Risk Society on Facebook during the Outbreak Epidemic in Taiwan

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Abstract

Since the re-outbreak of the covid-19 this year, a large number of emergencies and doubtful messages have been circulating on social platforms. This article focus on how risk society works during the epidemic on social media. To observe whether the government's communication strategies lower people's uncertainty toward the epidemic, we used the social media insight tool "CrowdTangle" to collect data from Facebook pages including "Ministry of Health and Welfare", six mayors from special municipalities, and a well-known bulletin board "PTT Gossiping". This paper process a self-built corpus, containing text data from fan pages mentioned above by using the Chinese independent corpus analysis tool "Corpro". The result shows that although the government did not choose the unsuccessful deficit model to communicate with people, it still failed to lower people's uncertainty due to audience preference shift. The risk communication strategies become more complex in an environment where the audience can reach sufficient information online.

Key word: Risk Society, Uncertainty, Social Media, Data analysis, Corpus-driven analysis.

Introduction

In the past, Taiwan has faced several epidemics such as influenza, dengue fever, enterovirus, SARS, foot-and-mouth disease, H1N1, swine fever, and coronavirus. With the progress of media and information technology, people develop different ways to cope with epidemic information. Therefore, the government worked out corresponding governance to promote pandemic-prevention policies.

Social media has been booming in Taiwan during the past ten years. From YouTube, which focuses on video and audio, to Facebook, Line, which focuses on social interaction and integrates video and audio, all kinds of media content convergence in audience's online media environment due to digitization. Just like Jenkins' description of convergence, since the information travel through different media and audience gain more initiation, the media environment becomes both diverse and convergent (Jenkins, 2006). Under this kind of media development process, the risk information faced by the government, experts, and laypeople are different from the past. There have been numerous research on risk information related to epidemics, food safety, and natural disasters in Taiwan. Researchers found out that we have undermined the authority of experts before the spring up of social media because of news reports, not to mention in the era of information explosion, laypeople can get tons of information or even create information no matter the authenticity, this makes controlling pandemic more challenging in the risk society.

The domain knowledge selected in this article touch on the two main areas, which are "risk society" and "corpus analysis". With the development of media and the Internet, the concept of "technological risk" had become a popular research topic within risk society. Most of the research are discussing about how the government should transmit the expert knowledge when the public deeply rely on Internet information to understand

medical and health information, and how should the government conduct effective risk communication. The corpus-driven analysis is a research approach suitable for analyzing social media corpus because the text on social media is more fluid and complex than linguistic corpus. By establishing the researcher's own corpus and further in-depth analysis, researchers can do a better overview of a text structure from a large number of texts in a more objective way, and it can break through the limitation of artificial codes (Guo, 2015). Within the unique communication environment of social media, this paper attempts to review the past research based on the two main areas mentioned above, and have a dialogue with the current situation of risk communication on social media during the epidemic.

Literature review

Regarding how the government should respond to emergencies or controversial events, researchers often analysis from the perspective of risk society and the communication of scientific knowledge. In Taiwan's context, there are many relevant studies on epidemics and food safety. From these studies, we can see the changing process of the relationship between the government, experts, the media, and the public over the decades. This article will review the literature on the main strategies of risk communication in the risk society and the ways the people face uncertainty, in order to understand what challenges the government is facing, and the people's preference when reducing uncertainty.

The imbalance of deficit model and deliberate model

In the face of scientific and technological disputes, the government mainly uses two models of communication with the public, namely the Deficit model and the

Deliberation model. Deficit model presupposes that people are lack of relevant knowledge. Therefore, this model emphasizes that the function of government and experts is mainly to educate and transfer expert knowledge (Sturgis, Allum, 2004); deliberate model is to merge public opinion and feedback into new policies through public engagement (Leach, et al., 2005). The deliberation model has been adopted in Taiwan in 2002, which is the second-generation health insurance planning project, and several consensus conference were held during 2004 to 2005 (Lin & Chen, 2003). However, the deliberation model in Taiwan is still imperfect. On the one hand, when the government implement the deliberate model, the chief executive has too much influence on administrative procedures in the bureaucratic system, that makes the government still occupied the higher power position (Lin, 2009; Liu, 2009). On the other hand, the process of consensus conference often turns into a stage for some opinion leaders "convincing" other people, rather than a platform for diversity opinions discuss with each other (Chen, 2006).

