Eurasian Journal of Social Sciences, 8(2), 2020, 53-69
DOI: 10.15604/ejss.2020.08.02.002

EURASIAN JOURNAL OF SOCIAL SCIENCES

www.eurasianpublications.com

EVALUATION AND EMPIRICAL STUDY ON THE INFORMATION SERVICE QUALITY OF TIKTOK GOVERNMENT ACCOUNTS

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Received: May 8, 2020 Accepted: June 13, 2020

Abstract

Effective evaluation on the information service quality of TikTok government accounts, an emerging channel and means employed by China's government to provide public service, will be helpful to provide reference for the service improvement. Based on the SERVQUAL model and scale, and the gaps model of service quality, the authors established an evaluation indicator system for the TikTok government account information service quality from the public perspective, and also empirically verified its primary indicators through a case study of local TikTok government accounts. The findings showed that the SERVQUAL model and scale are also applicable to the study of the information service quality of TikTok government accounts after some modification, and that the user-perceived service quality of the local TikTok government accounts has not yet met their expectations. Further research will place an emphasis on an empirical study of the national wide top-ranked case(s) for comparative analysis and benchmark setting purpose.

Keywords: TikTok Government Accounts, E-Government Service Quality, Evaluation Indicator, Factor Analysis

1 Introduction

With the development of e-government, the government administration is progressively becoming service-oriented and the service quality has been attracting great attention from the public. Providing high-quality public service is the duty of government (Janita and Miranda, 2018; Reddick *et al.* 2017). The information service in e-government is also steadily developing in this context. As an evidence, governmental agencies at global wide have been making good use of social media to provide services to the public, which even further transforms their operations from the centralized mode to the de-centralized, network mode, supporting many-to-many interactions with citizens (Aladwani and Dwivedi, 2018). The emergence of short videos opens up a new way to convey the government's information to the public.

There have been emerging a number of short video applications in recent years. With the virtue of accurately positioning the target user groups and precision release of short video information, TikTok short video applications stand out. Among them, TikTok government accounts have become the representative of the latest trend of new media in e-government.

When www.chinapeace.gov.cn officially launched its TikTok account on March 8, 2018, it became the first TikTok government account on the platform. As of December 2019, totally 17,380 TikTok government accounts have been opened by government agencies at all levels and governments of 31 provinces (autonomous regions, municipalities directly under the central government of China) have all opened TikTok government accounts (China Internet Network Information Center, 2020). The information service quality of TikTok government accounts is therefore concerning both academia and practitioners.

For quite a few years, the public administration departments have been mainly relying on the government website, government service App and government service new media (such as MicroBlog and WeChat) to provide services to the public (Criado *et al.* 2013). Short video App is usually regarded as a commercial product. It comes out that the existing short video studies concentrate on finding the significant impacts of the sense of humor of short video on the viewers' sense of immersion, social presence and entertainment (Wang, 2020) and exploring the factors influencing addiction with short video application (Zhang *et al.* 2019) and the practical problems brought about by short videos (Stokel-Walker, 2019), but have not yet studied the short video for government affairs. Given that the TikTok government accounts have become a unique way for China's government to provide public service, our research focuses on the information service quality of TikTok government accounts. For this purpose, we have, from the public's perspective, designed a TikTok government accounts information service quality evaluation indicator system and also analyzed our empirical investigation data with an effort to understand the current status and also find out problems of TikTok government accounts information service.

