

Fake News on Social Media during the Covid-19: The Impact on Public Relations in China

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Abstract

The study aimed to develop and test the hypothesis about impact of fake news on public relations. A total of 404 subjects were sampled using purposive sampling method. Descriptive statistics is used to count the demographic characteristics. The reliability of collected data were initially tested with Cronbach's alpha. Further, factor analysis was performed to extract desired information from designed questionnaire. Descriptive statistics shows that out of 404 respondents, 55.5% were female and 44.5% were male. Value of Cronbach's alpha indicated the reliability of internal consistency for 5-point Likert scale ($\alpha = 0.933$). Results of factor analysis supported the one-factor structure which explain up to 52.469% of the total variance, and the associated items had a lambda factor loading ranging from 0.522 to 1.016. High value of eigenvalue i.e. 10.891 confirmed the robustness of factor generated. The fake news on social media during Covid-19 had affect the public relations in China to a great extent.

Keywords: Fake news, Factor analysis, Covid-19, Public relation and Respondent.

Introduction

The rapid evolving social media has made it easier than ever to connect people around the globe and share news stories instantly, but it has also made it much easier to spread misinformation, or fake news, to those people as well. (Kaplan and Haenlein, 2010.) Observing the effects of fake news in China during COVID-19, researchers can see that fake news not only has a negative effect on Public Relations (PR) practitioners but also has a long-term effect on businesses and their reputation. In other words, as news spreads more quickly and easily through social media like WeChatt, Sina Weibo, DouYin and NextMedia. Clickbait which has become a dominant form of disseminating false news just to gull the reader to click on link also effected PR during COVID-19 by creating a hype like as "New COVID Variants Not Leading To Hospitalization or Death", "New Covid 'Ninja' Variant May Be Deadliest Yet", "Brace for highly contagious new COVID-19 variant that can re-infect". (Mishra et al., 2022). People get scared and lost their trust on each other. (Sukmono, 2021 and Mishra., et al., 2022).

Fake news has gradually grown to be a significant issue that PR professionals must consider. In light of theories, particularly Constructivism and the English School approaches,

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light will be shed on types of fake news as well as the consequences of fake news on public relations. Additionally, one case from China will be discussed to see how these impacts are playing out in the real world.

During the COVID-19 epidemic, social media immediately circulated false information about the virus and its impact on China. This had a bad effect on public relations in China, as the issue was misrepresented. In addition to causing anxiety and uncertainty among the general people, the proliferation of bogus news also induced fear. To fight this issue, the Chinese government has taken many steps to prevent the dissemination of false information. These tactics included establishing a 24-hour hotline for public opinion polls that monitored all types of communication, including TV broadcasts, chat rooms, blogs, and Weibo (a micro blogging site similar to twitter). They even established over 300 local rumor control offices across the nation, which disseminated accurate information via posters, pamphlets, and online posts. The authorities also prohibited sensationalist reporting and instructed state-run news companies to only publish updates after official verification. However, these attempts may not have been sufficient, since many false reports continue to circulate on social media today. (Banerjee and Meena, 2021).

When the COVID-19 outbreak began, there was widespread misinformation and misleading news on social media. This had a significant impact on China's public relations, as many were uncertain of what to believe. During this time period, the government published requirements for correct information. Aware of the need of accurate information, several businesses took the initiative to provide it themselves by running advertisements through their social media channels and ensuring that all commercials ran across platforms featured accurate information. Others utilized media releases or interviews with spokespersons to disseminate safety tips at COVID-19. Nonetheless, other businesses did not take any action. (Van Der Linden, Roozenbeek, and Compton, 2020)

Fake news has proliferated at an alarming rate on social media during the COVID-19 outbreak in China. This has had a bad influence on China's public relations. People have panicked and acted irrationally as a result of fake news articles. They have also fostered public distrust of the government. To address this issue, it was critical for Chinese public relations professionals to be aware of the fake news stories spreading on social media. They should also be prepared to respond swiftly and effectively to any emerging false news stories. During COVID-19, for example, one method of combating fake news was to share articles containing medical advice online. These articles were authored by infectious disease experts. When faced with false information on social media during the pandemic, it was critical not to believe everything. Because there are many false news websites waiting for such an occasion, it was necessary to evaluate sources before presenting something as factual or reputable. (Dang, 2021)

China's public relations have been generally unfavourable during COVID-19. The growth of fake news on social media has reduced trust and confidence in the government's ability to deal with the pandemic. As a result, public support for the government's response to the pandemic has dwindled. Furthermore, the detrimental impact of fake news on social media has increased negative opinion toward Chinese enterprises. The general public is no longer trust in how advertisers use their personal information or how their private data will be treated if it is compromised. It also reduced friends' desire to share photos, personal stories, or secrets with them via social media networks. These combined impacts may lead to lower company and customer loyalty as well as increased distrust between individuals and governments. During COVID-19, the spread of fake news on social media presented issues that extended beyond advertising, sales, and marketing. (Liu, Shahab, and Hoque, 2022)

During COVID-19, the dissemination of fake news on social media has negatively impacted China's public relations. The Chinese government has responded by attempting to restrict information dissemination and increase transparency. Despite these attempts, though, bogus news continues to proliferate on social media. This has produced uncertainty and worry among the public and hindered the government's ability to communicate effectively with its constituents. As a result, the government has increased its efforts to increase awareness of the disease and provide clear instructions on how to keep safe. In addition, they have begun attempts to educate people about what is true and what is phoney on social media, so that they can distinguish between the two before sharing them. In addition, they collaborate closely with internet companies such as Tencent and Weibo that are utilizing their own techniques to address this issue. (Ahmad and Murad, 2020).

Scope of the Research

As the global spread of the COVID-19 pandemic proceeds, so does the transmission of false information regarding the virus. This has significantly affected public relations in China, where the outbreak originated (Gong, 2020). The goal of this study is to evaluate how fake news regarding COVID-19 has affected public relations in China and to provide potential countermeasures against its dissemination. This study will primarily examine the spread of bogus news on social media platforms like WeChat and Weibo. In order to avoid external involvement in our study process, we are restricting our review to instances submitted by Chinese government agencies or universities.

