Innovation through social media in the public sector: Information and interactions

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ARTICLE INFO

ABSTRACT

This paper conducts a content analysis on the performance of information and interactions in selected Chinese government microblog accounts as innovations in the public sector. In specific, the study examines the quantity, content, stakeholders related, government levels related, timeliness, forms, language styles, sources of message, the use of push, and responses in government accounts. The study finds that a majority of messages in government microblog accounts were posted for self-promotion rather than service delivery. The forms, languages and timeliness of information posted tend to be monotonous, rigid and formal, and the interactions between governments and the public in government microblog accounts were mostly insufficient and preliminary. Furthermore, a longitudinal comparison between data in two sequential years also indicates that government use of microblogs is improved over time. Based on the findings, the paper provides relevant recommendations to governments.

1. Introduction

Microblogging becomes a mainstream internet application and hub of public opinions in China since 2009. General citizens, opinion leaders and traditional media in the country are using microblogging actively as a new channel to receive information, distribute messages and express opinions. By the end of December 2012, the total number of Chinese microblogging users had reached 309 million, representing 54.7% of the total internet users in China (China Internet Network Information Center, 2013). The phenomenon also impels the public sector in China to launch government microblog accounts as innovations to disclose government information and foster interactions between government and citizens. By the end of 2012, the total number of Chinese government microblog accounts has exceeded 176 thousand (China National Academy of Governance, 2012).

This study intends to explore how social media are used by government to disseminate information and interact with citizens by examining the information and interactions in selected Chinese government microblog accounts with content analysis. The research questions focus on: 1) how do governments use microblogs to disseminate information; 2) how do governments use microblogs to interact with citizens; and 3) do governments' approaches of using microblogs change over time?

The paper first reviews the literature of social media in Section 2. Next, in Section 3 the paper elaborates research methods of the study

with regard to research designs and research questions, coding schema development, sample selection, data collection and analysis. Then research findings are illustrated in Sections 4 and 5, followed by discussions and implications in Section 6. The paper ends up with the Conclusions section. The study could extend current knowledge on government innovation through social media and provide practical advices to government microblogging.

2. Literature review

2.1. Social media and its characteristics

Social media has been defined with various perspectives. Some definitions are technology oriented, and some focus on their impacts and what they can enable. Some are more general and some are more specific. According to Hansen, Shneiderman, and Smith (2011), social media is a set of online tools that are designed for and centered around social interactions. In practice, social media serves as a catchall phrase for a conglomeration of web-based technologies and services such as blogs, microblogs (i.e., Twitter), social sharing services (e.g., YouTube, Flickr, StumbleUpon, Last.fm), text messaging, discussion forums, collaborative editing tools (e.g., wikis), virtual worlds (e.g., Second Life), and social networking services (e.g. Facebook, MySpace). Kaplan and Haenlein (2010)define social media as a social structure in which technology puts power in communities, not institutions, as well as a set of open, web-based and user-friendly applications that enable users to network, share data, collaborate and co-produce content.

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Spannerworks (2009) outlines some defining characteristics of social media: 1) participation: social media encourages contributions and feedback from everyone interested, blurring the line between media and audience; 2) openness: most social media services are open to feedback and participation. They encourage voting, comments, and sharing of information with rare barriers to accessing and making use of content; 3) conversation: whereas traditional media is about broadcast, content transmitted or distributed to an audience, social media are better seen as conversational, two-way interaction channels; 4) community: social media allows communities to be formed quickly and communicate effectively around common interests; and 5) connectedness: social media thrives in their connectedness, exploiting hyperlinks and combining different kinds of media in one place.

Among various social media tools, microblogging is a broadcast medium in the form of blogging and is a network community based on huge grassroots net-users. It differs from traditional blog in its content that is typically smaller in both actual and aggregate file sizes, and allows users to exchange small elements of content such as short sentences, individual images, or video links (Wikipedia, 2013a). Twitter, so far the most influential microblogging platform worldwide, is "an online social networking and microblogging service that enables users to send and read "tweets", which are text messages limited to 140 characters" (Wikipedia, 2013b).

In sum, the abovementioned definitions emphasize two fundamental features of social media. One is disseminating information produced by users to others, and the other is fostering interactions among users for the sake of conversation, connecting, participation and collaboration.

2.2. Potentials for government of social media

The potentials for government use of social media have been raised and discussed repeatedly in recent literature. Bertot, Jaeger, and Grimes (2010) argue that the combination of e-government, social media, web-enabled technologies, mobile technologies, transparency policy initiatives, and citizen desire for open and transparent government is fomenting a new age of opportunity and social media has great potential to extend government services, solicit new ideas, and improve decision-making and problem-solving (Bertot, Jaeger, & Hansen, 2012). The combination of government reform efforts and the emergence of Web 2.0 social media tools that promote information sharing, integration, and public discourse renewed the emphasis on the ideas that democratic governments should be open, accessible, and transparent to the governed (Dawes, 2010). Center for Technology in Government (2009) summarizes a variety of values of social media for the government: greater competitiveness in employee recruiting, enhanced access for the disabled, creation of virtual communities, instantaneous information sharing, enhanced collaboration, enhanced public safety, information dissemination and exchange, "Coolness" factor, improved training capabilities, cost saving and so on. Sandoval-Almazan and Gil-Garcia (2012) assert that social media has the potential to allow greater communication, participation, and collaboration with citizens. Wigand (2010) suggests that Twitter can help organizations to share essential information with the public effectively and induce the public (the ultimate beneficiaries) to participate in new projects. Picazo-Vela, Gutierrez-Martinez, and Luna-Reyes (2012) point out that government organizations are experimenting with social media to communicate with their constituents and reinvent government–citizen relationships. Moreover, besides the impact of social media use in governments in increasing transparency and participation of citizens in decision-making, Osimo (2008) also mentioned its effect in fostering collaboration between government agencies. Within government areas at all levels from local to federal, social media also allows large scale distributed collaboration, information sharing and creation of collective intelligence (Chun, Shulman, Sandoval, & Hovy, 2010).

Krzmarzick (2012) summarizes five levels of social use in federal government; 1) informed decision making, 2) communicate with citizens and other agencies, 3) internal collaboration, 4) research/information gathering and 5) marketing and promotion. Felten (2010) clarifies the difference between outreach and transparency, in that "outreach means government telling us what it wants us to hear; transparency means giving us the information that we, the citizens, want to get." Golbeck, Grimes, and Rogers (2010) also differentiate transparency from outreach (or self-promotion) by illustrating that "outreach is the practice of promoting and disseminating information and ideas to a specific or general audience. Transparency is the activity of making information free, open, and easily accessible to the public to help ensure accountability."

Overall, according to the literature, the potentials for government use of social media can be categorized into two types: information and interaction. Information means that government could use social media to disseminate information for enhancing government outreach, improving government transparency, and delivering public services. Interaction means that government could use social media to interact with various internal and external stakeholders for promoting citizens' participation in decision-making and improving communication and collaboration between government and citizens as well as among government agencies internally.

