

Adopting microblogging solutions for interaction with government: survey results from Hunan Province, China

**Key words:** adoption, diffusion, trust in government, Sina Weibo, microblogging, China, social media

Word count (including references): 6969 words

**Abstract (146 words):** Authorities in the People's Republic of China communicate with citizens using an estimated six hundred thousand Sina Weibo microblogs. This study reports on a study of Chinese citizens' adoption of microblogs to interact with government. Adoption results from trust and peer pressure in *smaller-network ties* (densely knit, pervasive social networks surrounding individual citizens). *Larger-network ties* (trust in institutions-at-large, such as the Chinese Communist Party, executive organizations, the judicial system, media, et cetera) are not associated with adoption of microblogging. Furthermore, higher levels of anxiety are correlated with lower levels of use intentions, and this finding underlines the impact of the Chinese authority's surveillance and control activities on the lives of individual Chinese citizens. Based in these findings, we outline a theory of why citizens use microblogs to interact with government and suggest avenues for further research into microblogs, state-citizens communication patterns and technology adoption.

## 1. Introduction

The government of China is an avid user of microblogs (Ma, 2014; Schlæger & Jiang, 2014). In this context, microblogs refer to social networking services like Sina Weibo, Tencent, People's Net and Xinhua Net through which users – individuals, businesses and government agencies alike - can post, share and comment upon messages that are limited to 140 characters, pictures, or videos. Academic literatures have extensively researched the motivations and practices of Chinese officials, agencies, Chinese Communist Party (CCP) (Harwit, 2014; Schlaeger & Jiang, 2014; Ma, 2014; Meng, Pan, & Yang, 2017) to use an estimated amount of 600 000 government and Party microblogs (Qin, Strömberg, & Wu, 2017) and authorities' practices to regulate and control communication on microblogs (King, Pan, & Roberts, 2013; Harwitt, 2014; Qin, Strömberg, & Wu,

2017), yet Chinese citizens' motivations and uses have large gone unnoticed (with Medaglia & Zhu's (2016) study being a notable exception). With this article, it is our express intention to fill this gap and to produce and test an explanation of Chinese citizens' adoption of microblogs to interact with government. Moreover, by constructing and testing such an explanation, it is also our ambition to reflect on how new technology-enabled forms of interaction, deliberation and communication fit into state-citizen communication patterns of authoritarian governance regimes. China is an interesting case in this regard because it combines an authoritarian regime with a large user base that is described in literature as on average young, social and outspoken (Hassid, 2012).

## **2. The Rise of Weibo Microblogs in China and the Response by Chinese authorities**

### *2.1 China's political structure*

The People's Republic of China is governed through two interlocking power structures: the Chinese Communist Party (CCP, headed by the Politbureau and its Standing Committee), and a government apparatus, headed at the national level by a Premier who presides over the State Council. The Party – government structures parallel one another in various administrative tiers: central level including autonomous regions (of which Tibet is one) and special autonomous regions (Hong Kong and Macau), provinces, prefectures, counties, districts, and towns and sub districts. Central level leaders are recruited from Party cadres and appointed by higher hierarchical echelons. Since the reforms of the 1980s, village elections and public administrative hearings have taken place more frequently. Overall, the CCP has emphasized the importance of the Internet for gaining insights into citizen preferences (Meng, Pan, & Yang, 2017). While on the one hand findings show a strong guiding policy from the central government on interaction with citizens, which would suggest centralization, on the other hand we find that the pace in which, and the method how varies for each provincial government (Wu & Bauer, 2010).

### *2.2 The Rise of Microblogs*

China witnessed the first Internet applications in the 1980s. Initially, network applications emphasized use in academic circles. In 2006, Chinese citizens became aware of the American microblogging platform Twitter. Twitter was soon accompanied by Chinese counterparts like Fanfou, Digu and Jiwai (Harwit, 2014; Qin, Strömberg, & Wu, 2017). In 2009, in response to riots in the Xinjiang Uyghur autonomous region, Chinese government blocked Twitter, as well as shut down most domestic microblogging services. In late 2009, Sina Weibo, a hybrid of Twitter and Facebook, entered the scene and it soon became the most popular platform in China with the number of users peaking over 600 million users in 2014 (Harwit, 2014), of whom 85% accesses Weibo through their mobile device (Chui, 2012; Koetse, 2015). While Sina Weibo's user experience is mostly comparable to Twitter, the degree of interaction is higher and more comparable with Facebook. Weibo includes a trending topic list which is based on computer-based user participation as well as staff choices, which causes some items to be distributed more than others. Furthermore, posts are censored by keyword blacklisting and manual staff monitoring, with automated filtering efforts being in place as auxiliary method (King, Pan, & Roberts, 2013). King, Pan and Roberts note that keyword blocking and automated filtering methods can relatively easily be outsmarted by using analogies and metaphors, but hand censoring is not easily evaded. Moreover, in order for users to make full use of microblogs, they are required to register, hence users who publish content deemed sensitive by authorities, are easily identified (Harwit, 2014).

### *2.3 Government Response to Citizens using Microblogs to Interact with Government*

Harwit (2014) states that almost from the launch of electronic networks in the 1980s, the CCP's Central Publicity Department and the State Council Information Office issued directives to lower-level branches of government, ordering specific agencies to censor sensitive content and sanction perpetrators. However, in subsequent years, technological opportunities (e.g., the emergence of microblogs) as well as the political climate changed. Surveillance has continued to exist and is both practiced by information officers and internet monitors at all levels of government as well as by censors employed by private