Statement of the Problem

There has been a rise in bogus news on social media during COVID-19. This has had a bad influence on China's public relations. Fake news can cause distrust and perplexity. It also led to people making poor decisions with potentially disastrous effects. This problem is compounded by social media platforms' failure to do more to prevent the spread of incorrect information. As a result, many people are left perplexed and unsure about what to believe. Legislation and rule execution in China may have prevented fake news. During COVID, proper regulation may have protected China from bogus news.

Research objectives

1. To investigate the impact of false content on public relations in China.
2. To analyze the impact of false Links' on public relations in China.
3. To assess the impact of Factual errors on public relations in China.
4. To figure out the impact of Screenshot doctored content on public relations in China.
5. To determine the effect of Fake Ads on public relations in China.

Research Questions

1. What is the impact of false content on public relations in China?
2. What is the impact of false Links' on public relations in China?
3. What is the impact of Factual errors on public relations in China?
4. What is the impact of Screenshot doctored content on public relations in China?
5. What is the effect of Fake Ads on public relations in China?

Research Hypothesis

H1: False content has impacted public relations in China.

H2: False Links hit public relations in China.

H3: Factual errors influenced public relations in China.

H4: Screenshot doctored content have affected public relations in China.

H5: Fake Ads have rammed public relations in China.

Impacts on Public Relations

False Alarm:

Fake news regarding the coronavirus pandemic has led to a false alarm in the China. This has caused many people to fear and take precautions that they may not have otherwise taken. For example, some China citizens are getting their pets vaccinated while others are buying additional masks or stocking up on anti-viral medication. In China, hospitals are reporting a spike in individuals coming with flu symptoms who wish to be tested for covid-19. China citizens will keep this issue high up on their thoughts while the outbreak continues, making it harder for officials to convince them of any updates or adjustments happening with regards to covid-19. China is also trying to influence the public's view by censoring any bad reporting regarding its own response to covid-19 and only disseminating information through its own outlets such as China Central Television. The impact is how social media can distribute bogus information from dubious sources. Since social media does not require verification before publishing posts, it allows users' personal opinions or beliefs to go unchallenged when used for propagating disinformation. (López-Marcos and Vicente-Fernández, 2021).

Misunderstanding and Misjudgment:

Fake news can cause individuals to misunderstand or underestimate a situation. In the instance of the covid-19 epidemic, misleading news regarding the virus has led to a mistrust of information from both the government and health experts. This mistrust can induce people to make poor decisions concerning their health and safety. It can also lead to divisiveness among people who might otherwise be unified in battling the pandemic. For example, the China Government enacted a travel ban against people of six nations including Libya but ignored other countries that have been afflicted by the virus.. (Ecker et al, 2022)

Broken Trust, Beliefs

As people become increasingly aware of the propagation of fake news, they begin to lose trust in social media as a dependable source of information. This broken trust can have far-reaching ramifications, forcing people to reconsider their beliefs and even their vision of reality. In China, meantime, the government's use of social media to control the narrative has led to a loss of faith in the authorities. If a person is unhappy with the lack of freedom in their nation, they may be tempted to leave and seek asylum elsewhere. To put it simply, without trust in the system or authoritative figures, there is no desire for change. (Yang & Tian, 2021).

Cooperation Difficulties

When incorrect information is published about a corporation, it might be difficult for that company to cooperate with others. This is because people may not trust the company if they think it is disseminating incorrect information. This can make it difficult for the organization to acquire aid from others or to work together on projects. It also makes it impossible for the company to attain its goals if nobody will cooperate with them. (Gürlek, and Kılıç, 2021.)

Opportunity to Build Trust through Performance

When social media is saturated with bogus news, it can be challenging for public relations professionals to rise above the din. However, this also gives an opportunity for public relations professionals to establish credibility with their consumers by serving as a trustworthy source of information. In times of crisis, such as the Covid-19 outbreak, people need reliable and current information, which public relations professionals can supply. In order to build trust, they should also be able to describe how they received the information and what procedures they took to verify its veracity. (Meilatinova, 2021).

Literature Review

Public Relations (PR):

Managing how people perceive and feel about a person, brand, or business is known as public relations (PR). PR for corporations, notably publicly traded companies, focuses on maintaining a positive corporate image while handling media requests and shareholder inquiries. (Aula and Mantere, 2020)

Fake News:

Fake news, are created to intentionally deceive readers and seek to gain financially or politically by spreading lies and falsehoods. (Kalsnes, 2018.) Fake news has existed on social media long before the 2016 in China, which were impacting every segment of society. However, fake news during pandemic exacerbated the situation. There are at least five sorts of fake news, or rumors, that businesses should be careful of when it comes to public relations on social media platforms such as WeChatt, NextMedia, DouYin, and Douban. (Blank and Lutz, 2017).

False Content:

During the outbreak of COVID 19 in China, many social media platforms were flooded with false content. This fake news included content about the virus, as well as conspiracy theories about the Chinese government. This false information had a significant impacted public relations in China, as it made it difficult for the government to communicate with the public. In addition, this false content caused mistrust and confusion among the general population. The National People's Congress even issued a statement stating that these hoaxes and rumors are detrimental to society and create panic among people. This was a clear example of how fake news has been affecting public opinion in China, through false content spread through social media sites. Additionally, during a pandemic, social media is typically loaded with bogus news that might damage public relations. For example, a recent study indicated that during the COVID-19 outbreak, bogus material about the virus was spread more on social media than true news. This can generate challenges for public relations specialists who are trying to manage the crisis. When a big number of people exchange information or rumors on social media, it can lead to a panic spiral where people begin cancelling their vacation plans or skipping work and school, which causes fewer people in these locations to be exposed to the virus. However, this just leads to greater disinformation as well as anxiety and terror among individuals stricken by the condition. (Apuke and Omar, 2021)

False Links:

During the outbreak of COVID 19, many social media users in China were tricked by false links. These links, when clicked on, would send the user to a site that looked very similar

to a credible news source. However, the information on these sites was often fake, and would often times spread false information about the virus. This caused a lot of confusion and chaos among social media users, and made it difficult for public relations professionals to counter the fake news. The most common type of fake news is that COVID 19 can be transmitted through touching someone or shaking hands with them. Many Chinese citizens also believed that this was because Chinese people are more trusting than Westerners, as a result of our Confucian culture which encourages us to trust other people without question. One sort of fake news that has been frequently spread on social media during the COVID-19 outbreak was fraudulent links. These are connections to websites that look to be trustworthy news sources, but are actually false. This can be incredibly destructive to public relations, as it can cause consumers to lose trust in actual news sources. It's also detrimental since some people may assume they have taken sufficient precautions against infection when they have not. (Rocha et al., 2021)

Factual errors:

One type of fake news was factual errors, such as claiming that the virus could not be transmitted through human-to-human contact. This misinformation led to a lot of confusion and anxiety among the general public. The other types of fake news include: Distortion, which is when the message contains an underlying meaning different from what is actually being said; Fabrication, which is made up entirely from scratch with no basis in truth; Diversionary tactics, which are used to take attention away from an unfavorable subject by raising another issue or controversial topic; and Propaganda techniques. These types of fake news caused serious damage to public opinion. (Bilge et al., 2009).