2. Literature review and rationale for this study

2.1. Literature review: studies on evaluation indicators and model of e-government information service quality

Studies on e-government service quality evaluation indicators and model have always been the focus of scholars. Earlier, Papadomichelaki and Mentzas (2012) conceptualized the e-GovQual and measured the user's perceived service quality of E-government from the four dimensions such as reliability, efficiency, citizen's support and trust. Their research demonstrated that these four dimensions all exert important impacts on the service quality; and Kaisara and Pather (2011) expanded the existing studies from electronic service quality to e-government field and believed that, in their assessment on e-government of South Africa, the six dimensions such as website design, website navigation, interaction, website aesthetics, information quality and security are applicable to the assessment on service quality. Most recently, Li and Shang (2020) employed Partial Least Square (PLS) to verify the facilitating part of e-government service quality based on the investigation data of 1650 Chinese residents. The results show that the quality, reliability, security level, accessibility, service capacity, information quality, response capacity and interaction of system constitute the eight dimensions affecting E-government service quality. Janita and Miranda (2018) applied Delphi method to have empirical study on the key factors that should be taken into consideration when the government designs the Web service portal for use of its employees. Their research indicated that such four dimensions as information quality, privacy, technological efficiency and communication with employees can be used to assess the electronic service quality. Also, Kurfali *et al.* (2017) introduced the factors of internet trust and trust in government on the basis of Unified Theory of Acceptance and Use of Technology (UTAUT) and verified their research with 529 samples obtained from investigation on Turkey citizens. The research results demonstrated that anticipated performance, convenience, social influence and internet trust are the decisive factors affecting the citizen's use of electronic government service.

Studying the relationship between electronic government service acceptance and use and the public's satisfaction from the user's perspective is also a research hotspot. Verdegem and Verleye (2009) formed conceptual model based on ICT acceptance theory and used quantitative and qualitative methods to comprehensively analyze the relationship between the public's satisfaction and the electronic government service trust and acceptance. The results

suggest that the public's satisfaction plays an important role in public's acceptance of electronic government service. Reddick and Turner (2012) conducted an opinion survey on Canadian residents and found that the government's active service values and experience in service delivery can improve the public's satisfaction with government's website and that the active experiences of citizens when accepting service can be transformed into more satisfied experience of the public toward E-government. Alawneh *et al.* (2013) identified privacy safety, trust, accessibility and public service awareness as well as public service quality as the five factors affecting the satisfaction of Jordan's public with E-government service. They investigated 400 employees of the four universities in north Jordan and found that the public service quality is the most important factor affecting the satisfaction with E-government service. Al-Hujran *et al.* (2015) expanded the studies on the basis of technology acceptance model, established a research model and surveyed 413 Jordanian citizens and found that the citizens' willingness to accept and use E-government service is greatly affected by their attitude. With Chinese and South Korean students as the example, Mensah *et al.* (2017) studied the determining factors affecting their willingness to use E-government service. Their research results suggest that the perceived practicability, perceived usability, perceived service quality and citizens' trust all play an active role in students' willingness to accept and use e-government service.

However, Stefanovic *et al.* (2016) established an e-government system success model based on the Information System Success (ISS) and surveyed the 154 employees of e-government system of Serbia. Their research shows that the three dimensions such as information quality, system quality and service quality exert a positive impact on the willingness to use E-government service and that the information quality and service quality will not directly affect the user's satisfaction.

2.2. Rationale for this study

Studies on service quality have always been the key point of marketing and service industries. Service quality is not only the core of service management but also one of important links in enterprise management. Therefore, the studies on service quality from different perspectives are gradually increasing. Gronroos (1984) firstly put forward the concept of perceived service quality in 1982 and that the service quality is the results of comparison between the user's perceived service and expected service. Gronroos (1984) considered technical quality (result quality) and functional quality (process quality) as the two dimensions evaluating the perceived service quality. Extending the above-mentioned concept to the information service quality of TikTok government accounts, we regarded the short video information contents of TikTok government accounts as the technical quality which specifically covers the authority and accuracy, authenticity and reliability, and value. Meanwhile, we considered the process that users receive short video information of TikTok government accounts as the functional quality which covers the convenience for the users to get short video information of TikTok government accounts, the response speed and time to get the service and attitude in interaction and so on.