Internet Service Providers (King, Pan, & Roberts, 2013). Additionally, however, since about 2011, many local authorities have embraced Sina Weibo as an information channel for public service announcements and as a propaganda space. One observable behavior is that many agencies started to post human-interest stories and morning- and afternoon general wisdom sayings (Liu, 2013; Schlaeger & Jiang, 2014; Hao, Zheng, Zeng, & Fan, 2016). More importantly, since 2011, authorities have become more tolerant of 'citizen voice' related to local issues such as corruption by local officials, illegal land seizure, and ecological disasters. King, Pan and Roberts (2013) provided empirical evidence suggesting that Chinese authorities nowadays allow a range of expressions of positive and negative comments about the state, its policies and its leaders. Schlaeger and Jiang (2013) reported that more and more individual local political and administrative leaders actively are using microblogs to 'gauge the water' (Cairns & Carlson, 2016; Qin, Strömberg, & Wu, 2017) and use technologies like Sina Weibo as a 'beta institution' with which new ways to incorporate citizens' suggestions and complaints into policies are experimented with (Schlaeger and Jiang, 2013; Sullivan, 2014; Ma, 2014). Data from a survey experiment conducted by Meng, Pan and Yang (2017) showed that more than half of the surveyed administrative and political leaders are receptive to suggestions expressed through microblog channels, but their willingness to incorporate citizens' suggestions into policies (and inversely the probability that citizens are ignored or sanctioned) depends on social contention and risk that criticism turns into social protest (Hassid, 2012; Li, Homburg, de Jong, & Koppenjan, 2016; Li, Koppenjan, & Homburg, 2017). If authorities find that collective movements are in evidence or suspected, they will most likely intensify censorship and may have officials and a so-called '50-cent party' of trolls (some trolls are paid at a piece-rate of fifty fen) 'occupy' social media (Cairns & Carlson, 2016; Qin, Strömberg, & Wu, 2017) in order to prevent social protests from gaining traction (Cai, 2010; Cairns & Carlson, 2016; Qin, Strömberg, & Wu, 2017). Sullivan (2014) notes that the Chinese authorities' possibly biggest fear is the emergence of a coalition of laid-off workers, dispossessed homeowners, unemployed graduates, hungry farmers and ethnic and religious minorities that may challenge political stability and the regime's hold on power; if this happens, censors will attempt to clip

social ties of the movement rather than block media altogether (King, Pan, & Roberts, 2013).

### **3. Adoption and diffusion of microblogs in China**

#### *3.1 Underpinnings of a theory on Chinese citizens' adoption of microblogs to interact with government*

Interaction of Chinese authorities with microblogs is rather complex (Qin, Strömberg, & Wu, 2017). Microblogs are being used as a source of information through which authorities experiment with learning about public sentiments, and as a propaganda space through which citizen discontent is contained within tolerable limits - practices referred to as 'consultative Leninism' (Tsang, 2009) or 'networked authoritarianism' (MacKinnon, 2011; Tsai, 2016). The literature also documents how, occasionally, online discontent transforms into visible protests (Deng et al., 2015), but an explanation of why relatively ordinary Chinese citizens either or not adopt microblogs like Sina Weibo in their interactions with government, is lacking. This gap is also observed in studies focusing on citizens' social media use in Western contexts (Susanto & Goodwin, 2013; Welch & Fulla, 2015). In the following sections, we will develop and test a theory on Chinese citizens' adoption of microblogs (and Sina Weibo in particular) in their interaction with authorities.

In the more generic technology adoption literature, frequently used starting points are theories and models like the Technology Acceptance Model (TAM), Theory of Reasoned Action (TRA), the Motivational Model, Theory of Planned Behavior (TPB), the combined Theory of Planned Behavior – Technology Acceptance Model, the model of PC Utilization, Innovation Diffusion Theory and Social Cognitive Theory. The Unified Theory of Acceptance and Use of Technology (UTAUT and UTAUT2, Thong, & Xu (2016); Venkatesh, Thong, Chan, & Hu (2016)) integrates many variables of the beforementioned theories into a model that features an individual's 'intention to use' as a mediator in the relation between an individual's actual use of a specific technology as an outcome variable on the one hand and, a set of predictors like the user's

expectancy, ease of use, peer pressure, habit and availability of resources. UTAUT and comparable models have been used to explain, among other things, Chinese consumers' use of mobile commerce platforms as well as citizens' use of government websites in a variety of national contexts (Yang, Homburg, Moody & Bekkers, 2018; Homburg, 2019). In general, UTAUT and UTAUT2 models are suitable for explaining adoption of specific services (and in an e-government context, especially electronic transactions), given, in principle, voluntary use of the technology or service at hand.

There are reasons, however, to question the validity of the UTAUT model for explaining adoption of microblogs by Chinese citizens to interact with government in the Chinese context. Characteristic for this context, as has been put forward in the previous section, is the gradual experimentation by Chinese authorities with receptivity towards citizens' grievances (Schlaeger & Jiang's (2013) concept of 'beta-institutions'), which coincides with a legacy of totalitarianism and practice of censorship, online policing and at times physical repression of collective action. As a result, Chinese citizens can be viewed of as individually free to express themselves on microblogs, but collectively chained (King, Pan & Roberts, 2013). The willingness of citizens to express their preferences undoubtedly differs from that in a consolidate democracy (Meng, Pan, & Yang, 2017), implying Chinese citizens can be expected to express circumscribed sets of preferences in the face of possible sanctioning of online behaviors deemed inappropriate by Chinese authorities. In other words, Chinese citizens can be expected to have to deal with balancing new opportunities through which sentiments may be vented, with risks of being confronted with censorship and prosecution.

### *3.2 Conceptualization and hypothesis development*

#### *Adoption: intention to use*

In our conceptualization of adoption of microblogs by Chinese citizens, we conceptualize adoption as a degree to which Sina Weibo is mentally accepted by a Chinese citizen as a channel to communicate with government. We follow a widely used practice in adoption research by measuring 'acceptance' as an

individual's intention to use Sina Weibo, because intentions are more validly measured in questionnaires than behaviors are, and previous studies have shown intentions are adequate proxies of actual behaviors (De Lange & Homburg, 2017). Furthermore, measuring intentions in a questionnaire to be administered in a target population of Chinese citizens proved to be less sensitive than measuring actual behaviors.