However, in the face of emergencies, man-made disasters, and epidemics, the government prefers the Deficit model, which transit information unilaterally. Such as the Dioxin-polluted duck eggs incident and the malachite green grouper incident in 2007, most of the information sources were released from the government's scientific data (Chen & Wu, 2011). Even when the Tainted baby formula incident in 2008 happened, the government use the Deficit model, trying to educate the public with experts' knowledge, foreign research data, and experiences, but failed because of losing the opportunity to define the risk (Lee, 2011).

There are two obvious shortcomings of the lack model. One is to define what people need to know too arbitrarily, and the other is too hastily to presume that people who have scientific knowledge will surely accept scientific results. These two shortcomings are more prominent in an environment where social media is highly

developed. During the Covid-19 epidemic, it is impossible to define what people need to know, and the academia have not yet clear release any scientific results, the third "contextual model" is more in line at this time. This model believes that when people receive information, they will use past personal experience, background information, and cultural context for cognition (Huang, 2017). In today's media environment, since the information environment of each person is different, the audiences cannot deal with the overwhelming sources of information, so they will selectively expose themselves to the information they prefer. In addition, people can speak and discuss freely on the Internet, and the public opinion formed is enough to spill back into the mainstream media and even influence government decision-making. Neither the deficit model nor the deliberate model is applicable anymore.

How people lower their uncertainty

The "uncertainty" in the risk society is an important element in Science, Technology and Social research (STS). Many scholars have defined and classified the uncertainty in detail ways (Lee & Chen, 2020). For example, reviewing from the perspective of STS research, Wynne (2002) believes that risk in the uncertainty can be divided into seven types- including risk, uncertainty, ignorance, indeterminacy, complexity, disagreement, and ambiguity. Miles and Frewer (2003) believe that STS research should base on seven aspects of observation uncertainty, including affected persons, time, measurement, scientific argumentation, and animal measurement results in human risk assessment, risk's scale, and how to deal and reduce risks. According to the perspectives of two postmodernists- Focault and Lyotard, scholars in Taiwan pointed out that what risks can experts and technology will create when they facing uncertainty (Chou, 2005). With the development of technology, government agencies and experts also have to face different uncertainty, however, people's behavior is

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completely different when they facing "uncertainty".

There has been research on people's behavior in dealing with uncertainty since 1985. The research found that people did not like to receive "contrastive" information in scientific data and preferred simple, dichotomous, and absolute answers (Fischhoff, 1985). However, the following research also found that if the government releases an absolute statement, the public would be skeptical again (Frewer et al., 2002). With the development of communication technology, the public has changed from a listener who unilaterally receives uncertain information to one of the sources of information. Therefore, the information received by the public is not limited to the government and experts. When the public have the ability to access the Internet, experts and government's authority of defined risks is also challenged (Nucci & Kubery, 2007), therefore, what kind of risks that society faces is constructed by the government, experts, and the people.

What kind of information that people want to receive? Past studies have also tried to summarize. Taiwanese scholars have compiled related foreign studies and pointed out that risk receivers hope to get advice and answers, numbers to select and judgment, finally yet importantly, process and framing (Young & Hsu, 2010). It shows that people do not want to know the correct information or scientific evidence, but want to have enough information so they can have choices in judgment and decision-making (Miles & Frewer, 2003). In addition, when people face crises or risks, they usually regard risk as a combination of hazard and anger (Sander, 2012). People pay less attention to scientific knowledge, but pay more attention to the emotional uncertainty (Lee & Chen, 2020). This shows when people facing risks and crises, the information that people want to obtain is no longer consistent with the information provided by the "deficit mode" or "deliberation mode".

What are people's concerns at the huge development of social media nowadays? Trench (2007) pointed out that when risk or scientific information spreading on the

Internet, it is easy to make the information confused and difficult to identify, but its chaotic nature reflects the information loopholes encountered by society when facing risks. This article attempts to analyze the information about the epidemic on social media through a self-built corpus, to piece together issues that the public cares about but the government or experts have not paid attention to. Based on the above-mentioned literature, this study raises the following research questions:

1. How do the central and local governments discourse the epidemic?

2. What causes the uncertainty from the public about the epidemic information?

Research Methods

Data Collection and Analysis Tools

This article uses Facebook's public content data insight tool "CrowdTangle" to collect 8 different Facebook fan pages' posts. The first Corpus is the Ministry of Health and Welfare's Facebook fan page, which represent the Central Government. The second corpus contain the Mayor of six municipality's fan pages, which representing the local government. The last corpus is gather from "PTT Gossiping", which representing the public. Data were collected from 11 May 2021, the second outbreak of Covid-19 in Taiwan to 30 August 2021. The three main corpus contains 1080 posts. To process these data, I used the Chinese independent corpus analysis tool "CORPRO" to observe word frequency and word collocation, observing which of the model mentioned before that government prefer, and what causes people's uncertainty.