Screenshot doctored content:

Doctored content on social media platforms like DouYin and NextMedia became a problem for public relations in China during the outbreak of COVID 19. This was because people were unsure of what information to trust, and often believed the fake news without checking its veracity. The fake news had a range of topics, from cures for the virus, to new cases in different parts of the country. They were typically spread through bots or trolls who would post the messages at high volumes so that they would be seen by as many people as possible. Other sources claimed that some of these bots belonged to the Chinese government. During this time, most of the fake news targeted the Chinese authorities and accused them of not doing enough to protect their citizens. (Shao et al., 2017.)

Fake Ads:

Fake ads were one type of fake news that was particularly prevalent. These ads typically featured products that claimed to be effective against the virus, but were not actually backed by any scientific evidence. As a result, many people were misled into buying products that did not actually work, and some even experienced serious side effects. There were also videos depicting false COVID 19 cures or treatments. It is important for people to be cautious when viewing advertisements online, and check for credible sources before purchasing anything. It was crucial to be aware of the numerous sorts of Fake Ads that are out there, especially during a pandemic. Fake advertising are one sort of fake news that can be extremely destructive. They can propagate incorrect information about products or services, which can encourage

individuals to make bad decisions. In the case of China, Fake Ads have been used to spread misinformation about the coronavirus, which has led to public relations problems for both countries. (Posettiand and Bontcheva, 2020)

Theoretical framework:

Fake news PR

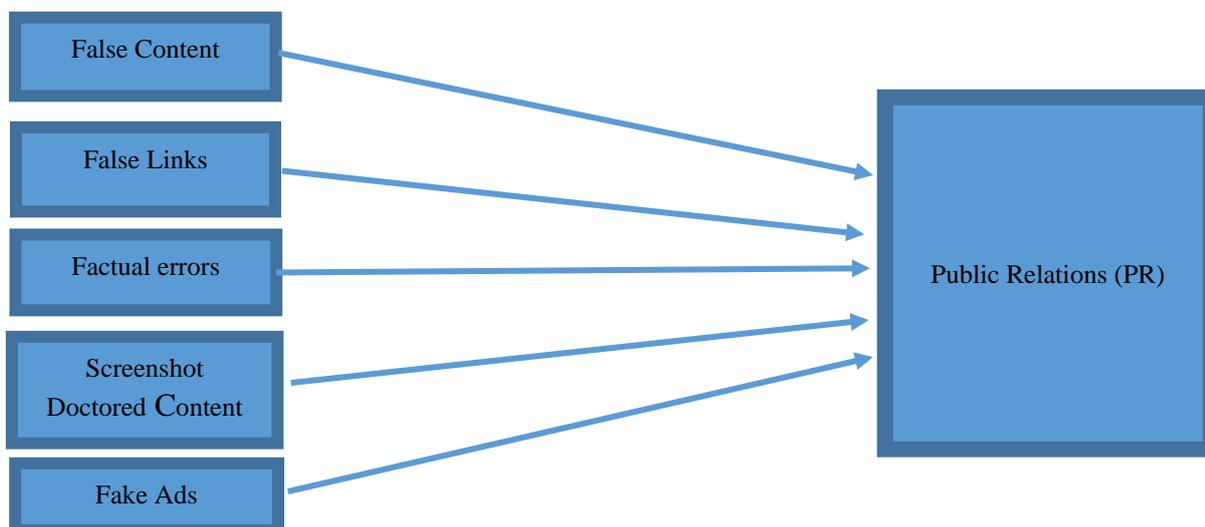


Figure 1: *Thematic view of proposed work.*

Research Methodology

Type of Research:

In our study, we will take a qualitative as well as quantitative approach, and the findings will reveal information about how fake news impacted public relations in China during COVID-19. We will collect data for this study using through questionnaire and interviews. The administration may be able to gain a competitive edge in the finance sector with the help of this research. After the data have been collected, the descriptive statistics, chi square and factor analysis will be streamlined, which will produce results that can be trusted.

Research approach:

For the purpose of this study, the research strategy that was developed was intended to collect information on how fake news impacted public relations in China during COVID-19. We gathered primary data through questionnaire and interviews and secondary data from a wide variety of sources, such as reports published by the government, articles published in scientific journals, and news articles.

Sampling approach:

Purposive sampling will be used to collect data as part of the sampling method, which is a method that does not involve probability.

Research Design:

The research design is comprised of the comprehensive step-by-step research plan that outlines the methodology that will be utilized to carry out an investigation. Components of the research design include theoretical and conceptual frameworks, dimensions, methods of data collection and analysis, and data collection and analysis techniques.

Data collection and Analysis:

The primary sources of data for this thesis were questionnaire and secondary sources. Secondary data, which can also be referred to as second-hand data, is information that has already been gathered and is available for use in additional research studies. Secondary data can be used in the same way as primary data.

Descriptive statistics:

Descriptive statistics is used to describe the collected data in such a way that a reader can quickly understand the average behavior of data. In this study, a Likert scale, which is a rating scale that assesses behaviors, and opinions quantitatively (from 1 to 5) is used to check the impact of fake news on Public Relations during Covid-19. Specifically, as Likert scale (1-5) is adapted so counts and proportions will be used to describe the figures about 15 items of socio-demographic variables. Descriptive statistics is specially used to describe the socio-demographic variables in our study. Moreover, bar graphs are also added for bird eye view about socio-demographic and fake news relevant questions.