2.3. Performance of politicians' use of social media

A number of researches study the performance of politicians' use of social media with regard to information and interactions on their social media accounts. Golbeck et al. (2010) find that legislators in the U.S. are primarily using Twitter to disperse information and to report on their daily activities. These types of information tend not to provide new insights into government or the legislative process or to improve transparency; rather, they are vehicles for self-promotion. Although Twitter is also facilitating direct communication between Congress people and citizens, this is a less popular activity.

Small (2011) conducts a content analysis of the most popular Canadian political microblogging and indicates that informing is the primary function, while political dialog and reporting are rare. Sæbø (2011) examines parliament representatives' Twitter in Norway and finds that the main purpose of parliament representatives' Twitter is to disseminate information to electors, and provide information on ongoing activities to the audience. Sandoval, Matus, and Rogel (2012) investigate how Mexican presidential candidates use Twitter to communicate with citizens by analyzing 618 tweets from the three most important political parties and find that candidates are only sending messages for politicians and not for citizens. Sobaci and Karkin (2013) conduct content analysis to investigate whether Twitter is used by mayors in Turkey to offer better public services. The analysis reveals that Twitter is adopted and used by mayors mostly for the purposes of self-promotion and political marketing in Turkey, rather than for the use of Twitter for transparent, participatory and citizen-oriented public service delivery.

2.4. Performance of government agencies' use of social media

Several studies are carried out in North America to investigate the performance of government agencies' use of social media. While the U.S. federal government agencies are mandated to engage in higher level online interactions to not only become more transparent, but also increase participation and collaboration, Mergel (2013) shows that government is currently focusing mostly on using social media channels to push out information that is recycled from other government communication channels, rather than using them for engagement activities. The study also indicates that government agencies do not desire to create a direct, reciprocated relationship with citizens by following citizens back and have creative conversations online. Mossberger, Wu, and Crawford (2013) examine the use of social networks and other interactive tools in the 75 largest U.S. cities between

2009 and 2011 and further analyze discussion on social networks and interviews. The study finds that one-way "push" strategies predominate, although there are some signs of greater openness toward dialog with citizens. Meijer and Thaens (2013) investigate social media practices in three North-American police departments and show that their social media strategies are widely different. The Boston Police Department developed a 'push strategy'; the Metropolitan Police Department in DC developed a push and pull strategy, and the Toronto Police Service developed a networking strategy. Sandoval-Almazan and Gil-Garcia (2012) conduct a longitudinal review of the 32 state websites in Mexico to study how state governments are using Twitter, and highlight some differences and similarities among state governments.

Similar studies are conducted in European countries as well. Mundy and Umer (2012) select ten UK Borough councils with active accounts in Twitter and analyze local governments' interaction in Twitter with a mixture of social network analysis approaches including text based analysis of tweet contents, analysis of the directionality of the flow of tweets, and the collection of statistics related to re-tweets, individual 'tweeters', followers and those following. The study demonstrates that UK councils are primarily using Twitter as broadcast channels and are not truly engaging with these channels as social platforms. Hofmann, Beverungen, Räckers, and Becker (2013) explore how successfully local governments utilize social media for managing external communication with citizens in Germany. The study analyzes the properties and topics of government posts, conceptualizes success in governments' online communications in terms of the frequency and polarity of citizens' reactions, and evaluates government communication behavior in social media by examining the Facebook sites of German local governments using a multi-method approach. The study finds that the online communication of local governments in Germany is based on disseminating information in a traditional way, without adapting their communication habits to the particular characteristics of social media. Although social media offers potential to overcome the defects of governments' traditional offline communication, this potential is not well-exploited by governments.

In South Korea, Cho and Park (2012) analyze the Twitter activity of the Ministry for Food, Agriculture, Forestry and Fisheries (MFAFF), and indicate the limitations of MFAFF's using of Twitter as a mutual communication channel. Abdelsalam, Reddick, Gamal, and Al-shaar (2013) examine the presence, usage, and effectiveness of Egyptian government social media websites and conclude that they were used mainly to post information, with very little two-way interaction between citizens and government.

2.5. Studies on government agencies' use of microblogging in China

By December 2012, more than 170,000 government microblogging accounts have been launched by government agencies at various levels in China, increasing by 249.51% over the end of 2011. Among them, a majority of government microblogging accounts are run by county-level agencies at 43% followed by city-level agencies at 33%. In terms of government functions, 37% of government microblogging accounts are launched by policy departments, followed by Communist party committees at 12% and propaganda and publicity departments at 11% (China National Academy of Governance, 2012). Wan (2011) also collects and analyzes 584 messages from government microblog accounts in Sina Weibo, the most influential microblogging platform in China, in a particular time period and finds that governments in East China are more positive in developing microblogs than those in West China; the higher the government level, the fewer microblogs exist; the majority of government microblog accounts are run by judicial and police departments.

Several scholars study the performance of Chinese government microblog accounts, and most of these papers are written in Chinese languages and published in journals in China. Wang (2011) compares foreign and Chinese government microblogging and finds that Chinese

government is much more hesitant on launching and developing government microblogging accounts. Several case studies on the impacts of government microblog accounts in emergency responses find that microblogs can improve the efficiency of information sharing and dissemination to the public (Cai, 2010; Yang & Zhang, 2010; Zhang & Zhang, 2010). Dong (2011) asserts that government microblog accounts have important effects on information disclosure, public-service delivery, and responding to citizens' questions.

Zheng and Ren (2012) find a number of issues and problems in Chinese government microblogging such as inconsistent identities, irrelevant information, rigid and inconsistent language styles, low frequency of updates, short active period, and insufficient cross-boundary collaboration. Zheng (2013) further investigates the external drivers and challenges that Chinese government agencies are faced with as well as the internal capabilities of Chinese government agencies in using microblogs. The study concludes that governments' internal capabilities are not adequate in using social media to cope with the changes in external society in the social media age.

2.6. Research gap

According to the literature, many researchers throughout the world have studied how social media are used by governments to disseminate information and interact with citizens. However, their findings may not be generalizable to government microblogging in China, given its unique political, social, economic and cultural context. Meanwhile, most previous studies in China on this topic were conducted without systematic and empirical methods and fail to provide solid evidences on the performance of Chinese government microblog accounts. Therefore, this study attempts to fill up this gap by conducting content analysis on the information and interactions in Chinese government microblog accounts systematically. By studying government use of microblogs in a different international context, the study could extend current knowledge on government use of microblogs and may also have implications for other countries.

3. Research methods

3.1. Research questions and research designs

The paper intends to investigate how social media are used by government to disseminate information and interacting with citizens in China. In specific, research questions of the study comprise of the following:

1) Overall, do Chinese governments use microblogs for disseminating information or fostering interactions?
2) How do Chinese governments use microblogs to disseminate information with regard to the quantity, content, stakeholders and government levels related, timeliness, forms, and languages styles? Do they disseminate information for self-promotion, transparency or service delivery?
3) How do Chinese governments use microblogs to interact with citizens with regard to the sources of messages, use of push and responses?
4) Do Chinese governments' approaches of using microblogs change over time?