Then, Parasuraman *et al.* (1985) (shortly as PZB) established service quality gap model on the basis of Gronroos's (1984) perceived service quality concept and defined the service quality evaluation as the difference between the perceived actual service quality and ideal expected quality of people. To facilitate quantitative calculation of the service quality, they further proposed SERVQUAL model and scale. Such model contains 22 specific evaluation indicators under such five dimensions as tangibility, reliability, responsiveness, assurance and empathy (Parasuraman *et al.* 1988). Till this time, SERVQUAL evaluation method has become the most extensively applied research theory. Some scholars referred to SERVQUAL model and re-interpreted the five dimensions of SERVQUAL scale (Ocampo *et al.* 2019; Hung *et al.* 2013; Alawneh *et al.* 2013), and constructed service quality evaluation system to assess the e-government service quality.

3. Methodologies

3.1. Model design

In this paper, we combined with the study results of domestic and foreign scholars and institutions on E-government service quality to correct the SERVQUAL model. We selected and retained three dimensions of reliability, responsiveness and empathy, replaced the dimension of tangibles with convenience and increased the dimension of trust from the user's perspective and by combining with the uniqueness of E-government service and TikTok government accounts. Then, we established TikTok government accounts information service quality evaluation model (Figure 1).

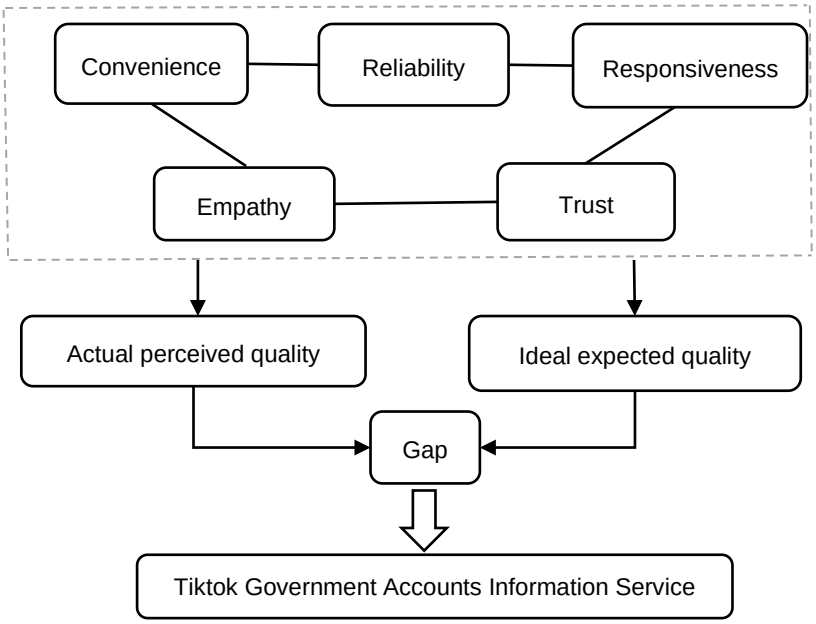

Figure 1. Evaluation model of Tiktok government accounts information service quality

3.1.1. Convenience

It is reflected in the availability of platform, stability of system hardware and convenience of software support when the users come into contact with information service provided by TikTok government accounts. This dimension specifically includes the user's flexibility in operating and using TikTok government accounts, convenient access, effectiveness of information acquisition and video interface loading speed.

3.1.2. Reliability

It refers to the fact that TikTok government accounts can fulfill its commitment to users under the premise of completeness and accuracy. Information release and dissemination are the main functions currently undertaken by TikTok government accounts and the essential core is the quality level of contents. The quality level is specifically manifested in the value, authenticity and reliability and understandability of contents provided by TikTok government accounts.

3.1.3. Responsiveness

It refers to the response speed of TikTok government accounts to user's operation instructions and the service efficiency and effect. It is reflected in whether the official management team of TikTok government accounts can make full use of various technologies and observation methods to shorten the public's waiting time for service. There is a clear positive correlation

between the public's waiting time and the response speed of TikTok government accounts. The shorter the waiting time, the faster TikTok government accounts responds. Such indicator specifically includes service efficiency, video update frequency and service feedback results.