In order to explain Chinese citizens' adoption of Sina Weibo to interact with government, we hypothesize that 'intention to use' Sina Weibo to interact with government is correlated with a number of variables, which are discussed in more detail below.

#### *Peer pressure*

Peer pressure is hypothesized to impact Chinese citizens' adoption of Sina Weibo as CCP- and government communications have emphasized the importance and relevance of Sina Weibo as a channel with which public sentiments are to be communicated (Harwit, 2013; Qin, Strömberg, & Wu, 2017). In general, adoption theories have generally identified above-individual considerations, more specifically conformation to expectation of nearest and dearest people, as an important predictor of adoption of technology (Carter & Bélanger, 2005; Venkatesh et al., 2016). We assume that this impact might be even more prevalent in authoritarian systems. We therefore hypothesize that the higher the pressure to be recognized as a user of Sina Weibo an individual Chinese citizen perceives, the higher the intention to use Sina Weibo to interact with government will be.

#### *Anxiety*

A second relevant construct is a user's perception or belief in the fallibility of a specific technology he or she is about to be using. In this study, it is assumed that anxiety is an individual's general negative affective emotion of unease or arousal in the way one deals with technology, where unease and arousal are related to consequences the citizen may be confronted with and that are beyond the control of an individual citizen (Rana et al., 2013; Rana et al., 2016). As has been discussed in section 2.3, censorship, bans or prosecution may

follow social media activity deemed inappropriate by Chinese authorities, which underlines the relevance of anxiety as a predictor of adoption (Q. Wang, Yang, & Liu, 2012). We therefore hypothesize that the higher an individual's level of anxiety towards microblogs, the lower the intention to use Sina Weibo to interact with government will be.

### *Trust*

The concept of trust is prevalent in many adoption studies, including but not limited to studies of electronic government services (Carter & Bélanger, 2005; Venkatesh, Thong, Chan, Hu, & Brown, 2011; V. Weerakkody). The concept of trust is used in many contexts and therefore notoriously hard to define (Frederiksen, 2014). Although anxiety and trust may be thought of as overlapping concepts, trust is an individual's belief that exists only in reference to other individuals or institutions, and therefore is different from anxiety defined as an individual, internalized negative affective emotion. In this study, we conceptualize trust of a citizen A in party B as A's notion of safety associated with A's expectation that B will refrain from exploiting A's vulnerabilities in the presence of B's principle power to do so (in other words, A expects B to be reliable) (Pavlou & Gefen, 2005). By accepting vulnerability, A possesses trust; by refraining from exploiting vulnerability, B is trustworthy. Trust and trustworthiness in relation to microblogs in China has at least two meanings.

A first meaning, following Yang and Tang (2010), is a sociological interpretation of trust and it is related as the degree to which citizens have a positive expectation of the motivations of administrative, legal and societal institutions such as the Chinese Communist Party, government apparatus, councils, courts, associations, media and complaints bureaus. We will refer to the term *institutional trust* in this context, and associate this type of trust with ties that individual citizens may have with larger overarching societal structures (so-called larger-network ties). Hence, an individual displays a high level of institutional trust if he or she thinks that authorities – at considerable physical distance, or minimally at arm's length from citizens - will not negatively affect individuals' lives, even if authorities possess the right and means to do so. We



hypothesize that the higher an individual's level of institutional trust, the higher the intention to use Sina Weibo to interact with government will be.

A second meaning, following Poppo, Zhou, & Li (2016) and Reich-Graefe (2014) is that trust is relevant in interpersonal relationships. In this more psychological connotation, trust is an expectation that other persons or officials refrain from opportunistic behaviors. In a Chinese context, interpersonal trust is considered to be of the utmost relevance as trust in officials protects citizens against administrative hurdles or unforeseen risks. Therefore, an intricate and pervasive relational network is a cultural phenomenon that is vital in daily life in China. This network, *guanxi*, consists of feelings of empathy and solidarity (*ganqing*), reliability and sincerity (*renqing*) and reliance (*xinren*) (Yen, Barnes, & Wang, 2011).

Interpersonal trust is relevant for explaining citizens' adoption of Sina Weibo since there is empirical evidence that many Chinese government officials are receptive to citizens' sentiments on Sina Weibo, but they may respond in unfavorable ways (that is, engage in opportunistic behaviors) to citizens if citizens' sentiments are perceived as a threat to social order. The potential threat is personified by specific individuals, or develops in relations with specific persons, so called smaller-network ties. We hypothesize that the higher an individual's level of interpersonal trust in government officials, the higher the intention to use Sina Weibo to interact with government will be.

#### **4. Methodology and measurement**

##### *4.1 Questionnaire design, data collection and data screening procedures*

In order to construct an explanation, a first step was to conduct a survey with which the various variables could be measured in a sample of Chinese citizens. To ensure the validity of the measurements as much as possible, this study adopted and slightly modified related-question Likert items in prior studies for peer pressure (2011), interpersonal trust (Poppo, Zhou, & Li, 2016; Reich-Graefe, 2014), institutional trust (Q. Yang & Tang, 2010), anxiety (Venkatesh et al., 2011) and use intention (Thong, & Xu, 2012). A 71-item questionnaire was

developed in the English language, translated into Mandarin Chinese, and then translated back to English by an independent translator so that the quality of the translation could be checked. Furthermore, the questionnaire was piloted among various Chinese students living and working near the researchers' domicile.

A second step involved the selection of a region within which respondents could be targeted. Given the vast size and cultural variety that exists in China, we decided to limit the data collection to a specific province and selected Hunan province, located in South Central China. Hunan, home to 68 million inhabitants (estimate 2017) and 41 ethnic groups, has a fairly well-developed education system and Hunan government institutions have shown ample experience with social media: the city of Changsha's CCP committee spearheaded shaping online debates in as early as 2004 (Harwit, 2014), while Hunan's High Court and Changsha Police services received national awards from Sina corporation for their microblogs. This is not to say that Hunan excels in comparison with other provinces, we do neither aim for comparison nor generalization, we merely aim to demonstrate Hunan fits the criterium of having experience with social media.