The study is composed of three stages. The first stage involves developing data coding schema, the second stage involves selecting microblog accounts and collecting messages from these selected accounts. In the third stage, data analysis is conducted.

3.2. Development of data coding schema

The data coding schema of this study was initially developed based on the literature by identifying relevant facets in literature. The code schema was then improved through pilot coding with a few

government microblog accounts. As the literature review indicates, government use of social media can be categorized into two types: information and interaction. Information refers to disseminating information for enhancing government outreach, improving government transparency, and delivering public services. With regard to information disseminated by government microblog accounts, the quantity, content, timeliness, forms, language styles, stakeholders related, and government levels related to the content were coded. Interaction refers to interacting with various internal and external stakeholders for promoting citizens' participation in decision-making and improving communication and collaboration between government and citizens as well as among government agencies internally. With regard to interactions performed in government microblog accounts, the sources of message, use of push, attitudes of comments, commenter's types, and government responses were examined. The multifaceted coding schema used in the study is demonstrated in Table 1.

3.3. Microblog account selection and data collection methods

Foreign microblogging services like Twitter and Plurk are blocked in China, and Chinese microbloggers use Weibo services instead. Weibo is the Chinese word for "microblogging". The two most popular Weibo services in China are Sina Weibo, launched by SINA Corporation in August 2009 and Tencent Weibo launched by Tencent in April, 2010. Sina Weibo is the most visited Weibo Service in China, which is like hybrids of Twitter and Facebook and employs a format similar to Twitter with key difference in that it is used almost exclusively by Chinese language speakers (Wikipedia, 2013c). Government microblog accounts in this study were selected from Sina Weibo.

The data collection procedure involves two phases. First, ten government microblog accounts in China were selected for study. According to a prior study on government microblogging in China in 2011, when government microblog accounts first emerged, most accounts were opened by county, city and provincial governments, and very rare accounts were launched by central governments. With regard to regional distribution, more accounts were opened by governments in Eastern and Southern regions. With regard to the government functions, police, transportation, and judicial departments are among the most active government agencies in opening and running microblog accounts (Zheng & Ren, 2012). Based on the findings, the study selected ten government microblog accounts from different levels, regions and government functions in order to improve the representativeness and diversity of samples (see Table 2).

Finally, the ten government microblog accounts selected are, "Weibo Yunan", "Weibo Hebei", "Weibo Yinchuan", "Jinshan Communication", "The People's Government of Taoyuan County", "Weibo Ninghai", "Sichuan Transportation", "Civilized Hefei", "The People's Procuratorate of Hubei" and "Peace Southern-Guangdong". Two of these accounts are run by provincial governments, three by provincial government agencies, two by city governments, two by county governments, and one by district government. These microblogs are from the north,

south, east, west and central regions in China respectively. Since longitudinal data in two years were collected, the time continuity of accounts was also taken into consideration in selecting microblog accounts. The ten accounts selected are among the earliest government microblog accounts in China and are still in operation till now.

All messages and interactions during the week of May 30 to June 5 in both 2011 and 2012 were collected by researchers in the ten selected microblog accounts. The week of May 30 to June 5 is selected because in China this is an ordinary period without involving any major festivals or national events. In terms of weather, this season is usually mild and peaceful without occurrence of extreme weathers such as storm, typhoon, flood or hot days. Therefore, this week could serve as an ideal period to study the daily performance of government microblog accounts in China. Data were manually collected by two researchers. In the end, altogether 446 messages were collected from the ten selected government microblog accounts. Among them, 206 are from the selected week in 2011, and 240 from the same week in 2012.

Furthermore, as a supplement of the study on the ten government microblog accounts, data from "Shanghai Announcement", the most influential government microblog accounts in China according to Sina Weibo's ranking, were also collected to study the ratio of messages between information and interactions in a relatively much longer time period. All messages in this account from the first day it was launched on November 28, 2011 to April 30, 2012, are collected for study. Although Shanghai Announcement is not among the pioneers of government microblog accounts in China, it is ranked by Sina Weibo as the most influential government microblog account in 2012, due to the influence of the city and the performance of the account. In the end, 3129 messages were collected by researches manually.

3.4. Data analysis

The collected data were coded according to the categories in the coding schema by the two researchers with the approach of content analysis. Data were coded by one of the two researchers first and then double-check by the other researcher to ensure the accuracy and quality of coding. Whenever there are conflicts in coding, the two researchers will discuss to determine the final codes. Coding results are recorded in an excel file.

Next, the coded data were analyzed with quantitative methods. First, data were analyzed with descriptive statistics method to identify distributions and patterns. Cross-tab analysis was then conducted to explore correlations among variables. Data in 2011 and data in 2012 were also compared to investigate the possible changes across two years. SPSS software was used to support the process of data analysis. In the end, tables and figures were developed to demonstrate findings.

4. Findings: descriptive statistics

4.1. Quantity of messages

Among all 446 messages collected from the ten government microblog accounts in the two designated weeks in 2011 and 2012, 206 messages were collected from the week in 2011 and 240 messages were collected from the week in 2012, indicating a slight increase in the total number of messages. The quantity of messages in "Weibo Yinchuan" reaches 60 in data in 2011 and 48 in data in 2012, accounting for 29.1% and 20% of the total respectively. "People's Government of Taoyuan County" contains the least number of messages. Most accounts' activity remains stable in two years. Weibo Hebei makes the biggest progress by jumping from 15 in the week in 2011 to 40 in the week in 2012 in terms of the quantity of massages, while the activity of Sichuan Transportation drops dramatically from 25 messages in the week in 2011 to 7 messages only in the week in 2012. The activities of "the People's Government of Taoyuan County" account remain very low in both years(Table 3).

Table 1
Microblog accounts and characteristics.

Account name	Level	Region	Function
Weibo Yunan	Province	West	General
Weibo Hebei	Province	North	General
The People's Procuratorate of Hubei	Province	Central	Judicial
Sichuan Transportation	Province	West	Transportation
Peace Southern Guangdong	Province	South	Police
Weibo Yinchuan	City	West	General
Civilized Hefei	City	East	General
Jinshan Communication	District	East	General
The People's Government of Taoyuan County	County	North	General
Weibo Ninghai	County	East	General

Table 2
Multifaceted coding schema.

Categories	Facets	Codes
Information	Quantity	The total number of messages posted within 7 days of observations
	Content	Government internal activities; public services; social news
	Stakeholders related to the content	Government; enterprise; social organizations; media; general society; individuals
	Government levels related to the content	Higher jurisdictions, governments and departments; local jurisdictions, governments and departments; jurisdictions, governments and departments in other regions at the same level; lower jurisdictions, governments and departments; generic levels
	Timeliness	Routine message; emergency message; live message
	Forms	Text; picture; music; video; links; cartoon
	Language styles	Formality and humanity
Interactions	Forwarding	Self-initiated message; messages forwarded with comments; messages forwarded without comments
	Push	Yes or no. It refers to whether government accounts use symbol of @ to push a message to one or several specific individual(s) or institution(s).
	Response	Yes or no. It refers to whether government accounts response to comments posted by citizens and other stakeholders.