Measure of reliability:

The process of measuring the accuracy and validity of any research instrument is called reliability measure. To work on any drafted questionnaire related data, one must know the reliability of designed items. Work without measuring its reliability is considered “a death of knowledge”. In this regards, different measures are proposed by different authors (Deniz and Alsaffar, 2013; Bolarinwa, 2015). In our designed study, Cronbach alpha is used which can be easily be calculated using multiple statistical analysis softwares like R, SPSS, Minitab and Python. Moreover, as one can estimate this measure directly from software’s so, researchers do not need to go through the laborious exercise of the mathematical formula of Cronbach’s alpha. According to a rule of thumb, the higher of the alpha value, the more reliable the measure is (Bolarinwa, 2013). One must strive for reliability of drafted questionnaire for $\alpha = 0.70$ or higher. The more items we have in our scale to measure the construct of interest, the more reliable our scale will become. However, precautions should be in mind about the accuracy of Cronbach’s alpha, as the reliability values increase by increasing the length of items. The problem with simply increasing the number of items when carrying research is that respondents are less likely to participate and answer less attentively when confronted with the prospect of replying to a lengthy questionnaire. Therefore, the appropriate approach to draft a parsimonious questionnaire that completely measures the objective of construct of interest. A well-developed brief questionnaire may help to achieve a higher accuracy from answers of respondent.

Chi square:

To meet the research objectives which are mentioned above, chi-square test is selected, developed by Karl Pearson (Rana and Singhal, 2015). Chi-square test is a non-parametric in nature used to test the hypothesis about association between two or more variables/groups/population or criteria. It is the only test which is applied on categorical data e.g. male or female patients, educated or not, or between Likert and nominal scale or to find

association between social and demographic variables. (Sureiman, 2013). The following hypothesis will be tested through chi square test

H0: Public relation is independent to fake news.

H1: public relation and fake news have joint dependence.

H0: Public relation is independent to fake links.

H1: public relation and fake links have joint dependence.

H0: Public relation is independent to fake ads.

H1: public relation and fake ads have joint dependence.

Chi square statistic is used to check the described hypothesis regarding the impact of fake news on public relation in China.

Factor Analysis

To receive information about hidden impact of fake news on social media, a questionnaire relevant to that is drafted. However, the question is raised here what statistical method to choose to extract that hidden information from designed questionnaire. In this regard, Factor analysis is adapted. Factor Analysis (FA) is a statistical method performed to uncover latent variables/or to reduce dimensions, which exists among a set of observed variables and provide insight into the significance of underlying structure of the data (Jowkar et al., 2014). This method extracts maximum common information from designed variables and put the extracted information in common scores. Factor analysis is a part of General linear model (GLM), and GLM believes on few assumptions that must satisfied prior application of factor analysis. The several assumptions includes no multicollinearity, linear relationships, no outlier, enough sample size, exact correlation and relevancy of variables to factors. Once the assumptions In following complete steps are given which are necessary to work with factor analysis:

First, the decision has been taken about which factor analysis should be choose from exploratory factor analysis and confirmatory factor analysis. Exploratory factor analysis is used when number of factors to be determined are specified. As in our case, Public Relation is a factor which will be extracted from designed questionnaire. However, in confirmatory factor analysis, one must know about the exact pattern of which variable will load on what factors. One can say that the deep insight knowledge is needed before applying confirmatory factor analysis.

Once selection of appropriate type of factor analysis is done, second decision have been taken about the mechanism which will use in factor analysis to extract components. Mostly used methods include Principal Component Analysis, common factor analysisimage factoring, maximum likelihood method, outweigh least squares. Out of all principal componeny method is used in this study in order to find latent component from Likert scale items.

Third, rotation method is selected which help researcher to easily understand the output by simplifying it. There are many rotation methods as; varimax rotation method, quartimax rotation method, direct oblimin rotation method, and promax rotation method.

After applying factor analysis, one gets the factor loadings, eigen values and factor scores. Factor loading is basically the correlation coefficient for the designed items and factors. Factor loading shows the explained variance by an item on particular factor. An eigenvalue which is also called a characteristic root. It shows variance explained by particular

factor out of the total variance explained by all factors. From the factor loadings table of commonality, one can know how much variance is explained by the factors sequentially out of the total variance. Plot of eigenvalue is called scree plot. Significant factors can be viewed on scree plot on Elbow point. For example, if our first factor explains 58% variance out of the total, this means that 42% variance will be explained by the other factors. The factor scores which are also called the component scores can be used as an index of all variables that will be used for further analysis. With this factor score, whatever analysis we will do, we will assume that all variables will behave as factor scores and are independent with each other. After applying factor analysis cluster analysis is performed to make clusters of items designed in questionnaire. For that purpose, Hierarchical cluster analysis is selected to work on factor scores.

More detail about factor analysis is described in (Guelmami et al., 2021, Shrestha, 2021). In short, factor analysis helps us to find latent variable which is difficult to measure from respondent directly.

Results and Discussions

In this paper, extensive literature review has been reviewed to identify the well-defined factor which affects public relations due to disseminate false information during Covid-19 in China. After identification of the latent variable (which is fake news on social media impact public relations during Covid-19) structured questionnaire has been prepared and distributed according to purposive sampling approach. Results are calculated on collected data through SPSS V 22.0 described as follows:

Results of qualitative approach (interview about impact of fake news on public relations):

To get opinions about impact of fake news on public relations in China during Covid-19, 10 interviewees are selected purposively. From each respondent, 10 questions were asked. The open-ended questions are framed to get overview about influence of fake news on public relations during Covid-19 in China. The interview was structured using 5 main sections as follows:

- Opinion about fake news impact on public relations
- Future of fake news in China in relation to fake news
- What role did social media platforms such as WeChat, Sina Weibo, DouYin, and QQ play in China during the COVID outbreak
- Steps to prevent fake news on social media
- Tools to identify fake news

Response about above described sections are described as Opinion about fake news impact on public relations: majority of respondents think that fake news conceals the truth and will lead the public relations in the wrong direction, affecting the judgment of the social public. According to them, it may lead to damage of personal reputation, fall of company's stock, and may even lead to deterioration of relations between two countries.

Future of public relations in China in the light of fake news: average response of respondents is that with the prevalence of social media and self-publishing, China may still face a more complex situation in terms of public relations, requiring legislation to further regulate the behavior of platforms, individuals' social integrity and other aspects of information released to society.