3.1.4. Empathy

It is reflected in whether the team behind TikTok government accounts can start from the user's perspective to consider the user's current needs for information and then push out information recognized by the public. In the process of service push and user's reception of information, the humanistic care shown by TikTok government accounts and the user's personalized needs are important factors affecting the user's evaluation on service quality of TikTok government accounts. These factors are specifically embodied in communication attitude during service provision, the pertinence of reply, personalized service (such as tickers with special effect, TikTok Theme Contest).

3.1.5. Trust

From the user's perspective, the public's trust in information service quality of TikTok government accounts is mainly decided by the recognition of government image and capabilities. The public's trust has played a significant moderating role in relationship between the user's perceived usability and perceived service quality of E-government and the user's willingness to use E-government service (Mensah *et al.* 2017). It is specifically embodied in the responsiveness of government account to major public emergencies, transparency of the video information pushed, whether the information and service provided are trustworthy and meet the needs of users.

3.2. Data collection and empirical methods

As of March 5, 2019, Wuhan has 139 TikTok government accounts, ranking third among the top ten cities in terms of the number of TikTok government accounts. Considering the differences in regions and economic levels, this paper takes the official TikTok accounts opened by functional institutions at all levels in Wuhan as an example.

In this study, we adopted questionnaire survey to test the model and indicators in two parts. The introduction part explains the purpose of this survey and the definition of TikTok government accounts. The first part is mainly to understand the basic information of the respondents, including the gender, age, highest education and experience in using TikTok. The second part is mainly to investigate the user's actual perceived quality and ideal expected quality of specific evaluation items designed to evaluate the information service quality of TikTok government accounts. The Likert five-point scale was used as the evaluation scale and the respondents were asked to score their actual perceived value and the ideal expected value toward each evaluation item. The scores range from 1 point to 5 points. In the actual perceived quality, "1" represents very disagree and "5" represents very agree; in the investigation of ideal expected quality, "1" stands for very unimportant, the lowest value and "5" means very important, the highest value. We then analyzed the difference between the public's actual perceived value and ideal expected value towards information service of TikTok government accounts to judge the level of information service quality of TikTok government accounts.

On the basis of the above model analysis, we referred to the research results of E-government and Internet information service and refined the dimensions evaluating the information service quality of TikTok government accounts on the basis of SERVQUAL scale into evaluable initial evaluation items. Meanwhile, we combined with the experts' opinions to have pre-investigation on the 89 people who have paid attention to TikTok government accounts. After two rounds of reliability and validity test and factor analysis, we corrected the primary indicator system, eliminated two evaluation items with too low loading factor and finally determined 18 evaluation items (see Table 1) for evaluation of information service quality of TikTok government accounts through exploratory factor analysis. The objects of formal

questionnaire survey are the people who have used TikTok short video and may have paid attention to or watched short video of Wuhan's TikTok government accounts. We distributed the questionnaire on social platforms such as WeChat, QQ and Microblog and recovered 249 copies from March 15, 2020 to March 30, 2020. After eliminating the incomplete and invalid questionnaires, we obtained 207 valid ones. Among them, 87.9% of the respondents had a history of using TikTok for less than 2 years, and 88.9% of them used TikTok for less than 1 hour each time, and the age of the respondents was concentrated among young females between 18 and 25 years old, matching the profile of TikTok account users, and thus being qualified to be used for this research.

Table 1. Dimensions, indicators and measurement items of the Tiktok Government accounts information service quality evaluation model