4.2. Information vs. interaction

The study first categorizes messages into two major types: information and interactions. Information refers to one-way information dissemination, while interactions refer to two-way communication, collaboration and participation such as answering inquiries, raising questions, making comments, collecting advices and calling for participation.

The study on messages in ten selected microblog accounts indicates that only 16% and 7% of total messages fall into the category of "interaction" in data in 2011 and 2012 respectively, and the study on 3129 messages in "Shanghai Announcement" also suggests that only 11% of messages involve interactions. As a tool designed for and centered around social interaction, microblogging could promote two-way conversation, engagement and collaboration between government and citizens. However, the study shows that interaction is used rarely by Chinese government microblog accounts compared to information dissemination(Fig. 1).

4.3. Message content

Message contents are coded with three categories: government internal activities; public services and social news. Government internal activities refer to content related to internal activities of government such as government meetings, event, and leaders' activities. These messages are mostly posted by governments for self-promotion. Public services refer to such information as weather forecast, healthy advices, and transportation status, which are needed by the public. Social news usually broadcasts general events and news happened in society as traditional mass media are doing. This categorization is non-exclusive and one message could be coded into several categories.

The code aims to investigate whether microblogs are used by government for self-promotion, service delivery or general media.

According to the results of analysis, in the designated week in 2011, 42.7% of messages are coded as government internal activities, while 36.9% and 24.3% of messages are coded as social news and public services respectively. Obviously, the function of public services was not paid high attention by government microblog accounts. Even among messages about government internal activities, very few of them are about transparency of governments, instead, a majority of them can be described as self-promotion or propaganda. For example, a message about a leader's activity only broadcasts what the leader wants citizens to listen and follow, rather than what citizens really want to know about the leader. If government microblog accounts are mainly used for promoting government images or broadcasting social news, instead of delivering public services, they may lose citizens' interests in following them.

However, after one year, a significant change is observed. In data in 2012, the category of public services becomes the largest group accounting for 39.8% of the total, followed by the category of social news at 38.4%. Meanwhile, the quantity of government internal activities drops to 22. This may indicate a shift toward more service-oriented use of microblogging by Chinese governments(Fig. 2).

4.4. Stakeholders related

Stakeholders related with the content of each message are coded into government, enterprise, NGO, media, general society and individuals. Some messages may be related to multiple stakeholders and thus be coded with more than one category. This code intends to investigate whether a message is posted by governments for more introversive or extroversive purposes.

The results show that in data in 2011, a majority of messages at 144 are related to governments, and 80 are related to the general society, 22 to individuals, 13 to enterprises, and 10 to media. However, the situation also changed significantly after one year. In data in 2012, messages

Table 3
Quantity of messages.

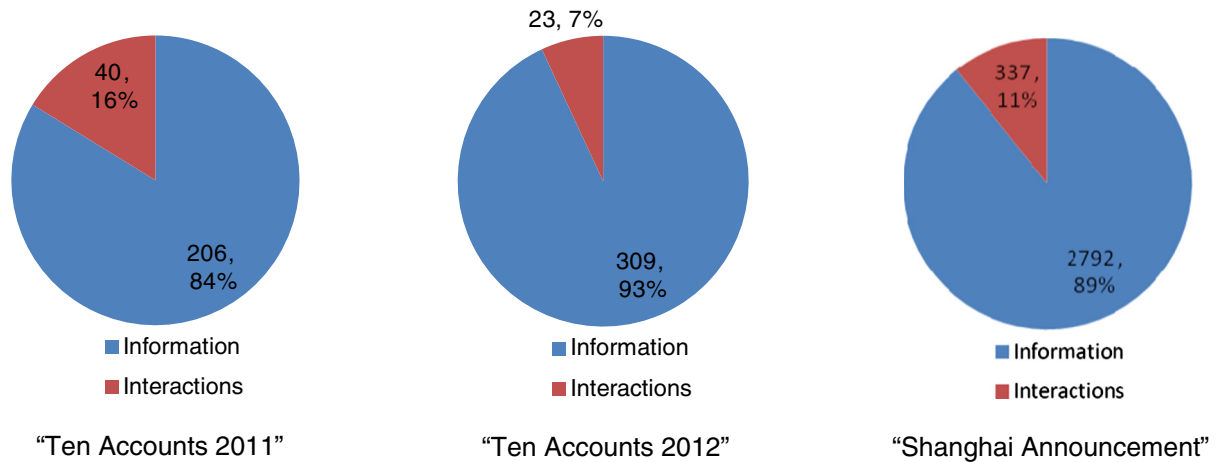| Name	2011		2012	
	Quantity	Percentage	Quantity	Percentage
Weibo Yunan	17	8.3%	22	9.2%
Weibo Hebei	15	7.3%	40	16.7%
The People's Procuratorate of Hubei	14	6.8%	15	6.3%
Sichuan Transportation	25	12.1%	7	2.9%
Peace Southern-Guangdong	29	14.1%	42	17.5%
Weibo Yinchuan	60	29.1%	48	20.0%
Civilized Hefei	13	6.3%	5	2.1%
Jinshan Communication	13	6.3%	29	12.1%
The People's Government of Taoyuan County	2	1.0%	0	0.0%
Weibo Ninghai	18	8.7%	32	13.3%
Total	206	100.0%	240	100.0%

Fig. 1. Information vs. interactions.

related to general society rise up to 210 in quantity and become the largest group followed by messages related to government and individuals. Meanwhile, the quantity of messages related to government drops to 61 in 2012 from 114 in 2011. This figure may suggest that content in Chinese government microblog accounts is gradually moving from an agency-centered approach to a public-oriented perspective(Fig. 3).

4.5. Government levels related

The related government levels of the content of messages are classified into "higher jurisdictions, governments and departments", "local jurisdictions, governments and departments", "jurisdictions, governments and departments in other regions at the same level", "lower jurisdictions, governments and departments" and "generic levels". For example, a message posted in the microblog account of a city government, announcing a new policy approved by the city government, would be coded as "local jurisdictions, governments and departments". However, if the same message was posted by the microblog account of its upper-level provincial government, the message would then be coded as "lower jurisdictions, governments and departments". With this code, this study intends to examine whether messages posted in government microblog accounts are closely related to a specific locality to inform or serve the local.

According to the analysis on data in 2011, 56.8% of messages are related with "local jurisdictions, governments and departments" level, followed by 54 messages related to "lower jurisdictions, governments and departments" level, accounting for 26.2%. Data in 2012 show similar percentages. It indicates that most messages posted are related to specific localities(Fig. 4).