What role did social media platforms such as WeChat, Sina Weibo, DouYin, and QQ play in China during the COVID outbreak: seven out of ten respondents states that the above mentioned platform of social media play a role of supervision and promotion, and many people can post the problems and difficulties arising from the implementation of some policies through social media, which can play a role of supervision and improvement for various functional departments of epidemic prevention and control. However, some untrue news created a lot of panic through these sites.

Steps to prevent fake news on social media: average response of respondents fall in following:

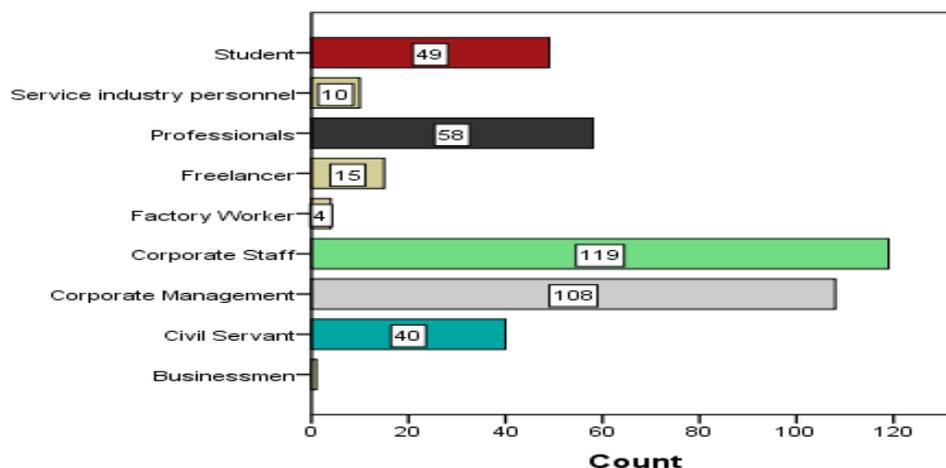
1. Through artificial intelligence algorithms, fake news should be detected first before disseminating to others.
2. Do not spread unverified fake news without authorization

Tools to identify fake news: According to the majority of the respondents, every fake news is first be classified by their respective problem Like, for job seekers and investors, the "Tianyancha" APP can be used in China to verify interested companies and companies to ensure that the companies are operating healthily and have no debt or credit problems. For Internet users, when they see a picture or a piece of news, they can use the "Baidu Image Recognition" function in the Baidu APP to search whether the information they see has another source.

Results of descriptive statistics:

Results of descriptive statistics about demographic is presented in Table 1 where counts and percentage is described for gender, age and education. Descriptive statistics shows that out of 404 respondent, 55.5% were female and 44.5% were male. Out of 55.5% female, 61.7% were master by education and from 44.5% male 51.7% were master. Occupation and length of services of respondents were displayed in Figure 2. Most of the respondents have occupation of corporate staff (19.2%) and corporate management (17.4%) and mostly respondents are belongs to the category of 1-10 years length of services (52.2%) as shown in Figure 2 part (a) and (b) respectively. Descriptive statistics about fake news items which are measured on Likert scale are listed in Table 2. Most of the items have highest response in “Greatly” and “A Lot”, which also supports hypotheses. An bird eye view on overall responses is displayed in Figure 3 which shows that overall, majority of the response were belongs to “Greatly” and “A lot”.

a)



b)

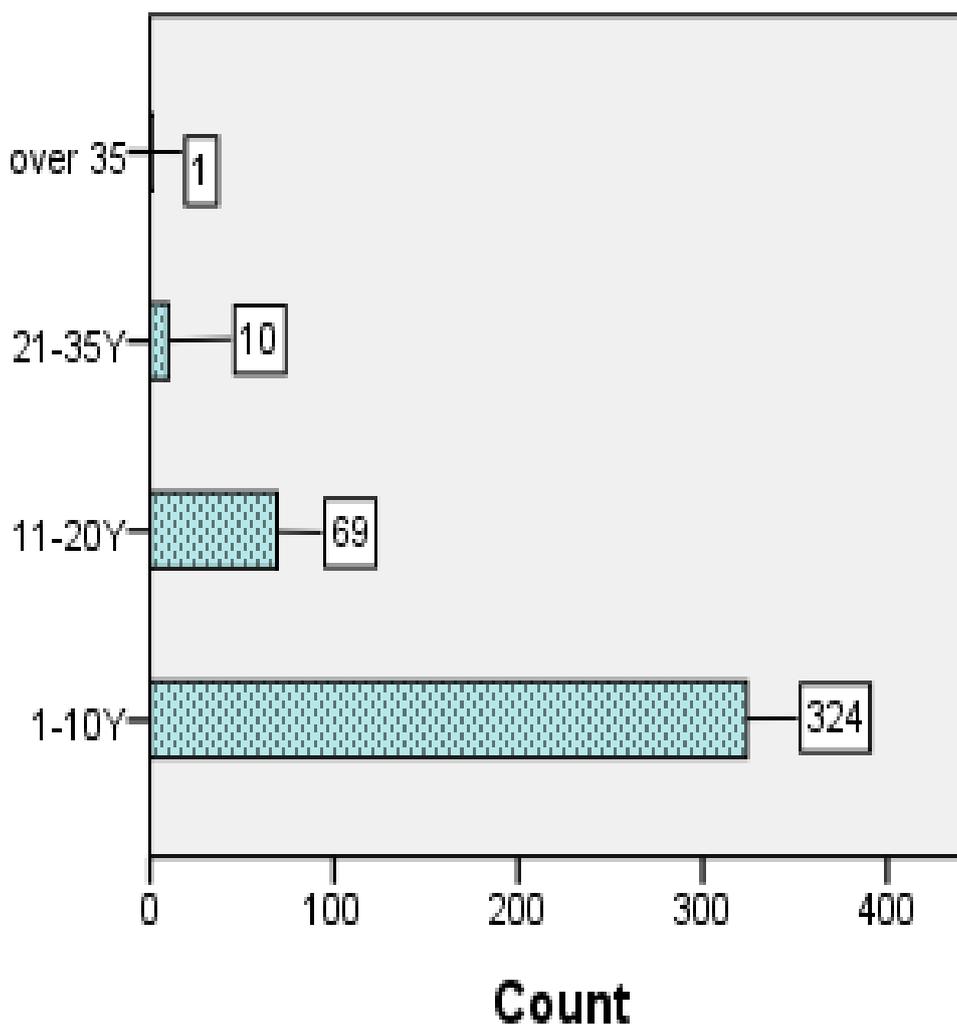


Figure 2: Display of Occupation of respondents selected for study: a) about occupation, b) Length of services.