Subsequently, as a third step, various China-based companies specializing in marketing and opinion polling were contacted; perceived sensitivity of the subject matter turned out to be prohibitive for many companies to carry out the survey. Eventually, data were gathered between 13 February and 21 February 2017 by a Shanghai-based survey company using an online survey tool.

Data were scanned and screened for kurtosis and unengaged responses based on standard deviations of Likert items and time it took for respondents to complete the survey ( $M = 12.6$  minutes,  $SD = 24.9$  minutes). Data from five respondents were dropped because of distrustful characteristics (age). Ten unexpected missing values were replaced by the median of nearby data points, following general data screening guidelines (Gaskin, 2017). Responses from 1572 citizens from Hunan Province could be used for further analysis.

## **5. Descriptive results**

### *5.1 Demographics*

Respondents were 914 men (58%) and 658 women aged 15 to 67 (men:  $M = 36.9$ ,  $SD = 8.4$ ; women:  $M = 34.6$ ,  $SD = 7.0$ ). the majority of the respondents (86%) reported to be living in an urban area. Professional activities included going to school (3%), working in the public sector (30%), working in the private sector (60%), keeping house (3%), and something else (2%). The highest level of completed education was junior high school and below (2%), senior high school (8%), college (37%), university (49%) and postgraduate (3%). Monthly salary ranged from less than RMB 2000 (3%), 2001-5000 RMB (23%), 5001-8000 RMB (39%), 8001-12000 RMB (27%) and above 12000 RMB (6%). Table 1 shows the comparison of gender, education level and age compared to Weibo users and the Chinese population.

| Variable         | Study sample<br>(n=1572) | Weibo Users<br>(Medaglia & Zhu,<br>2016) | Total 2017 China<br>population <sup>1,2</sup> |
|------------------|--------------------------|--|---|
| Female           | 42%                      | 49%                                      | 49%   |
| Higher Education | 52%                      | 76%                                      | 10%   |
| Age <24          | 2%                       | 49%                                      | 29%   |
| Age 24-33        | 40%                      | 39%                                      | 16%   |
| Age 34-45        | 44%                      | 11%                                      | 15%   |
| Age > 46         | 14%                      | 2%                                       | 38%   |

**Table 1: Comparison of characteristics of study sample, Weibo Users and total Chinese population of gender, education and age**

While the Hunan province covers a large area and holds a large population, and we did manage to sample across various age groups, income groups and gender groups, we cannot claim that findings do justice to regional differences, which might exist within Hunan province, or to differences in the whole of China (see Table 1): highly educated people and middle-aged people seem to be

<sup>1</sup> <https://www.populationpyramid.net/china/2017/>, last accessed Thursday, February 17, 2022.

<sup>2</sup> 2014 OECD data, <http://stats.oecd.org>, last accessed Thursday, 6 July 2017.

overrepresented. This could be regarded as a limitation which should be explored further in future research.

### *5.2 Use of social media*

With almost all respondents being registered Sina Weibo users (97%), and 72% of all respondents reported to use Weibo services about once a day or more. Organizational government Sina Weibo accounts (that is, accounts used with reference to civil service law, excluding accounts opened by Party and organizational cadres) were used by 90% of respondents. Of all respondents, 57% answered they used Government Sina Weibo accounts at least once a week or more, with gender ( $p < .001$ ), age ( $p < .001$ ), income ( $p < .001$ ) and education ( $p < .001$ ) affecting Government Sina Weibo frequency of use (chi square = 213.164,  $p < .001$ ,  $df = 10$ , Nagelkerke's  $R^2 = .171$ ). Figure 1 displays the reported topics respondents use most (with a maximum of three options). Apparently, topics of state-citizen interaction on Weibo cover many issues with no clear dominance of specific areas of discussion.