4.6. Timeliness

Timeliness of messages is classified into "routine", "live" and "emergency". "Routine message" refers to messages posted routinely and are not related to any specific dates. For example, massages illustrating government policies or procedures that have been in place for long time fall into this category. "Live message" requires the content of a message to be associated with a specific date of posting. For example, content about a government meeting held or to be held on or around the date when the message is posted can be classified as "live message". "Emergency message" is concerned with unexpected emergencies such as outbreaks of earthquake, floods and typhoon. In general, "live messages" and "emergency message" may indicate a better use of microblogging by governments as a timely and instant channel for information dissemination and interaction.

According to the data collected in data in 2011, most messages fall into the category of "routine message" at 164, accounting for 79.6%, followed by messages in the category of "live message" at 19%. Only 1.5% of messages are in the category of "emergency". However, in data in 2012, the category of live messages becomes the largest group representing 71.7% of the total. It seems that the timeliness of government microblog accounts has been improved gradually by posting more messages related to the dates when messages are posted(Fig. 5).

4.7. Message forms

In terms of forms, messages in microblog accounts are usually composed of text, picture, music, video, link and cartoon. Sometimes, one
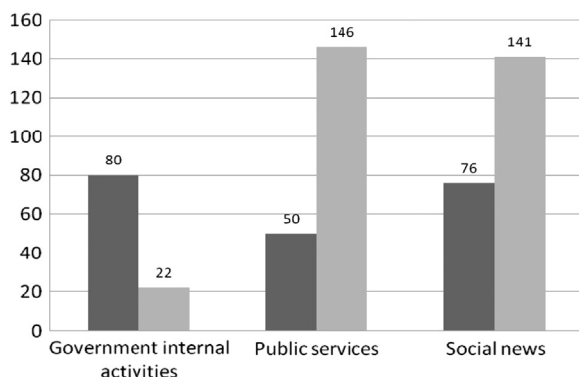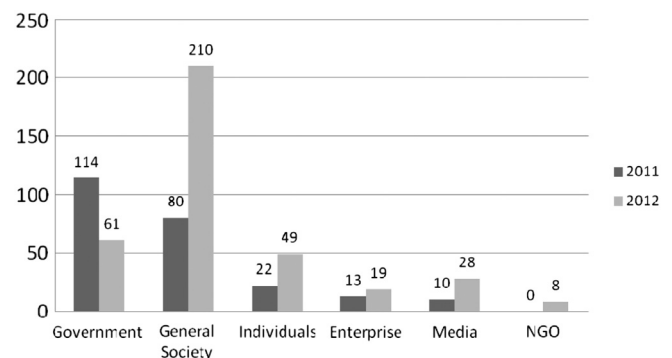

Fig. 2. Message content.
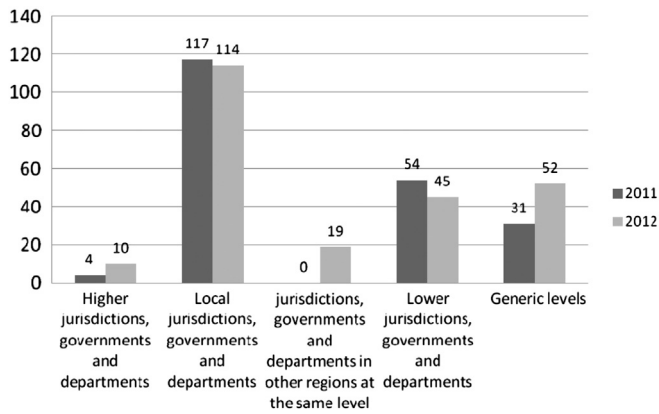

Fig. 3. Stakeholders related.
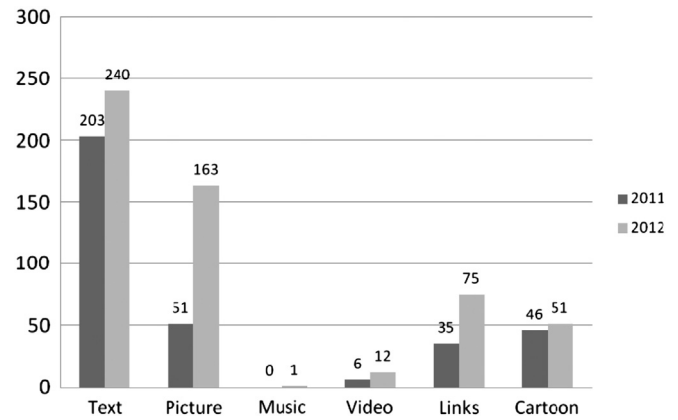
Fig. 4. Government levels related.

Fig. 6. Message forms.

message may combine several forms. In general, more lively and attractive forms instead of plain texts only are more attractive to the audience.

According to the analysis of data in data in 2011, 203 messages contain the form of "text", and the quantities of messages containing the forms of "picture", "cartoon", "link", and "video" are 51, 46, 35, and 6 respectively. No messages employ the form of "music". It seems that "text" is the most commonly used form in government microblog accounts in 2011. However, after one year, in data in 2012, the usage of pictures increases dramatically from 51 in 2011 to 163 in 2012, followed by the usage of links which also rise significantly. It seems that over time government microblog accounts start to employ more varieties of forms to attract audience(Fig. 6).

4.8. Language styles

Language styles of messages are divided into "humanity" and "formality". The former refers to formal, official and rigid language styles, and the latter refers to plain, lively and human expressions. Messages with humanity style usually use spoken languages like "come on!","go!" and "guys" and may make jokes with or even "tease" the audience, while messages with formality style tend to use written languages and big words like "inaugurate", "advance" and "comrades" and would never use funny words. Obviously, humanity style would be easier to understand by the audience than formality style.

According to data analysis, overall a majority of messages in government microblog accounts seem to be formal and official. In data in 2011, messages with "formality" account for 80.6% of the total, while messages with "humanity" style account for 19.4% only. However, after one year in the week in 2012, the percentage of "humanity" goes up to 31%(Fig. 7).
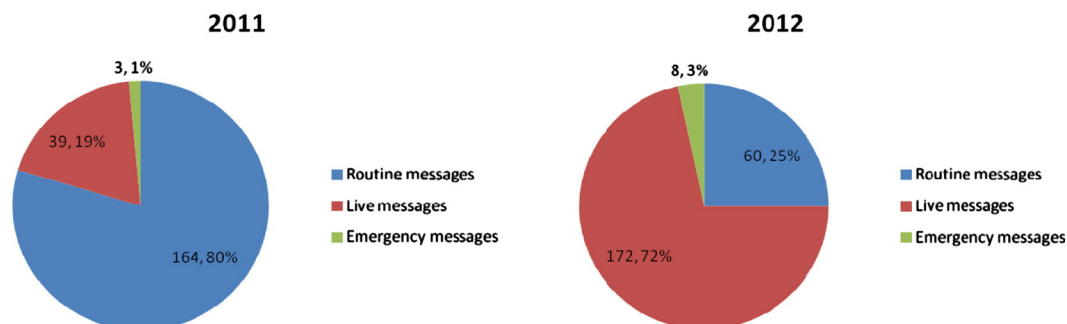
4.9. Forwarding

Sources of message are coded with three categories. "Self-initiated messages" refer to messages drafted and initiated by government microblog accounts themselves; "message forwarded with comments" refer to messages forwarded by government microblog accounts from other microblog accounts with their own comments added; and "messages forwarded without comments" refer to messages forwarded by government microblog accounts from other microblogging accounts without adding any their own comments. In general, the usage of forwarding function can be an indicator of interaction activity in government microblog accounts.