Characteristic	Value (n%)
Gender	
Male	
Female	180 (44.5)
Education	224(55.5)
Less than inter	0
Intermediate	116(28.7)
Bachelor	226(55.9)
Master	62(15.3)
Other	252(62.38)
Age	125(30.94)
20-30	18(4.46)
31-40	9(02.23)
41-50	
Over 50 years	

Table 1: *Descriptive statistics of demographics.*

	Not at all		A little		Average		Greatly		A lot	
	Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %
Fake News during COVID-19 reduced public cooperation in China	22	5.4%	122	30.2%	114	28.2%	123	30.4%	23	5.7%
False Content during COVID-19 create fear in people of China	27	6.7%	61	15.1%	64	15.8%	156	38.6%	96	23.8%
False Links during COVID-19 caused individuals to misunderstand	11	2.7%	50	12.4%	57	14.1%	188	46.5%	98	24.3%
False Identities influence on public relations by inspiring Fake news advertising impact individuals of China to make bad	12	3.0%	75	18.6%	73	18.1%	178	44.1%	66	16.3%
Clickbait articles during COVID-19 created Public Panic	23	5.7%	51	12.6%	61	15.1%	146	36.1%	123	30.4%
Fake news during COVID-19 distracted from real issues	12	3.0%	75	18.6%	70	17.3%	148	36.6%	99	24.5%
Fake news hindered the voice of health care departments	50	12.4%	68	16.8%	70	17.3%	145	35.9%	71	17.6%

Fake videos during COVID-19 put public safety at risk	27	6.7%	74	18.3%	76	18.8%	143	35.4%	84	20.8%
Fake audio can ruin your personal relationships	22	5.4%	102	25.2%	79	19.6%	122	30.2%	79	19.6%
Ordinary people are infected with confusion and insecurity	7	1.7%	61	15.1%	51	12.6%	150	37.1%	135	33.4%
Fake News Caused chaos at airports and ports in China	68	16.8%	108	26.7%	85	21.0%	94	23.3%	49	12.1%
Fake news during COVID-19 created financial issues	55	13.6%	124	30.7%	116	28.7%	83	20.5%	26	6.4%
Fake News during COVID-19 Led To Violence	104	25.7%	105	26.0%	94	23.3%	64	15.8%	37	9.2%
False news weakened confidence in the government	64	15.8%	109	27.0%	63	15.6%	99	24.5%	69	17.1%

Table 2: Descriptive statistics of fake news on social media during Covid-19.

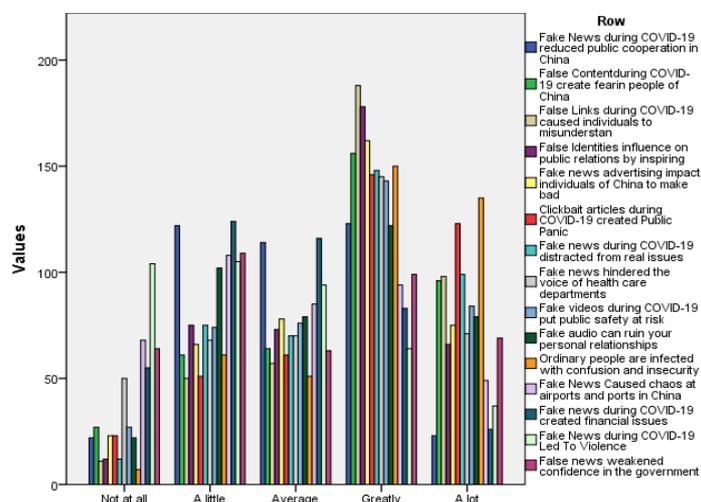


Figure 3: Graphic view of overall response of all questions.

Results of reliability measure

To check the internal reliability for the 15 items on a 5-point Likert scale, Cronbach's alpha is applied. Cronbach's alpha is a scale reliability measure used to check the collected data validity in such a way that high value of α give indication about consistency between items of questionnaire. Results of Cronbach's alpha applied on $n = 404$ samples is $\alpha = .933$. The Cronbach's alpha shows that the items in the test are highly correlated with each other. Once the reliability of questionnaire is tested through Cronbach's alpha, further analysis can be performed to meet objectives.

Results of chi square

To confirm the hypothesis stated in research objectives, chi square test is applied on designed variables. Association of public relations with all 15-items are checked. Results of Public Relations (PR) with fake news, fake links, fake ads and fake advertisement were listed in Table 3. Results shown that fake news, fake links, fake ads and fake advertising have a significant impact on Public Relations as all values are lower than both 0.05, and 0.01. So hypothesis i.e.

H0: Public relation is independent to fake news.

H1: public relation and fake news have joint dependence.

H0: Public relation is independent to fake links.

H1: public relation and fake links s have joint dependence.

H0: Public relation is independent to fake ads

H1: public relation and fake ads have joint dependence.

All H0 are rejected and concluded that there is an association between public relations and fake news; public relation and fake links; public relation and fake ads.

Table 3: Association between false content and Public Relations

Variables	Value	df	Asymp. Sig. (2-sided)
PR vs false contents	283.869	16	.000
PR vs false links	283.539	16	.000
PR vs fake ads	265.056	16	.000
PR vs advertisement	355.589	16	.000

Results of factor analysis:

The exploratory factor analysis is carried out to confirm the theoretical framework which is shown in Figure 1 by Principal Component method with a varimax rotation. Whether the data is suitable for exploratory analysis or not, Kaiser-Meyer-Olkin (KMO) statistic is applied. SPSS software is used for the application of described method. To accept the factors solution, the KMO value must be greater than 0.50, according to (Jowkar et al., 2014). Normality assumption is tested through the Bartlett test, Results of KMO and Bartlett's shown in Table 4. Significance probability of Bartlett's test of Sphericity is $0.000 < 0.01$, rejects the hypothesis which indicated that the parameters are related, so the drafted questionnaire is suitable for factor analysis. Correlation between variables is also estimated which shown that most variables have relatively strong correlation, which makes a sense of applying factor analysis. (Due to length, correlation matrix is not placed in paper but can be demanded on request)