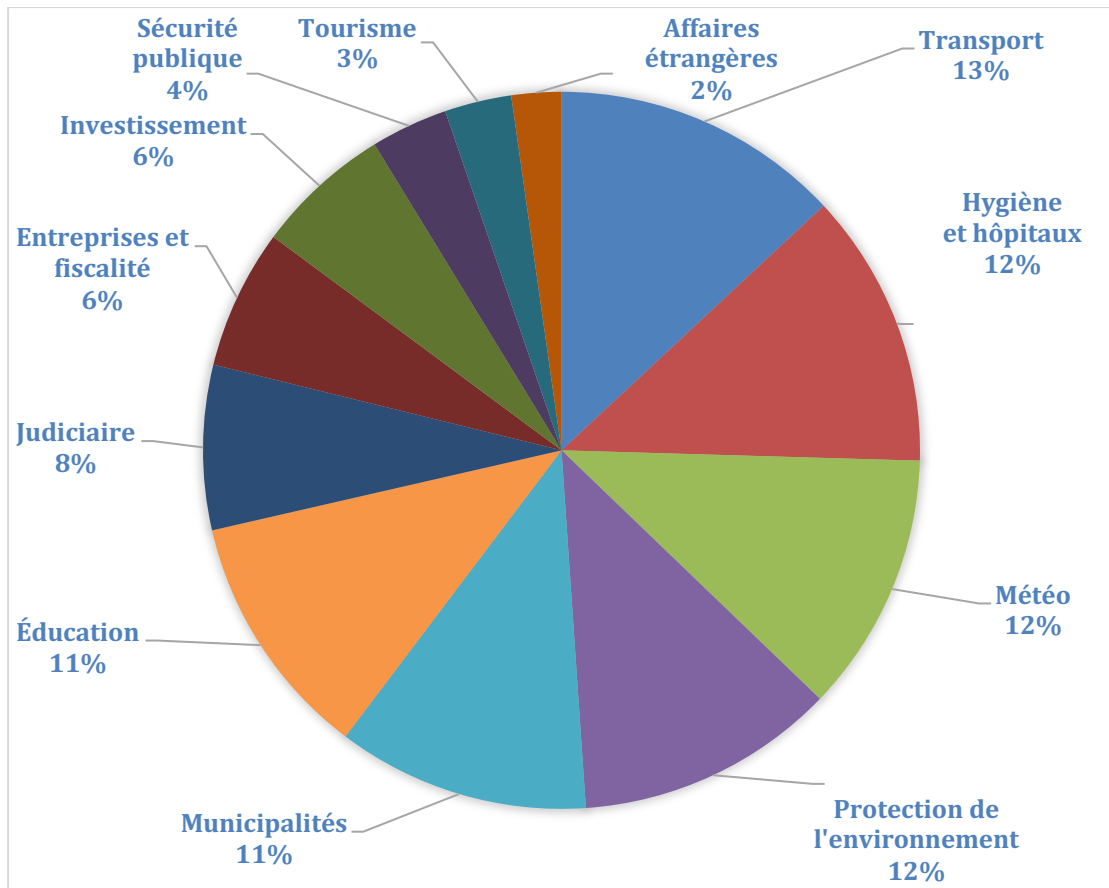


Figure 1: Citizen use of government Weibo, by topic area

## 6. Analysis and hypothesis testing

### 6.1 Results of the exploratory factor analysis and reliability analysis

As there is little empirical research on government-initiated social media use in China considering interpersonal trust, institutional trust and anxiety, we carried out an exploratory factor analysis in order to identify the underlying structure of the measured variables in the questionnaire. First of all, the factorability of all Likert items in the questionnaire was examined. A cross table analysis of all items showed that many items correlated at least .3 with at least one other item, suggesting factorability. The Kaiser-Meyer-Olkin measure of sampling adequacy was .968 and thus well above the commonly recommended value of .6, and Bartlett's test of sphericity was significant ( $\chi^2 (1176) = 31145.577, p < .0001$ ). The diagonals of the anti-image correlation matrix were above .5 with the

exception of the items on anxiety. Finally, the communalities were all above .3, further confirming that each item shared at least some common variance with other items. Given the above considerations, factor analysis was deemed to be suitable with all items. Factor analysis was carried out using maximum likelihood extraction method since the variables were generally normally distributed. Given two potentially correlated trust variables, and a possibly related anxiety variable, we used oblique rotation (which is inclusive of orthogonal rotation) to allow for possibly correlated factors. And, since our dataset was relatively large (more than 1500 observations), we decided to opt for Promax rotation. In the course of the factor analysis, inclusion of all items did not result in a simple factor structure. Only after elimination of items, a five-factor solution explaining 44.9% of the variance could be identified (see Table 2). Subsequently, internal consistency of the identified factors was measured using Cronbach's alpha (Table 3). All measures for consistency were acceptable; no improvements could be made by dropping items from the scales. Subsequently, composite scores were created for each of the factors based on the mean of the items factor loadings greater than .3. Table 3 reports the mean values, standard deviations and correlations between the abovementioned scales.

|     | Behavioral intention | Peer pressure | Anxiety | Interpersonal trust | Institutional trust |
|-----|----------------------|---------------|---------|---------------------|---------------------|
| Q17 | .667                 |               |         |                     |                     |
| Q18 | .684                 |               |         |                     |                     |
| Q19 | .633                 |               |         |                     |                     |
| Q28 |                      | .463          |         |                     |                     |
| Q29 |                      | .485          |         |                     |                     |
| Q30 |                      | .401          |         |                     |                     |
| Q31 |                      | .476          |         |                     |                     |
| Q38 |                      |               | .806    |                     |                     |
| Q39 |                      |               | .878    |                     |                     |
| Q40 |                      |               | .880    |                     |                     |
| Q41 |                      |               | .796    |                     |                     |
| Q42 |                      |               |         | .452                |                     |
| Q43 |                      |               |         | .589                |                     |
| Q44 |                      |               |         | .625                |                     |
| Q45 |                      |               |         | .698                |                     |
| Q46 |                      |               |         | .586                |                     |
| Q47 |                      |               |         | .590                |                     |
| Q48 |                      |               |         | .615                |                     |
| Q49 |                      |               |         | .679                |                     |
| Q50 |                      |               |         | .509                |                     |
| Q51 |                      |               |         | .557                |                     |
| Q52 |                      |               |         | .649                |                     |
| Q53 |                      |               |         | .365                |                     |
| Q54 |                      |               |         |                     | .376                |
| Q55 |                      |               |         |                     | .430                |
| Q56 |                      |               |         |                     | .445                |
| Q57 |                      |               |         |                     | .596                |
| Q58 |                      |               |         |                     | .625                |
| Q59 |                      |               |         |                     | .569                |
| Q60 |                      |               |         |                     | .553                |
| Q61 |                      |               |         |                     | .741                |
| Q62 |                      |               |         |                     | .744                |
| Q63 |                      |               |         |                     | .609                |
| Q64 |                      |               |         |                     | .713                |
| Q65 |                      |               |         |                     | .746                |

**Table 2: Results of factor analysis (maximum likelihood extraction, Promax rotation)**

|   | Cronbach' s<br>alpha | Mean (SD)   | Behavioral<br>intention | Peer pressure | Anxiety | Interpersonal<br>trust | Institutional<br>trust |
|---|----------------------|-------------|-------------------------|---------------|---------|------------------------|------------------------|
| Gender (1=female)                             |                      | 0.42        | -.046                   | -0,03         | -0,02   | .022                   | -.138                  |
| Age   |                      | 35.9 (7.9)  | -0,43                   | -0,40         | -0,29   | -0,07                  | .018                   |
| Area (1=Urban)                                |                      | 0.87        | -0,10                   | -0,10         | -0,03   | -0,12                  | -0,13                  |
| Education<br>(1=University &<br>postgraduate) |                      | 0.52        | -0,08                   | -0,03         | 0,04    | -0,05                  | -0,09                  |
| Job (1=Civil servant)                         |                      | 0.30        | -0,04                   | -0,02         | -0,09   | -0,05                  | -0,03                  |
| Behavioral intention                          | .708                 | 1.68 (.55)  | 1                       |               |         |                        |                        |
| Peer pressure                                 | .762                 | 1.96 (.63)  | .500                    | 1             |         |                        |                        |
| Anxiety                                       | .895                 | 3.50 (1.09) | -.358                   | -.170         | 1       |                        |                        |
| Interpersonal trust                           | .854                 | 1.95 (.50)  | .535                    | .628          | -.253   | 1                      |                        |
| Institutional trust                           | .891                 | 1.88 (.51)  | .414                    | .575          | -.104   | .685                   | 1                      |