According to the analysis of data in 2011, a majority of messages fall into the category of "self-initiated messages", accounting for 72.8%, while "messages forwarded with comments" and "messages forwarded without comments" are seldom used. Nevertheless, after one year in 2012, the number of messages forwarded either with or without comments increases significantly. It also indicates that although forwarding message from other microblog accounts is not used frequently by government microblog accounts, the situation is improving over time(Fig. 8).

4.10. Push

In microblog accounts, a user can push or copy a message to other users by applying the symbol of "@". Apparently, the usage of this function can foster interactions among users. However, the data analysis shows that only 2 out of 206 messages use this function in the week in 2011. Although the figure goes up to 44 in the week in 2012, overall it suggests that push function is used by governments insufficiently(Fig. 9).
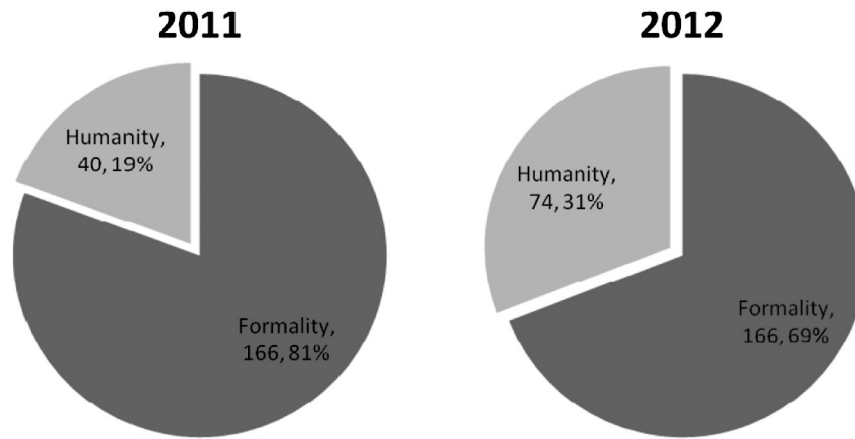

Fig. 5. Timeliness.

2011　　　　　　　　　2012

Fig. 7. Language styles.

4.11. Response

The study also investigates whether governments respond to the questions, criticism and comments from other accounts as an indicator of the level of interactions. Among 206 messages from 2011, 174 of them were commented by readers, accounting for 84.5%. However, responses are observed in only 26% of 174 messages in the data in 2011, while in 2012, the percentage goes even lower to 19%, probably because of the increase in total messages and comments. Overall, it shows that governments seldom respond to other users' comments(Fig. 10).

5. Findings: cross-tab analysis

5.1. Crossed-tab analysis between message content and timeliness

According to the result of crossed-tab analysis between message content and timeliness, in data in 2011, most "routine messages" are associated with "government activities" and "social news", while "live messages" are mostly related with social news and public services. However, in 2012, public services and social news become majorities in all categories and are especially prominent in live messages. A steady progress is made by government microblog accounts(Fig. 11).

5.2. Crossed-tab analysis between message sources and related government levels

According to the crossed-tab analysis between message sources and government levels related, in data from both 2011 and 2012, most "self-initiated messages" are related to "local jurisdictions, governments and departments" than other government levels. This is a good sign indicating that government microblog accounts tend to initiate original messages related to the localities and forward messages related to higher or lower level governments(Fig. 12).

5.3. Crossed-tab analysis between message sources and message content

The crossed-tab analysis between message sources and message content shows that in data from 2011, 81% of "self-initiated messages" are associated with "government activities" and "social news", 56% of "message forwarded with comments" are related with "social news"; and 58% of "messages forwarded without comments" involve "public services". It indicates that in 2011 government microblog accounts tend to initiate messages related to government internal activities and forward messages that are related with social news and public services.

However, according to data in 2012, the majority in the "self-initiated message" category becomes social news followed by the category of "public services", and in categories of messages forwarded both with and without comments, the category of "public services" grow to be the majority. It suggests that government microblog accounts gradually move toward initiating messages related to social news and public services, and forwarding messages related with public services(Fig. 13).

6. Discussions and implications

6.1. Information: self-promotion vs. service delivery

Overall, the study shows that microblogs have provided Chinese governments new channels to disseminate information and deliver public services. However, in earlier days when government microblog accounts were launched, most of the messages were posted for the purpose of self-promotion of governments' images rather than delivering public services to external general public. Analysis on "stakeholders related" also strengthens this conclusion by demonstrating that the quantity of messages related with the government themselves prominently exceeds that of messages related to the external stakeholders such as enterprises, media and individuals.

Nevertheless, the longitudinal comparison in the study also shows that over time government microblog accounts' performance improved dramatically in that most messages were posted for delivering public services and were related with the general public.
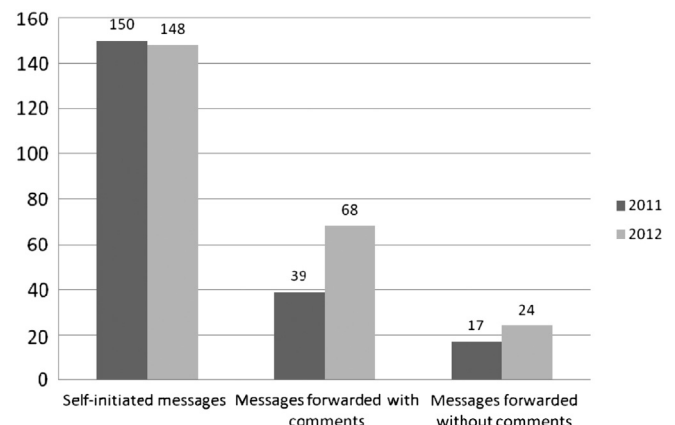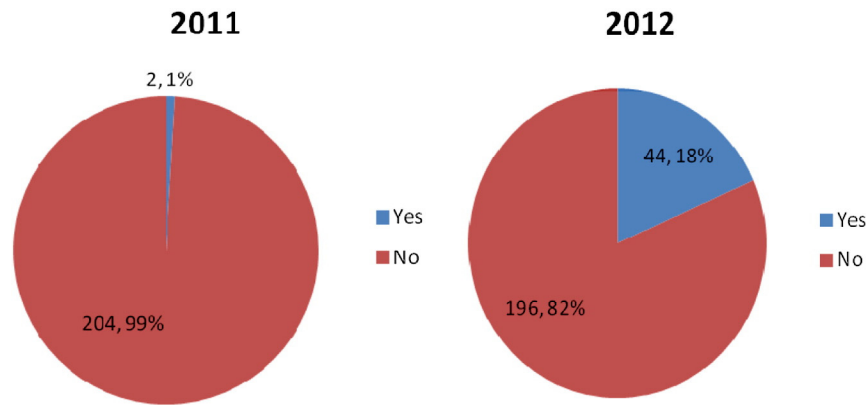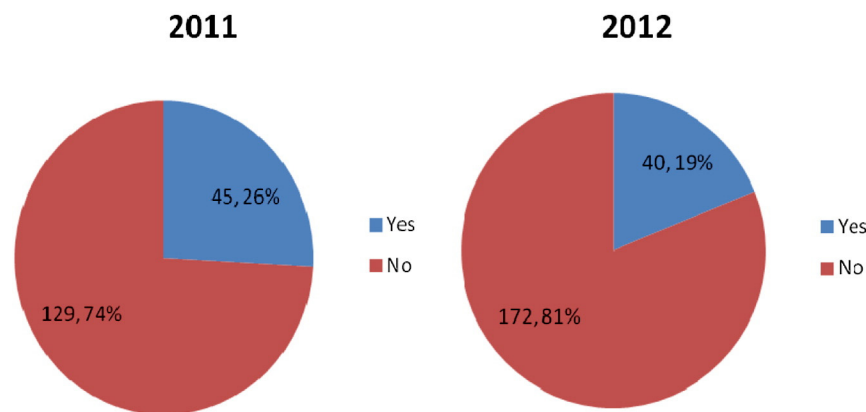