Table1

Corpus Representative	Fan Page's name	Articles Posted
Central Government	Ministry of Health and Welfare	314
Local Government	Mayor of Taipei City (Opposition Party)	77
	Mayor of New Taipei City (Opposition Party)	140
	Mayor of Taichung City (Opposition Party)	70
	Mayor of Taoyuan City (Ruling Party)	85
	Mayor of Tainan City (Ruling Party)	61
	Mayor of Kaohsiung City (Ruling Party)	37
Public	PTT	296

Research Approach

Corpus-driven analysis is a research approach suitable for processing social media corpus. Since the text on social media is more fluid and complex, using self-build corpus and further in depth analysis can help researchers to review the discourse structure of a large number of texts in a more objective way. In addition, this method can break through the limitation of artificial codes; make it possible to see a more holistic appearance of the text (Kuo, 2015). The text analysis tool used in this research is Chinese independent corpus analysis tool "CORPRO". Most text analysis tools mainly deal with English corpus in the past, CORPRO uses Chinese word segmentation system to help researcher processing Chinese corpus (Que & Chen, 2016). In this study, I removed some prepositions, pronouns and function words that do not have analyzable meaning, such as "的"(which means "of"), "了"(past tense marker), "在"(which means "in"). Moreover, since most of the corpus tools use the CKIP word segmentation system

created by Academia Sinica, some words are not in the common word segmentation database, such as emerging words "境外移入"(overseas immigration) or "新冠肺炎"(Covid-19), so it's necessary to develop "Researcher's Dictionary".

Results and discussion

After cleaning and organize the raw data, we can see the corpus structure thoroughly. First, we can see the word frequencies below (Table 2). By observing word frequencies, you can accurately observe the appearance of a large amount of text.

Table 2

order	Word	Chinese	Freq.
1	Case	個案	758
2	Press conference	記者會	719
3	Diagnosed	確診	677
4	epidemic prevention	防疫	541
5	staff	人員	506
6	live streaming	直播	502
7	Add	新增	455
8	local	本土	453
9	Command center	指揮中心	431
10	Film	影片	423
11	Case	病例	416
12	quarantine	檢疫	414
13	Taiwan	臺灣	398
14	Ministry of Health and Welfare	衛福部	393
15	vaccine	疫苗	385
16	Abroad	境外	377
17	Move-in	移入	374
18	epidemic	疫情	363
19	die	死亡	354
20	Infect	感染	336
21	self-isolation	隔離	319
22	Vaccination	接種	288

23	male	男性	279
24	specimen collection and testing	採檢	273
25	Grand total	累計	271

Due to the huge amount of data, this study takes the top 25 word frequencies for observation. From the corpus structure displayed by word frequency, we can see the information outline released by the central government after the second outbreak of the epidemic. Most of the information focuses on the progress of the epidemic and the situation of the individual cases. There is no mention of scientific information about the epidemic or related information on epidemic prevention.

After the central government, this paper divided the local government posts into the ruling party and the opposition party for observation:

Table3

ruling party			opposition party		
Word	Chinese	Freq.	Word	Chinese	Freq.
epidemic prevention	防疫	583	epidemic prevention	防疫	505
epidemic	疫情	348	epidemic	疫情	420
Taoyuan	桃園	300	New Taipei City	新北市	384
vaccine	疫苗	244	Confirmed	確診	182
friend	朋友	200	New Taipei	新北	168
Citizen	市民	186	vaccine	疫苗	167
Vaccination	施打	167	Citizen	市民	165
City Hall	市府	157	friend	朋友	144
Taiwan	台灣	136	Hou Youyi	侯友宜	136
grateful	感謝	128	report	報告	120
Community	社區	117	screening	篩檢	120
Colleagues	同仁	114	vaccination	施打	118
Work	工作	113	rapid test	快篩	97
staff	人員	110	action	行動	95
Case	個案	108	people	民眾	94
specimen collection and testing	採檢	103	Virus	病毒	94

Hospital	醫院	103	Level 3 epidemic alert	三級警戒	94
Confirmed	確診	101	Hospital	醫院	90
Epidemic	疫調	98	service	服務	89
Kaohsiung	高雄	96	measure	措施	88
Vaccination	接種	94	grateful	感謝	87
protect	保護	93	time	時間	85
disinfect	消毒	93	Governance	治理	85
Finish	完成	92	situation	狀況	82
Tainan	台南	89	Guidelines	準則	81

From the corpus of the opposition party and the ruling party, this research did not observed significant difference. Only Taipei city and the New Taipei city, where the two opposition party is in power, is a more severely affected area, so "rapid test" and "confirmed" have been mentioned more times than other region. In addition, both the ruling and the opposition parties preferred reporting confirmed cases, thanking healthcare professionals, and reporting on the epidemic prevention measures. So far, most of the information related to the epidemic is not scientific data or research results, but more like a report on the current situation of epidemic prevention.