**Table 3: Reliability, means, standard deviation and bivariate correlations of variables**

## 6.2 Multiple linear regression analysis



In order to test a basic multivariate model with one dependent variable (behavioral intention) and four independent variables we conducted a multiple linear regression analysis.

Before the actual regression was implemented, we checked the following model assumptions for multiple regression analysis following guidelines set out by Field (2009). Multicollinearity was checked by inspecting the correlations of the independent variables in Table 3 and by inspecting the VIF values of each independent variables. As none of the correlations are above .7, and all VIFs were below 4, this assumption is met. Homoscedasticity was checked using a scatterplot of standardized residuals and predicted values; no anomalies were found. Independent errors were checked using the Durbin-Watson statistic and the value of 1.910 revealed no problems associated with this assumption. The assumption of normally distributed errors was tested via inspection of unstandardized residuals. Although the Shapiro-Wilk test for normality ( $SW = .972, df = 1572, p < 0,01$ ) suggested normality was not met, inspection of the Q-Q plot revealed a relatively normal distribution, and we concluded that this assumption was also met.

The impacts of the variables peer pressure, anxiety, interpersonal trust and institutional trust on behavioral intention to use social media to communicate with governments (controlling for age and gender, and subsequently for urban/rural residency, level of education, and either or not working in the public sector) were assessed using multiple linear regression analysis. A significant regression equation was found for age and gender ( $F(2, 1569) = 3.645, p < 0,05; R^2 = 0,003$ ), age, gender, living area, level of education and working in the public sector ( $F(5, 1566) = 6.805, p < 0,001; R^2 = 0,021$ ) as well as for age, gender living area, level of education, working in the public sector, peer pressure, anxiety, interpersonal trust and institutional trust ( $F(9, 1562) = 112.507, p < 0,001; R^2 = 0,411$ ). Coefficients and significance levels of the various independents are reported in Table 4.

|   | Model 1                   | Model 2                   | Model 3                   |
|---|---------------------------|---------------------------|---------------------------|
|   | Beta (significance)       | Beta (significance)       | Beta (significance)       |
| Age                                     | -0,050*                   | -0,066*                   | -0,055*                   |
| Gender (1=female)                       | -0,053*                   | -0,057*                   | -0,062**                  |
| Area (1=urban)                          |                           | -0,088**                  | -0,035                    |
| Education (1=University & postgraduate) |                           | -0,069**                  | -0,036                    |
| Job Type (1=Civil servant)              |                           | -0,025                    | -0,037                    |
| Anxiety                                 |                           |                           | -.247***                  |
| Peer pressure                           |                           |                           | .247***                   |
| Interpersonal trust                     |                           |                           | .279***                   |
| Institutional trust                     |                           |                           | .045                      |
|   | $\Delta R^2 = .003$ (adj) | $\Delta R^2 = .018$ (adj) | $\Delta R^2 = .390$ (adj) |

**Table 4: Regression results on Behavioral Intention (\* p<0,05; \*\* p<0,01; \*\*\*p<0,001)**

In summary, we can state that hypotheses regarding the impact of anxiety (negatively), peer pressure and interpersonal trust are supported, whereas the hypotheses regarding the impact of institutional trust on Chinese citizens' adoption of Sina Weibo does not receive support.

## 7. Conclusion

The results presented in the previous section provide core components of a theory that explains why Chinese citizens, living in an authoritarian governance regime, adopt Sina Weibo to interact with authorities. By doing so, it corroborates and specifies determinants of Chinese citizens' adoption of

microblogging that were suggested in qualitative, small-n and more descriptive studies of microblogging in China (Schlaeger & Jiang, 2013; Harwit, 2014; Sullivan, 2014). Taken together, the analysis points at the relevance of an individual citizen's immediate social environment (think of expected behaviors than emerge from pressures from one's nearest and dearests, and beliefs in trustworthy, benevolent behaviors of government officials) in explaining Chinese citizens' adoption of microblogging in order to interact with government. Adoption does not result from technological opportunity alone; rather, *smaller-network ties* consisting of feelings of belonging in relation to one's nearest and dearests, and expectations of officials' sincerity do impact or at least enable an individual's adoption of microblogging in state-citizen relations. *Larger-network ties* (trust in institutions-at-large, such as the CCP, executive organizations, the judicial system, media, et cetera) are not associated with adoption of microblogging. This finding underlines the importance of densely knit, pervasive social networks surrounding individual citizens (*guanxi*) in explaining how Chinese citizens engage with authorities in citizen-state interactions using new electronic communication channels.

A noteworthy feature of microblogging use in a Chinese authoritarian state context is the potential of censorship and surveillance exercised by government information officials and censors working at Internet Service Providers. Empirical evidence shows that there is a variance in Chinese citizens' reported levels of anxiety. Furthermore, as higher levels of anxiety are correlated with lower levels of use intentions, anxiety limits citizen's adoption of microblogging. This finding underlines the impact of the Chinese authority's surveillance and control activities on the lives of individual Chinese citizens, and urges academics and social media practitioners alike to reflect on how political context may affect technology use in state-citizens relations in China, and arguably also in other contexts.

