health administration at the provincial level to disclose the information. So, without authorization, Health Commission of Hubei Province cannot disclose the information, and Wuhan Municipal Government cannot disclose the information. However, according to the *Regulations on the urgent handling of public health emergencies*, the local government shall report the situation in time to the superior administration and the state council, and the local government shall disclose the emergency response plan, early warning, and the measures to handle the situation. In addition, the *Law on response to emergencies* enacted after the 2003 SARS outbreak established the territorial principle which stipulates that the local government takes charge of the disclosure of information about emergencies and their associated responses. This is inconsistent with the *Law on the protection and treatment of infectious diseases*. Given these differences in stipulation between various laws and regulations the onus is on local governments to decide which to follow.

The Wuhan government used the *Law on the protection and treatment of infectious diseases* and the *Regulations on the urgent handling of public health emergencies* as an excuse not to disclose information to the public although they could have issued an early warning and disclosed information in accordance with the *Regulations on the urgent handling of public health emergencies*. Motivation for this decision could be because, influenced by the traditional bureaucratic culture, the information was regarded as directly related to government officials' political careers, and therefore the impact of disclosure on those individuals would be considered. This consideration was likely to have influence in determining the adoption of genres and predominance of the genre consisting

of overall numbers without any diagrammatic aids for interpretation of information disclosed by Hubei government. The structure and the symbolic system of the genre of notification on COVID-19 cases also indicated that that the government disclosed the information mainly to show the central government that they had disclosed the information, rather than to meet the public's information needs for COVID-19.

In addition, as COVID-19 information involves large quantities of personal data, how to balance the right to know and privacy protection was also an important issue for government to deal with when disclosing COVID-19 information, and it is also an issue with which to test the government's ability to process information. In 2019, the Shanghai government enacted the *Temporary regulations on the openness of public data in Shanghai* which recognized the data that could impact personal privacy to be non-open data, but if the non-open data were declassified or were performed through data masking, they could be disclosed. However, no laws or regulations stipulate the use of personal data in emergencies in China. The genre of "announcement on the districts and the places that confirmed cases had been to" adopted by Shanghai government reflects the principle of data minimization in that the structure of this genre is restricted to the name of the districts and the places that recently confirmed cases had visited and did not include any personal information. In other places, including Hubei, which occasionally discloses the movement trajectories of recently confirmed cases since 2021, the personal information of recently confirmed cases including their surname, age, gender, home address was included. The disclosure of this personal information might have negative effects on the individuals concerned. It was essential for the government to reveal the name of the districts and the places visited so that others can take precautionary measures, but further personal information is unnecessary.

6.2. Typology of government information culture

Based on the analyses of the characteristics of information culture of the two governments, the information culture of the Shanghai government can be described as governance oriented. In this kind of culture, information is regarded as an important tool to actualize good governance which means participation, rule of law, responsiveness, accountability, and transparency (Qudrat-I Elahi, 2009). Governance oriented information culture means that when the government discloses information, they take citizens' information needs into account and select the genres most appropriate for the dissemination of that information, and modify the genre(s) or adopt new genre(s) to respond to the public's information needs and the new situations. As the process becomes institutional practice, the information culture can be reaffirmed.

By way of contrast, the information culture of Hubei government is government oriented. In this kind of culture, information is regarded as a tool to actualize governmental interest. When the government discloses information, they tend to give priority to governmental interest or government officials' interest, and if the information is regarded to have a detrimental effect on governmental interest, the information would be covered up by the government. There is also a paucity of interactions between government and citizens. This means the government is likely to stick to the information genres that they have been used to and does not attempt to adjust the genres or adopt new genres to meet the public's information needs in epidemics. Hence, though the government in this kind of information culture is disclosing information, the genres that the government adopts cannot meet the public's information needs. Similarly, as the process becomes institutional practice, the information culture will be reaffirmed.

Kuhlthau (1993) depicts information seeking as a series of phases or stages, and states that affective feelings accompany the phases of information seeking. This suggests that if the public can get the information that they need in an emergency, they are more likely to feel satisfied and have trust in the government. Otherwise, they may feel a lack of confidence in the government. The emotional value of SnowNLP of the comments on Shanghai Fubu is 0.678, larger than 0.5, showing that the citizens' general attitude towards the disclosed information was positive. Thus, governance oriented culture is likely to enhance citizens' trust in government and be beneficial for government crisis management and good governance. In comparison, government oriented culture might pose a risk for government in achieving its goals, especially that of building trust between the public and government. If citizens do not trust the government, they are unlikely to cooperate with the government in fighting COVID-19 and they may seek information about the pandemic from other unreliable sources, which could result in social unrest. This finding further verifies the proposition of Porumbescu, Lindeman, Ceka, and Cucciniello (2017) that disclosure of government information is simply not enough to render transparency meaningful. Rather, government must pay careful consideration to how that information is presented to the public (Porumbescu et al., 2017, p.8).

6.3. Limitations and suggestions for future research

This study explored government information culture by investigating the genre set of online government information. Ethnographic field work and more extensive interviews with government employees about how the genres were created and why the genres were adopted or adapted will be needed to further test or modify the findings of this study. Moreover, this research mainly focused on the comparative study of two provincial governments, and more empirical studies will be needed to test and generalize the findings.

7. Conclusions

In this study, rhetorical genre theory was drawn on as a theoretical lens to bring together activities, practices, and communication in order to understand information culture in different local governments. This study empirically demonstrates that government information culture shapes and is shaped by the information genres that the government takes, thus filling the research gap in the relationship between genres and information culture. This study can also provide pragmatic insights for local governments to enhance information disclosure by adopting appropriate genres during emergencies and to cultivate an information culture which is beneficial to enhance citizens' trust in government and for government crisis management and good governance. When disclosing information online, the government should understand the public's information needs and develop genres that will address those needs. Meanwhile, government needs to be responsive to new information needs by modifying existing genres or adopting new genres. The government can use diagrams or other data visualizations to illustrate the information and enhance the understandability of information. In turn, governments might be able to cultivate a governance oriented information culture by actively listening to public information needs and adopting appropriate genres to best meet those needs.

Declaration of Competing Interest

None.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.lisr.2023.101263.

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