Fig. 8. Forwarding.

Fig. 9. Push.

Fig. 10. Responses.

6.2. Information: forms, language and timeliness

In 2011 most messages were too formal and relied heavily on using "text" form only, and the quantity of routine messages exceeded those of live messages and emergency messages. It seems that many Chinese government microblog accounts were used to disseminate information in the same approaches as those applied by traditional Web 1.0 tools. Government agencies didn't fully take advantage of some of the unique features of microblogs as Web 2.0 tools to inform and interact with citizens actively.

The longitudinal study also shows that both timeliness and forms of messages made great progress in 2012, in that live messages became the majority and the usage of pictures also rocketed. Meanwhile, the language styles of messages were also gradually shifting from formality toward humanity.

6.3. Interactions: forward, push and respond

Although the usage of forwarding and push made a leap in 2012, both are relatively indirect ways of interactions. The usage of response, a more direct way of interaction, seems to shrink over time. It indicates that government microblog accounts tend to avoid interactions with citizens, especially those in direct ways, to stay away from potential "troubles" and "misunderstandings".

6.4. Suggestions and recommendations

While government microblog accounts provide new channels for interactions and communications between governments and the public,
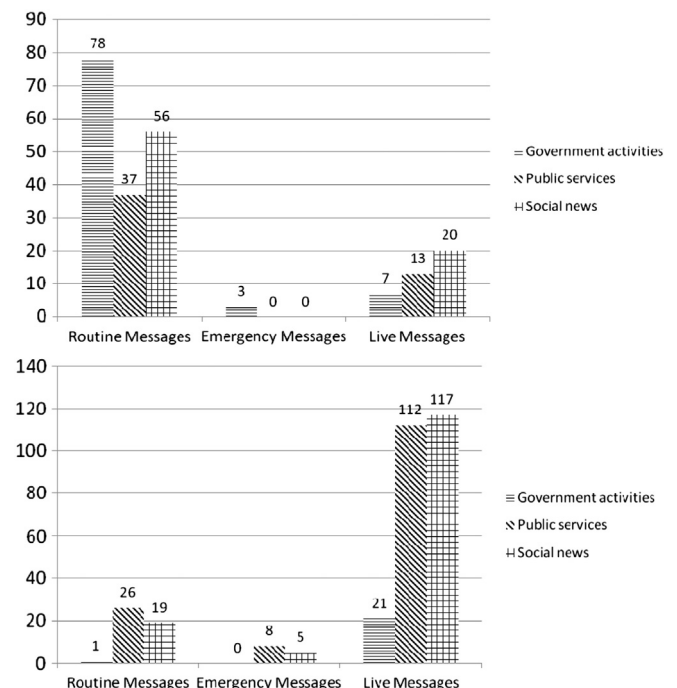

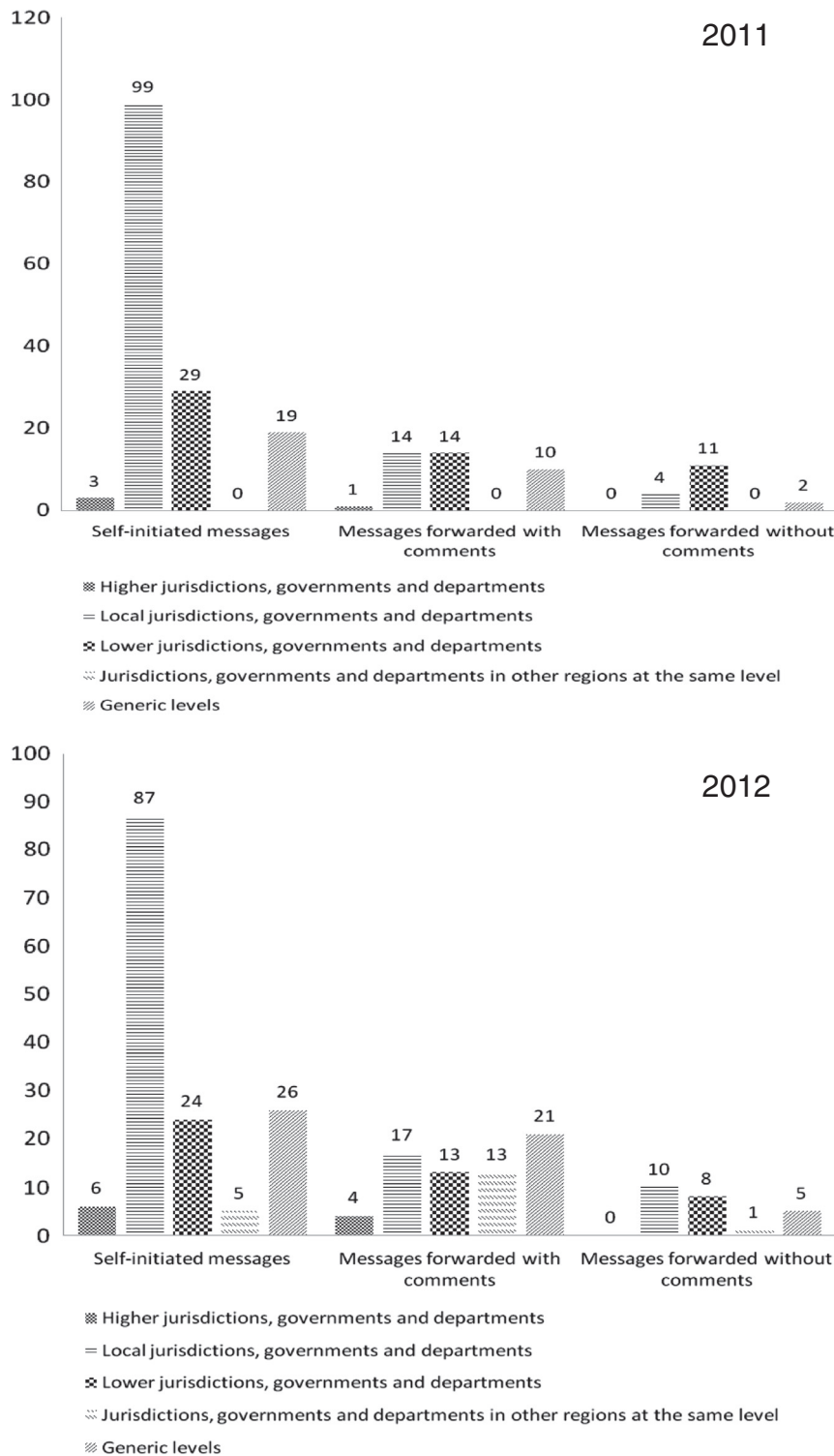**Fig. 11.** Crossed-tab analysis between message content and timeliness.