## **8. Limitations and research directions**

The above findings and subsequent discussions give rise to a number of directions for future research.

A first limitation concerns the possibilities for generalizing findings across the domain of the People's Republic of China. We have partly derived relevant variables (anxiety, peer pressure, a sociological and psychological notion of trust) from a context of the authoritarian governance system that is characteristic for the dual CCP-government structure that is prevalent in the whole of the PRC. In order to control for possible larger cultural differences throughout the vast country of China, we chose to develop and test hypotheses using data gathered in one (still huge and populous) province: Hunan province. Given China's omnipresent CCP-government apparatus, it may be tempting to generalize findings across the whole of China. There exists, however, a large socio-economic and ethnic diversity and China and since our theorizing concerns Chinese citizens' online motives, behaviors and perhaps implicit coping mechanisms, considerable discretion must be considered in order to prevent generalizations based on statistical inferences only.

A second limitation has to do with false attribution of findings to context. In this article, we have used inspiration from existing accounts of microblogging in China, adoption theories, and psychological ideas in order to develop and subsequently test hypotheses. Theorizing and testing enabled the conclusion that pervasive networks described in other Chinese literatures as *guanxi* are relevant for explaining adoption of microblogging. There may be a rival explanation stating that dense networks consisting of *smaller-network ties* are relevant for explaining microblogging adoption and how digital state-citizen relations look like, in various authoritarian regimes and in consolidated democracies alike. Moreover, some renditions of the Unified Theory of Adoption and Use of Technologies (UTAUT) focusing on electronic government transactions feature variables like peer pressure and trust also suggesting a role for *smaller-network ties* in explaining adoption of technologies in state-citizen relations outside the particular Chinese context.

A third limitation concerns the method, that is the survey, that was used in this particular study. It has been observed in literature that along with many other social science methods like interviewing and observations, surveys as a social scientific method is more challenging to administer in China than in other contexts. Respondents are likely to be familiar with filling in surveys that are administered by governments, and when invited to participate in a scientific study, Chinese citizens are likely to have privacy concerns influence their responses. This is a possible source of bias that could have occurred in the data set. Triangulation through additional interviews could be considered as a means to notice and if necessary correct for such bias, although it has been noted that researchers are sometimes in the position of having to read tea leaves to ascertain what respondents really believe (King, Pan, & Roberts, 2013), thereby introducing new forms of biases.

If we reflect on this particular study and take the limitations seriously, there are avenues for further research we would like to suggest.

A first research direction is comparative research of the use of microblogging in various political governance systems. This study has demonstrated the validity of constructs like peer pressure, interpersonal trust and anxiety in an authoritarian governance system like China. The conclusions from this study urge for replication in other contexts, such as Western liberal democracies, or in for instance transitional states in Eastern Europe, in order to come up with more robust, informative and realistic theories about how and why citizens use microblogging and other forms of social media to interact with government – and vice versa.

A second research direction has to do with the type of variables this study has identified as determinants of adoption of microblogging in a political context. At large, we see that ‘smaller-network ties’ and anxiety are important for understanding why citizens use microblogs in a Chinese context. This finding urges e-government researchers working with adoption models like UTAUT to focus on persuasive and normative pressures as determinants of technologies in state-citizen relations, rather than perhaps overly rational variables like

performance expectancy and ease of use, which the e-government adoption literatures has arguably inherited from UTAUT's legacy in more generic technology adoption studies.

A third avenue for research is to elaborate the concept of trust in government. E-Government researchers have begun to include 'trust' in explanatory theories of adoption of all kinds of e-government technologies. This study has identified various components of 'trust', and it arguably could be useful to furthermore analyze the multi-layered concept of trust in government, for instance in terms of beliefs relating to (1) competence and/or consideration of individual government officials (2) executive organizations having appropriate procedures and safeguards in place and (3) checks and balances between executive, judicial and legislative powers that enables correction of administrative errors or abuse.

The results of this study, combined with the directions for research suggested above, highlight how new technologies like microblogs enable specific discourses and interactions in state-citizen relations of authoritarian government regimes and in liberal democracies, and eventually in cross-fertilization between disciplines of political science, public administration and information systems. These academic disciplines have been ignoring each other's contribution to the fascinating empirical field of microblogging and social media for far too long.

## **References**

Cai Y (2010) *Collective resistance in China: Why popular protests succeed or fail*.

Stanford: Stanford University Press.

Cairns C and Carlson A (2016) Real-world islands in a social media sea:

Nationalism and censorship on Weibo during the 2012 Diaoyu/Senkaku crisis. *China Quarterly* 225: 23-49.

- Carter and Bélanger F (2005) The utilization of e-government services: Citizen trust, innovation and acceptance factors. *Information Systems Journal* 15(1): 5-25.
- De Lange MM and Homburg VMF (2017) Explaining municipal civil servants' voluntary turnover intentions: Where and why do civil servant go in times of austerity? *Tékne* 15(1): 16-25.
- Deng, Q, Liu Y, Deng, X and Zhang, H (2015) Semantic analysis on microblog data for emergency response in typhoon Chan-hom. *Proceedings of the 1st ACM SIGSPATIAL International Workshop on the use of GIS in Emergency Management, EM-GIS 2015*,
- Frederiksen, M (2014) Relational trust: Outline of a Bourdieusian theory of interpersonal trust. *Journal of Trust Research* 4(2): 167-192.
- Gaskin, J. (2017) Data screening. Available at:  
[http://statwiki.kolobkreations.com/index.php?title=Data\\_screening](http://statwiki.kolobkreations.com/index.php?title=Data_screening)  
(accessed 23 August 2019).
- Hao, X, Zheng, D, Zeng, Q and Fan, W (2016) How to strengthen the social media interactivity of e-government. *Online Information Review* 40(1): 79-96.
- Harwit, E (2014) The rise and influence of Weibo (microblogs) in China. *Asian Survey* 54(6): 1059-1087.
- Hassid, J (2012) Safety valve or pressure cooker? Blogs in Chinese political life. *Journal of Communication* 62(2): 212-230.