Factor analysis have been applied after confirming the data adequacy from KMO. Results of extracted factor, eigenvalues and communalities are presented in Table 5, 6 and 7 respectively. The extracted factor having eigenvalues greater than 2 were retained in analysis. Results of eigenvalues, percentage of variance, and cumulative percentage variance of extracted factors are presented in Table 6. Factor analysis indicated one factor solution as eigenvalue of that factor is extremely high (10.891) as shown in Table 6. The generated factor is alone responsible of 52.460% variation of the total variance as can be viewed in Figure 4. Moreover, an item was deleted if its factor loading was less than 0.35. Cluster analysis have been performed on extracted factor to make clusters of similar questions. Cluster analysis were generated three groups as shown in Figure 5 where cluster one comprises on question one of questionnaire presented in appendix, cluster two make group of question 8 and 9 which are related to health issues due to fake news whenever, cluster three retain all questions related to fake news except question 1, 8 and 9.

Table 4: *KMO and Bartlett's test*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.949
	Approx. Chi-Square	3387.933
Bartlett's Test of Sphericity	df	105
	Sig.	.000

Table 5: *Factor loadings of extracted component through principal component method.*

	Raw Component 1	Rescaled Component 1
Fake News during COVID-19 reduced public cooperation in China	.522	.509
False Content during COVID-19 create fear in people of China	.875	.733
False Links during COVID-19 caused individuals to misunderstand	.723	.698
False Identities influence on public relations by inspiring	.773	.727
Fake news advertising impact individuals of China to make bad	.812	.714
Clickbait articles during COVID-19 created Public Panic	.858	.724
Fake news during COVID-19 distracted from real issues	.809	.715
Fake news hindered the voice of health care departments	1.016	.793
Fake videos during COVID-19 put public safety at risk	.953	.796
Fake audio can ruin your personal relationships	.885	.736
Ordinary people are infected with confusion and insecurity	.816	.744
Fake News Caused chaos at airports and ports in China	.939	.732
Fake news during COVID-19 created financial issues	.834	.744
Fake News during COVID-19 Led To Violence	.868	.680
False news weakened confidence in the government	.981	.724

Table 6: *Extracted factors with eigenvalues, variance percentage and cumulative.*

Component	Initial Eigenvalues^a			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.891	52.469	52.469	10.891	52.469	52.469
2	1.594	7.680	60.150			
3	1.163	5.603	65.752			
4	1.025	4.938	70.691			
5	.910	4.383	75.074			

Table 7: *Cumunalities of all items.*

	Initial	Extraction
Fake News during COVID-19 reduced public cooperation in China	1.000	.274
False Content during COVID-19 create fear in people of China	1.000	.545
False Links during COVID-19 caused individuals to misunderstand	1.000	.511
False Identities influence on public relations by inspiring	1.000	.551
Fake news advertising impact individuals of China to make bad	1.000	.523
Clickbait articles during COVID-19 created Public Panic	1.000	.528
Fake news during COVID-19 distracted from real issues	1.000	.521
Fake news hindered the voice of health care departments	1.000	.618
Fake videos during COVID-19 put public safety at risk	1.000	.633
Fake audio can ruin your personal relationships	1.000	.543
Ordinary people are infected with confusion and insecurity	1.000	.569
Fake News Caused chaos at airports and ports in China	1.000	.513
Fake news during COVID-19 created financial issues	1.000	.550
Fake News during COVID-19 Led To Violence	1.000	.435
False news weakened confidence in the government	1.000	.494