However, in order to understand the source of people's uncertainty, this article has established an "uncertainty dictionary", which includes questionable words such as "不知道"(don't know), "問卦"(asked), "假如"(if), "要是"(what if), etc., and observe and Uncertainty dictionary's T-score of collocate vocabulary. CORPRO will only display words with significant T-scores. If the T-score reaches a significant level, it means that the two vocabularies in the original text shows up together more prominently than other vocabularies (Guo, 2015). This study also extracted the top 25 collocation words to observe which topic causes people's uncertainty, and the results are as follows (see Table 4 below for details):

Table 4

Chinese	Word	t-score

Net Army	網軍	3.50368
not support	不支持	3.17142
public	大眾	3.17142
Amount	金額	3.17142
people	人民	3.12133
DPP	DPP	3.02108
think	思考	2.96698
Kaohsiung	高雄	2.96644
Spread rumors	造謠	2.95363
Deliberately	刻意	2.8366
view	看法	2.8366
reckless	硬幹	2.8366
Green-communist	綠共	2.8366
SJW	覺青	2.8366
government	政府	2.71955
publicity stunt	作秀	2.68412
India	印度	2.68412
Out of context	斷章取義	2.68412
decision making	決策	2.68412
joke	開玩笑	2.68412
control	管制	2.64929
touch	接觸	2.46893
covid	covid	2.45657
Fxxk your mother	幹你娘	2.45657
shirk	推卸	2.45657

The results shows that the most important factor causing public uncertainty is the "cyber army." The second is the questioning of the government and the ruling party, as well as some venting of anger over uncertainty. Neither the ruling nor the opposition has published any relevant discussion on the uncertainty of the people.

Discussion

Corresponding literature review on the government's strategy in risk

communication and the people's behavior to reduce uncertainty, this paper observe some results that are different from previous studies:

The government's communication strategy: Defining the crisis but not mentioning scientific information

In the past, the literature pointed out that the government often adopted the "deficiency model", but from the results of this study, we can see that the government did not adopt the "deficit model" that focused on educational scientific knowledge. In addition, the previous article mentioned, for example, the tainted milk powder incident. The government missed the opportunity to define the crisis. From the results of this study, we can see that the government defined the epidemic as the risk of "overseas migration" in its public statements after the second outbreak. We can also see many updates the current situation of the epidemic coupled with the announcement of the government's epidemic prevention policy. Therefore, judging from the text obtained, the government has not copied the less successful strategies in the past. However, because the focus of public attention is very different from the scope of risk society research in the past, there is still a large gap in information when disseminating risk information.

The core care of the people is different from the past

In the past, the literature pointed out that the public did not prefer scientific results. This study found the data obtained incompletely consistent from previous research. The topic of most concern to the public "cyber army" is indeed not scientific information related to the epidemic. However, the development and efficacy of domestic vaccines are still popular. However, in general, the main cause of uncertainty comes from distrust of the ruling party. This makes the government face more challenges in risk

communication, because in addition to the skillful transmission of information on the epidemic itself, it also faces the challenge of political party image propaganda.

Conclusion and suggestions for future research

Since we know that with the difference in time and space, both the government's communication strategy and the people's behavior to reduce uncertainty are different from those recorded in the literature. In the era of information explosion, it is no longer possible to reduce public uncertainty through open and transparent information. On the one hand, people's preferences are different from the past, and on the other hand, the government must simultaneously carry out risk communication and face the doubts of the opposition and the public.

The research method of this article collects the social media corpus of the ruling party and the opposition party. Although we cannot observe the wrestling between the ruling party and the opposition party in the news media, there is no way to observe the difference from the text I collected. If researchers want to deepen their topic, they may need to use content analysis to present the whole picture more clearly. In addition, it can also continue to deepen two important roles in a risk society, which are "experts" and "mass media" that are not covered in this article. Many "experts" and "quasi-experts" have appeared in front of the screen during the epidemic, but their information is difficult to collect because they are scattered in various kinds of news reports and media.

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