Dimensions	indicators	measurement items	Source(s)
Convenience	Follow way	1.Searching and following Tiktok government accounts is very convenient	Kuo *et al.* (2005), Chen (2015), Shi (2015)
	Quick access	2.You can quickly access Tiktok government accounts and search information	
	Easy to use	3.It is easy to find the information you want on the Tiktok government accounts	
Reliability	Information authority	4.The content pushed by the Tiktok government accounts is authoritative and accurate	Parasuraman *et al.* (1988), Kuo *et al.* (2005), Xu (2015)
	Information authenticity	5.The content pushed by Tiktok government accounts is authentic and reliable	
	Content value	6.The information released by Tiktok government accounts is useful to me	
Responsiveness	Service efficiency	7.Tiktok government accounts online comment reply is timely	Yang and Jun (2002), Kuo *et al.* (2005), Xu (2015), Shi (2015)
	Update frequency	8.Tiktok government accounts short video content update is timely	
	Interface loading speed	9.Tiktok government accounts short video playing page load speed is fast	
	Service feedback	10.Online suggestions can be dealt with in a timely manner	
	Service effect	11.Online suggestions can get timely feedback	
Empathy	Communication attitude	12.The service attitude of Tiktok government accounts is friendly and polite	Parasuraman *et al.* (1988), Kuo *et al.* (2005), Liao (2013), Chen (2015)
	Targeted response	13. The Tiktok government accounts can give answers to relevant departments for different problems of users	
	Personalized service	14. Provide service forms that are not available on other platforms (such as special effects, stickers, Tiktok topic challenge, etc.)	
Trust	Government response	15.Tiktok government accounts can respond quickly to the warning information of sudden public events	Mayer *et al.* (1995), Zhao (2013), Xu (2015), Li and Xu (2017)
	Frank and disclosure	16.The short video information pushed by the Tiktok government accounts is open and transparent	
	Government credibility	17.The information and services provided by Tiktok government accounts are trustworthy	
	Government capacity	18.The information and services provided by the Tiktok government accounts can meet my needs	

4. Results

4.1. Sample descriptive statistics

Table 2 summarizes the characteristics of basic demographics of the respondents. According to data on 207 valid samples collected, 28.5% of the respondents are male and 71.5% are female. It is apparent that nearly 70% of the respondents are female, much more than male. In terms of age distribution, individuals between the ages of 18 and 25 are the majority, accounting for 87% of all respondents; and individuals under the age of 25 account for 89.4% of all respondents. In terms of education level, individuals that have a bachelor's degree are the majority, accounting for 58.9% (more than half) of all respondents. The users of TikTok are mainly young people, and most of them are female. Of these female, college students are the majority. The characteristics of the demographics of the people surveyed this time are generally consistent with the characteristics of the portrait of the users of TikTok. Therefore, the samples from this survey can be used to study the evaluation of the information service quality of TikTok government accounts.

Table 2. Demographic profile of respondents to the survey（n=207）

Characteristics	Items	Frequency	Percentage
Gender	Male	59	28.5%
	Female	148	71.5%
Age	＜18	5	2.4%
	18~25	180	87.0%
	26~35	18	8.7%
	36~45	1	0.5%
	＞45	3	1.4%
Education	High school and below	6	2.9%
	junior college	9	4.3%
	undergraduate	122	58.9%
	postgraduate	70	33.8%

According to Table 3, the number of respondents who have used TikTok for less than half a year is the largest, accounting for about 38.6% of the total number of respondents; the number of respondents who have used TikTok for 0.5-1 year accounts for 23.7%; the number of respondents who have used TikTok for 1-2 years accounts for 25.6%; the number of respondents who have used TikTok for 2-3 years and more is relatively small, indicating that most of the respondents do not have a long time experience with TikTok. We figure that this is largely due to the fact that TikTok was launched in September 2016, which was less than 4 years ago. Moreover, TikTok did not catch on until recent one or two years. According to the data on the average length of time spent by the respondents on TikTok, the number of respondents who spend less than 30 minutes each time on TikTok is the largest, accounting for 57% of the total number of respondents; the number of respondents who spend 30-60 minutes each time on TikTok is the second largest, accounting for 31.9%; and the number of respondents who spend 1-2 hours and more than 2 hours each time on TikTok is relatively small, accounting for 7.7% and 3.4% respectively.