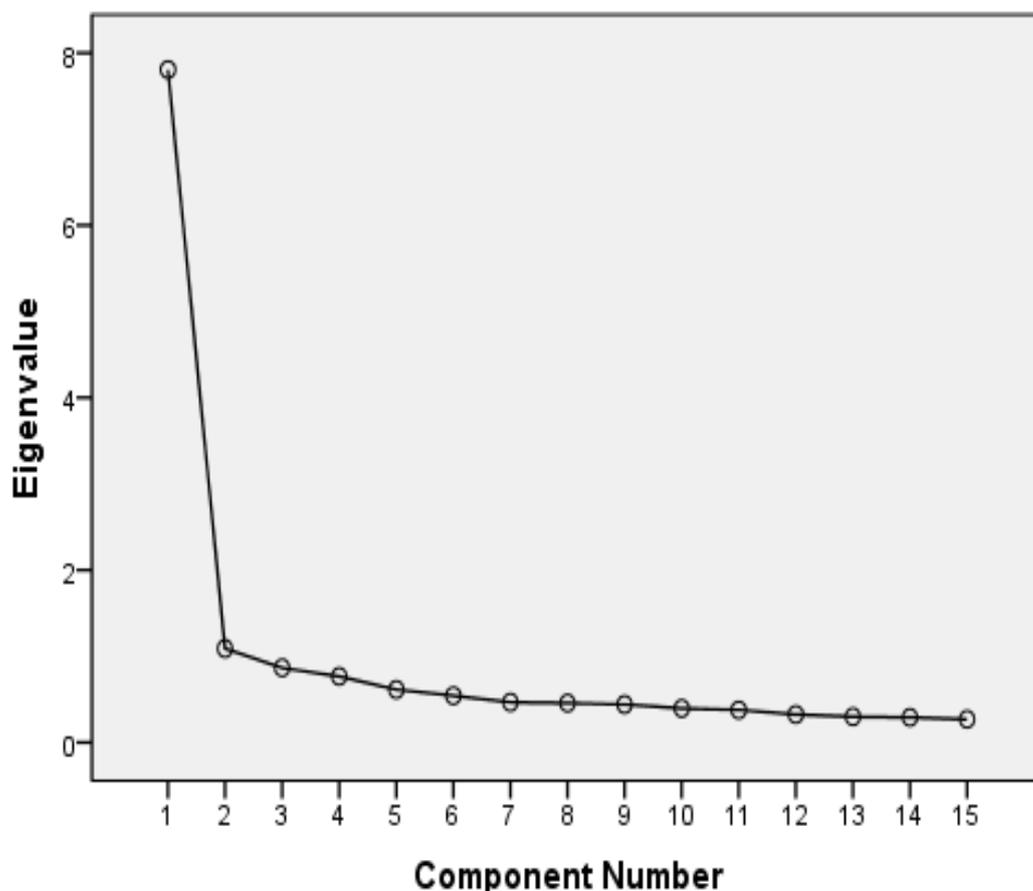


Figure 4: *Scree plot of eigenvalues.*

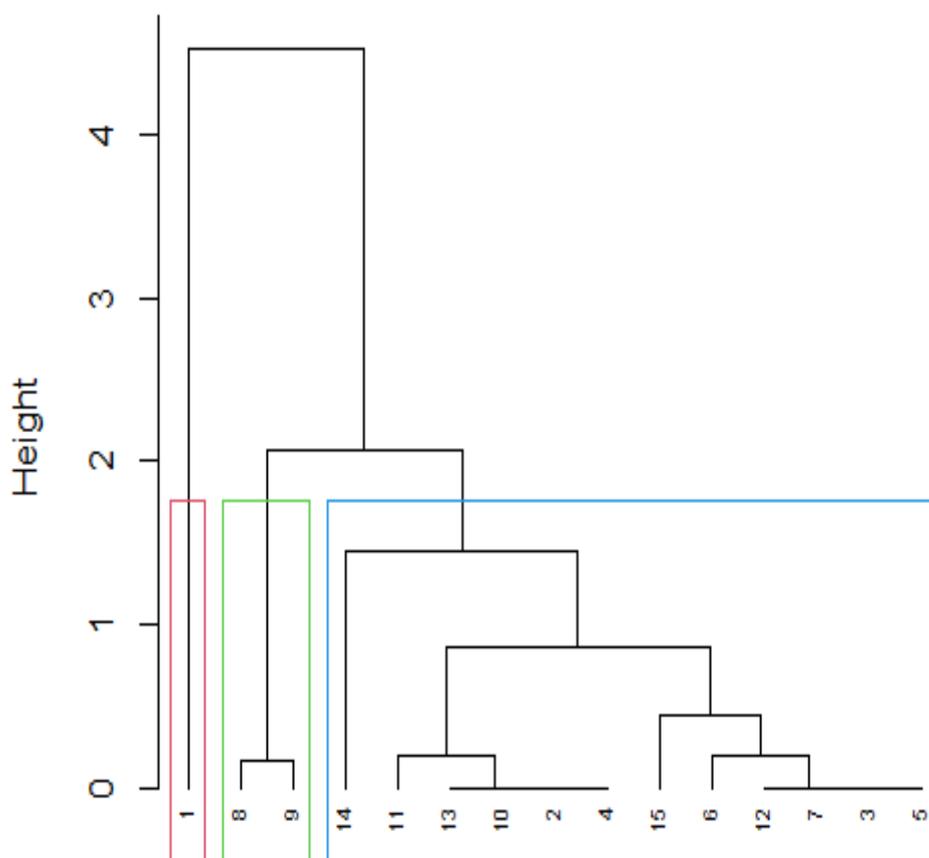


Figure 5: Hierarchical cluster analysis of derived factor loadings of 15 items.

Limitations

This study contains multiple limitations. First, we conducted quantitative and qualitative research only focusing on impact of fake news on PR in China during the COVID-19 which did not consider impact of fake news on individuals. Future studies could compare fake news impact not only on Public Relation but also individually and its influence on their health. Second, this study did not classify individuals according to their age and education which might provide more insight the impact of fake news on PR in China. Finally, questions can be added to address the issues to overcome the spread of fake news on social media specifically in pandemic.

Conclusion

This study conducted qualitative and quantitative research to explore influence of fake news on PR in China. Findings of both demonstrated that fake news through any channel on social media divert people attention, created hype, and put the public safety at risk by exploiting their trust on each other. Questionnaire is deigned to examine a theoretical model. In this regard, factor analysis, an advanced statistical technique, is utilized to analyze theoretical model illustrated in Figure 1. Factor analysis approved that the fake news on social media during Covid-19 had impact on the public relations in China to a great extent. Government should take notice to prevent false information on social media. There is a need to plan and invest in tools for identifying misinformation and improving online accountability, especially during times of a crisis as COVID-19 and any other pandemic.

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Appendices:

Interview Questions:

Question No.	Question
1	How does fake news affect public relations?
2	How can social media be utilized to address difficulties of public relations?
3	What steps can you take to combat the spread of fake news on social media?
4.	What are the negative repercussions of distributing false information?
5	Can technology aid in the elimination of incorrect information?
6	What role did social media platforms such as WeChat, Sina Weibo, DouYin, and NextMedia play in China during the COVID outbreak?
7	What are some examples of false news?
8	What circumstances would increase the believability of a fake news story?
9	How businesses and organizations may avoid becoming victims of fake information?
10	Which tool can be used to identify fake news stories?

Questionnaire:

PART A

Name of the Department: (optional)

Email address: (optional)

Number of Years In Service (if you are a worker):

1-10

11-20

21-35

More than 35 years

Your designation:

PART B

GENDER:

Male

Female

Prefer not to say

AGE

20-30

31-40

41-50

Over 50 years

EDUCATION

Less than inter

Intermediate

bachelor

master

Other

PART C

Please answer the following questions, ranging your answers between:

1: Not at all

2: A little

3: Average

4: Greatly

5: A lot

Sr. No.	Respond as per your opinion	1	2	3	4	5
1	Fake News during COVID-19 affected public relations in China.					
2	False Content during COVID-19 created fear in people of China.					
3	False Links during COVID-19 caused individuals to misunderstand or underestimate a situation.					
4	Fake news impact public relations by inspiring mistrust and suspicion.					
5	Fake news advertising impact individuals of China to make bad decisions.					
6	Click bait articles during COVID-19 created Public Panic.					
7	Fake news during COVID-19 distracted from real issues.					
8	Fake news hindered the voice of health care departments.					

-
- 9 Fake videos during
COVID-19 put public
safety at risk.
- 10 Fake audio can ruined
your personal
relationships.
- 11 Ordinary people are
infected with confusion
and insecurity by fake
news.
- 12 Fake News Caused chaos
at airports and ports in
China.
- 13 Fake news during
COVID-19 created
financial issues.
- 14 Fake News during
COVID-19 Led To
Violence.
- 15 False news weakened
confidence in the
government.
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