- Homburg, VMF (2019) Trust, fear and social influence: on the use of social media in China's authoritarian governance regime. In: Pucihar, A, Borštnar, M, Bons, R, Seitz, J, Cripps, H and Vidmar, D (eds.) *Humanizing Technology for a Sustainable Society*. Maribor: University of Maribor Press, pp. 223-238..
- King, G, Pan, J, and Roberts, MEME (2013) How censorship in China allows government criticism but silences collective expression. *American Political Science Review* 107(2): 1-18.
- Koetse, M. (2015) An Introduction to Sina Weibo: Background and Status Quo. Available at <https://www.whatsonweibo.com/sinaweibo/> (accessed 23 August 2019).
- Li, Y, Homburg, VMF, de Jong, M and Koppenjan, J (2016) Government responses to environmental conflicts in urban china: The case of the Panyu waste incineration power plant in Guangzhou. *Journal of Cleaner Production* 134: 354-361.
- Li, Y, Koppenjan, J, and Homburg VMF (2017) Governing environmental conflicts: A comparative analysis of ten protests against industrial facilities in urban China *Local Government Studies* 43(6):): 1-22.
- Liu, J (2013) *Microblogging use by the Chinese government*. Miami: University of Miami.
- Ma, L (2014) Diffusion and assimilation of government microblogging: Evidence from Chinese cities. *Public Management Review* 16(2): 274-295.



- MacKinnon R (2011) China's 'networked authoritarianism'. *Journal of Democracy* 22(2): 32-46.
- Medaglia R and Zhu D (2016) Public deliberation on government-managed social media: A study on Weibo users in China. *Government Information Quarterly* 34(3): 533-544.
- Meng, T, Pan, J and Yang, P (2017) Conditional receptivity to citizen participation: Evidence from a survey experiment in China. *Comparative Political Studies* 50(4): 399-433.
- Mergel, I and Bretschneider, S I (2013) A three-stage adoption process for social media use in government. *Public Administration Review* 73(3): 390-400.
- Pavlou, P A and Gefen, D (2005) Psychological contract violation in online marketplaces: Antecedents, consequences, and moderating role. *Information Systems Research*, 16(4), 372-399.
- Poppo, L, Zhou, K Z and Li, J J (2016) When can you trust "trust"? calculative trust, relational trust, and supplier performance. *Strategic Management Journal* 37(4): 724-741.
- Qin, B, Strömberg, D and Wu, Y (2017) Why does China allow freer social media? protests versus surveillance and propaganda. *Journal of Economic Perspectives* 31(1): 117-140.
- Rana, N P, Dwivedi, Y K and Williams M D (2013) Evaluating alternative theoretical models for examining citizen centric adoption of e-government. *Transforming Government: People, Process and Policy* 7(1): 27-49.

- Rana, NP, Dwivedi, YK, Williams MD, and Weerakkody, V (2016) Adoption of online public grievance redressal system in India: Toward developing a unified view. *Computers in Human Behavior* 59: 265-282.
- Reich-Graefe, R (2014) Calculative trust: Oxymoron or tautology? *Journal of Trust Research* 4(1): 66-82.
- Schlæger, J and Jiang M (2014) Official microblogging and social management by local governments in China. *China Information* 28(2): 189-213.
- Sullivan, J (2014) China's Weibo: Is faster different? *New Media and Society* 16(1): 24-37.
- Susanto, TD and Goodwin, R (2013) User acceptance of SMS-based e-government services: Differences between adopters and non-adopters. *Government Information Quarterly* 30(4): 486-497.
- Tsai, W (2016) How 'networked authoritarianism' was operationalized in China: Methods and procedures of public opinion control. *Journal of Contemporary China* 25(101): 731-744.
- Tsang, S (2009) Consultative Leninism: China's new political framework. *Journal of Contemporary China* 18(62:): 865-880.
- , ,Thong, JYL, Chan, FKY andand Hu PJH (2016) Managing citizens' uncertainty in e-government services: The mediating and moderating roles of transparency and trust. *Information Systems Research* 27(1): 87-111.
- Venkatesh, V, Thong, JYL, Chan, FKY, Hu, PJ, and Brown, SA (2011) Extending the two-stage information systems continuance model: Incorporating UTAUT

predictors and the role of context. *Information Systems Journal* 21(6): 527-555.

Venkatesh, V, Thong, JYL and Xu, X (2012) Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly: Management Information Systems* 36(1): 1157-178.

Venkatesh, V, Thong, JYL and Xu, X (2016) Unified theory of acceptance and use of technology: A synthesis and the road ahead. *Journal of the Association of Information Systems* 17(5): 328-376.

Wang, Q, Yang, S and Liu, J (2012) Study on users' adoption of online group purchase in China: A revised UTAUT model. *Advances in Information Sciences and Service Sciences* 4(17): 504-513.

Welch, EW and Fulla, S (2005) Virtual interactivity between government and citizens: The Chicago police department's citizen ICAM application demonstration case. *Political Communication* 22(2): 215-236.

Wu, Y, Bauer, JM (2010) E-government in China: development and driving forces of provincial portals. *Chinese Journal of Communications* 3(3): 290-310.

Yang, Q and Tang W (2010) Exploring the sources of institutional trust in China: Culture, mobilization, or performance? *Asian Politics and Policy* 2(3): 415-436.

Yang, Q., Homburg, VMF, Bekkers, VJJM and Moody, RFI (2018) Microblogging and Authoritarian Governance Regimes: Results from a survey on the use of

Sina Weibo by Chinese citizens. *Electronic Journal of e-Government (EJEG)* 16(2): 147-163.

Yen, ADA, Barnes, BR and Wang, CL (2011) The measurement of guanxi: Introducing the GRX scale. *Industrial Marketing Management*, 40(1): 997-108.