Table 3. Statistics of Tiktok usage（n=207）

Characteristics	Items	Frequency	Percentage
Experience with Tiktok usage (year)	＜0.5	80	38.6%
	0.5~1	49	23.7%
	1 ~2	53	25.6%
	2~3	20	9.7%
	＞3	5	2.4%
Average duration of each use (hours)	＜0.5	118	57.0%
	0.5~1	66	31.9%
	1~2	16	7.7%
	＞2	7	3.4%

Generally, the vast majority of the respondents spend less than 1 hour each time on TikTok, which is not long. This precisely reflects that the TikTok mobile app was designed to maximize the use of the relatively large amount of fragmented time that its users have and shows that it is reasonable to use the data from the samples collected through this survey to study the evaluation of the information service quality of TikTok government accounts.

4.2. Reliability and validity test

4.2.1. Reliability test

Cronbach's Alpha was used to measure the reliability of the questionnaire, and SPSS was used to analyze the reliability of 18 evaluation items involved in the information service quality of TikTok government accounts. The Cronbach's α value of the actual perceived quality and the ideal expected quality are 0.919 and 0.935 respectively (both are greater than 0.9), indicating that the internal consistency and reliability of the questionnaire are very high.

Table 4 shows the Cronbach's α value of each dimension of the formal survey. All α values of the five dimensions of the actual perceived quality and the ideal expected quality are greater than 0.7, and some are above 0.8, suggesting that the internal consistency between the questionnaire on users' actual perceived quality and the questionnaire on users' ideal expected quality regarding the information service of TikTok government accounts is relatively high, and the questionnaire is relatively reliable.

Table 4. Cronbach's α value in each dimension

Dimensions	Actual perception	Ideal expectation	Number of items
Convenience	0.758	0.790	3
Reliability	0.831	0.850	3
Responsiveness	0.818	0.843	5
Empathy	0.704	0.710	3
Trust	0.799	0.782	4

4.2.2. Validity test

Validity was used to measure the validity of each indicator and item in the questionnaire. In this paper, validity analysis refers to the measurement of the accuracy and effectiveness of the formally established indicator system for evaluation of the information service quality of TikTok government accounts. SPSS was generally used to test the validity of questionnaire structure and the correlation between and validity of the evaluation items of the indicator system by the method of factor analysis.

Table 5. KMO and Bartlettsphere test

Kaiser-Meyer-Olkin sample fitness test		0.915
Bartlett sphere test	χ^2	1762.174
	df	153
	Sig.	0.000

Moreover, according to the KMO test (KMO value = 0.915, which is greater than 0.7 and thus suitable for factor analysis) and the Bartlett test (p=0 < 0.001) (Table 5), the questionnaire data are very reliable and have obvious saliency characteristics. The obtained data are suitable for factor analysis. The "principal component analysis" technique was used to analyze valid sample data based on dimensionality deduction. The selected characteristic root was greater than the specified number of items, and 5 factors were extracted. The total variance explained was 67.703%. Furthermore, the scree plot was also viewed, so the requirements of factor analysis were generally met, and 5 factors can be extracted. In order to better explain the factors, the original evaluation indicators was rotated, and the resulting rotation component matrix a is shown in Table 6.

Table 6. Rotation component matrix a

	component				
	1	2	3	4	5
7	0.788				
9	0.733				
10	0.688				
11	0.582				
8	0.531				
15		0.761			
16		0.755			
17		0.703			
18		0.459			
6			0.834		
5			0.823		
4			0.469		
1				0.807	
2				0.649	
3				0.551	
14					0.743
12					0.686
13					0.638

A total of 5 factors are extracted from the 18 indicators in Table 6. The absolute values of the 5 factor loading after rotation are all greater than 0.45, with a good discrimination. There is no superimposed loading, but the order of the original evaluation items has somewhat changed, indicating that the influence of each indicator in each factor is different. Generally, the structure of the principal component factors after rotation is highly consistent with the revised indicator system above, and the structure validity of the questionnaire is relatively high.

4.3. The gap between the actual perceived quality and the ideal expected quality

Based on the collected questionnaire data and PZB's formula for calculating service quality, the mean actual perceived quality and the mean ideal expected quality under each indicator in each

dimension of the information service quality of TikTok government accounts were calculated; and the difference between the mean actual perceived quality and the mean ideal expected quality under the same indicator was calculated to obtain the difference between the mean actual perceived quality and the mean ideal expected quality under each indicator. The specific calculation results are shown in Table 7.