Fig. 12. Crossed-tab analysis between message sources and related government levels.

the study shows that in practice this Web 2.0 tool is not utilized by governments to facilitate communication and conversation, instead, it is more likely to be used as a Web 1.0 tool to disseminate information only. As a result, microblogs become "mini government websites" or "mini government newspapers".

These findings are in accordance with the results of studies conducted in other countries (Abdelsalam et al., 2013; Cho & Park, 2012; Hofmann et al., 2013; Mergel, 2013; Mundy & Umer, 2012). Given the differences among these countries in their political, social, economic and cultural context, faced with this brand new tool, their performances of using social media do share some similarities. Furthermore, these studies also investigate some new aspects that prior researches missed such as the language styles, stakeholders related, government levels related, and timeliness of content. These findings may have implications for government microblogging in other countries and can be tested in those countries.

The study suggests that government microblog accounts should disseminate more service-oriented information with more vivid forms
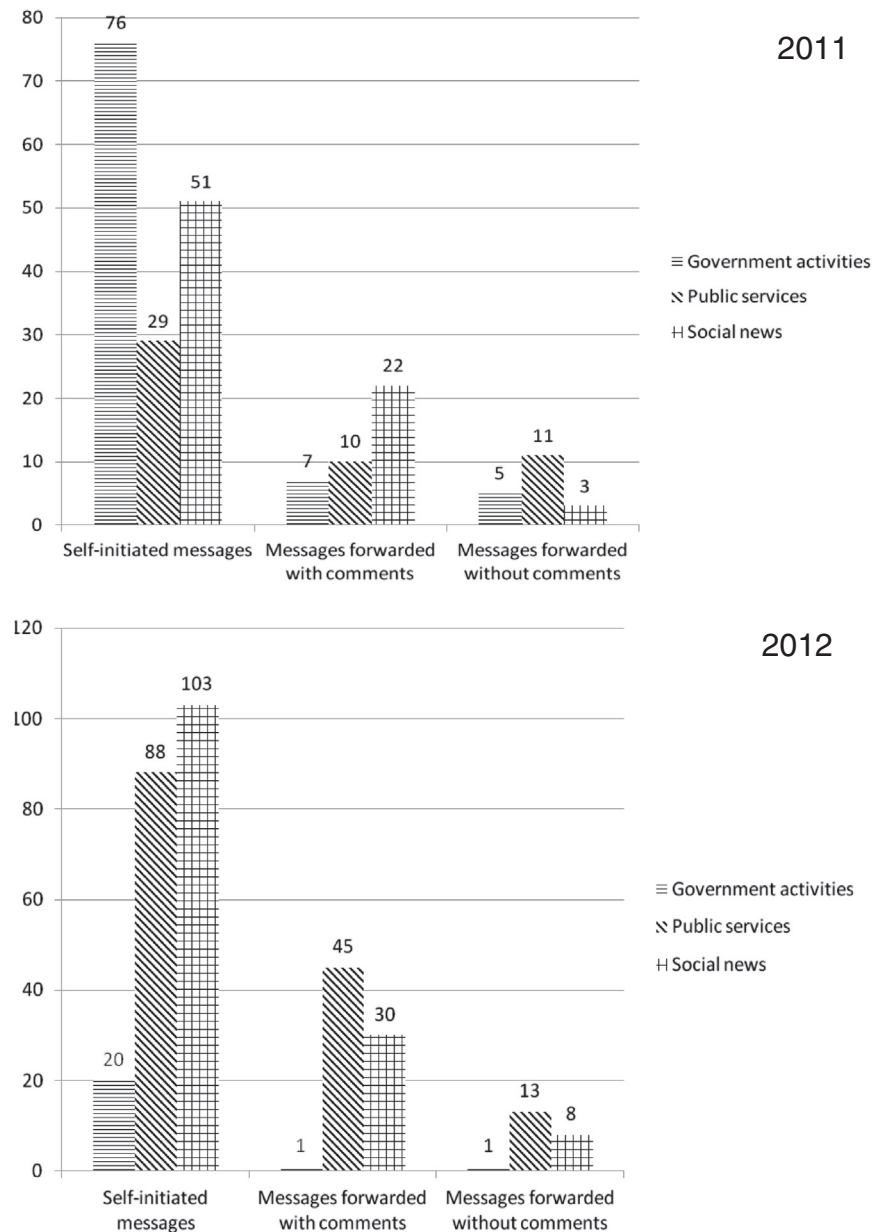
Fig. 13. Crossed-tab analysis between message sources and message contents.

and more friendly languages in a timelier manner. More importantly, in order to fully take advantage of microblogging as a Web 2.0 tool, government microblog accounts should perform more active and meaningful interactions with stakeholders by applying forwarding, push and responding more actively.

7. Conclusions

This paper conducts a content analysis on the performance of information and interactions in selected Chinese government microblog accounts as innovations in the public sector. The study indicates that a majority of messages in government microblog accounts were posted for self-promotion rather than service delivery. The forms, languages and timeliness of information posted tend to be monotonous, rigid and formal, and the interactions between governments and the public in government microblog accounts are mostly insufficient and preliminary and government microblog accounts tent to avoid direct interactions with citizens. Furthermore, a longitudinal comparison between data in two sequential years also indicates that government use of

microblogs is improved over time. Based on the findings, the paper provides relevant recommendations to governments.

One limitation of the paper is that it only selected eleven government microblog accounts for study. Therefore, future research could expand the sample sizes to broaden and deepen the studies on this topic. Future studies could also test the findings in this study to other countries.

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