According to Table 7, the difference between the mean actual perceived quality and the mean ideal expected quality under the 18 indicators in 5 dimensions is all negative, demonstrating that the mean actual perceived quality under each indicator of the information service quality of TikTok government accounts is lower than the mean ideal expected quality. In other words, the information service quality of TikTok government accounts fails to meet users' satisfaction. Under all indicators in all dimensions, the mean actual perceived quality in general is 3.50 and the mean ideal expected quality in general is 3.93.

Table 7. Tiktok government accounts information service quality gap table

Dimensions	Item number	indicator	Mean actual perceived quality	Mean Ideal expected quality	Gap
Convenience	1	Follow way	2.99	3.62	−0.63
	2	Quick access	3.35	3.96	−0.61
	3	Easy to use	3.31	3.95	−0.64
Reliability	4	Information authority	3.61	4.10	−0.49
	5	Information authenticity	3.46	4.05	−0.59
	6	Content value	3.54	4.14	−0.60
Responsiveness	7	Service efficiency	3.98	4.21	−0.23
	8	Update frequency	3.4	3.84	−0.44
	9	Interface loading speed	3.67	4.06	−0.39
	10	Service feedback	3.80	4.07	−0.27
	11	Service effect	3.65	3.89	−0.24
Empathy	12	Communication attitude	3.42	3.93	−0.51
	13	Targeted response	3.28	3.86	−0.58
	14	Personalized service	3.36	3.65	−0.29
Trust	15	Government response	3.56	3.77	−0.21
	16	frank and	3.37	3.90	−0.53
	17	Government credibility	3.59	3.79	−0.20
	18	Government capacity	3.62	4.02	−0.40
The actual perceived mean of each dimension indicator			3.50		
The ideal expected mean of each dimension indicator				3.93	
Average information service quality					−0.44

The overall difference between the mean actual perceived quality in general and the mean ideal expected quality in general, which is the mean service quality in general, is -0.44,

suggesting that there is a gap between the actual perceived quality and the ideal expected quality of the information service of TikTok government accounts among its users. The difference between the mean actual perceived quality and the mean ideal expected quality in the "convenience" dimension ("easy to use" specifically) is the largest, indicating that it is not easy for many users to find the information they want in TikTok government accounts. The difference between the mean actual perceived quality and the mean ideal expected quality in the "trust" dimension ("government credibility" specifically) is only −0.20, which is the smallest, suggesting that the public trusts the information and services provided by TikTok government accounts.

Based on Equation (1), the service quality was calculated to obtain the actual perceived quality and ideal expected quality in the five dimensions of the information service quality of TikTok government accounts, and then the difference between the actual perceived quality and ideal expected quality was calculated to obtain the difference between the actual perceived quality and ideal expected quality in each dimension (Table 8).

$$SQ_m = \frac{1}{N}\sum_{i=1}^{n}(\bar{P}_i - \bar{E}_i) \quad (1)$$

SQ_m denotes the quality of service in the m[th] dimension, m=1, 2, 3, 4, 5; N denotes the number of indicators that a single dimension contains. For example, the "convenience" dimension includes 3 indicators, and N=3 accordingly; $\overline{\mathrm{P}}_{\mathrm{i}}$ denotes the mean actual perceived quality under the i[th] indicator, and $\overline{\mathrm{E}}_{\mathrm{i}}$ denotes the mean ideal expected quality under the i[th] indicator.

Table 8. Quality and gap between the actual perception and the ideal expectation of each dimension

Dimensions	Number of items	Mean actual perceived quality	Mean ideal expected quality	Gap
Convenience	3	3.22	3.84	−0.62
Reliability	3	3.54	4.10	−0.56
Responsiveness	5	3.7	4.01	−0.31
Empathy	3	3.35	3.81	−0.46
Trust	4	3.54	3.87	−0.33

Viewed from the difference between service quality in each dimension in Table 8, the five dimensions in which the calculation results of service differences are arranged from high to low are: convenience > reliability > empathy > trust > responsiveness. The difference between service quality in the convenience dimension is the largest, which is -0.62, revealing that there is a lack of flexibility for the public to search and follow TikTok government accounts and that it is not very convenient to fast access the account and information. The difference between service quality in responsiveness dimension is the smallest, which is -0.31, but the difference between service quality is still negative and the public has high ideal expectations for service quality. Therefore, the officers of government agencies who manage TikTok government accounts should continuously improve the operation and management of TikTok government accounts and quickly respond to public demands.

4.4. Evaluation results of information service quality of TikTok government accounts

4.4.1. Weight determination

In this paper, the product scale method was used to determine the weight (Cronin and Taylor, 1994) of each dimension and indicator of the information service quality of TikTok government

accounts, and the weight of each dimension or indicator was calculated through normalization. The specific steps are as follows:

- The mean ideal expected quality under each indicator was calculated based on the above. In each of the five established dimensions, the indicators were sequenced based on their mean ideal expected quality and were weighted. After normalization, the weight (R_i) of the 18 indicators was obtained respectively; *I* in $R_i$denotes the i[th] indicator, *i*=1, 2, 3, 4... 18, and the results are shown in Table 9.

- Based on the dimensions to which these 18 indicators belong, the expected weight of each dimension was calculated and denoted as W_m. The calculation equation is as follows:

$$W_m = \sum_{i=1}^{N} E_i R_i \quad (2)$$

where, N is the number of items that a single dimension contains; m represents the m[th] dimension, m=1, 2, 3, 4, 5.

Table 9. Empowerment and weight of each Index

Item number	indicator	Mean Ideal expected quality	Empowerment	Weight（R_i）
1	Follow way	3.62	1	0.270
2	Quick access	3.96	1×1.354	0.365
3	Easy to use	3.95	1×1.354	0.365
4	Information authority	4.10	1×1.354	0.323
5	Information authenticity	4.05	1	0.239
6	Content value	4.14	1×1.354×1.354	0.438
7	Service efficiency	4.21	1×1.354×1.354×1.354	0.292
8	Update frequency	3.84	1	0.118
9	Interface loading speed	4.06	1×1.354×1.354	0.216
10	Service feedback	4.07	1×1.354×1.354	0.216
11	Service effect	3.89	1×1.354	0.159
12	Communication attitude	3.93	1×1.354×1.354	0.438
13	Targeted response	3.86	1×1.354	0.323
14	Personalized service	3.65	1	0.239
15	Government response	3.77	1	0.193
16	frank and disclosure	3.90	1×1.354	0.261
17	Government credibility	3.79	1	0.193
18	Government capacity	4.02	1×1.354×1.354	0.353

- The dimensions were sequenced based on their respective expected weight (W_m) from the highest expected weight to the lowest expected weight. The sequencing result represents the importance of the five dimensions in the public mind. Then the dimensions were weighted using the product scale method again, and the final weight (T_m) of each dimension was obtained after normalization (Table 10).

Table 10. Empowerment and weight of each dimension

Dimensions（$_m$）	Expected weight（$\mathrm{W_m}$）	Empowerment	Weight (T_m)
Convenience	3.865	1	0.130
Reliability	4.106	1×1.354×1.354×1.354	0.324
Responsiveness	4.057	1×1.354×1.354	0.239
Empathy	3.840	1	0.130
Trust	3.896	1×1.354	0.177

4.4.2. Overall service quality evaluation results

Based on the aforesaid difference between the actual perceived quality and the ideal expected quality in each dimension and the calculated weight of each dimension, we can use the following equation (3) to calculate the overall information service quality of Wuhan's TikTok government accounts（SQ）.

$$SQ = \sum_{m=1}^{5} T_m SQ_m \quad (3)$$

where, SQ denotes the overall service quality, $\mathrm{T_m}$denotes the weight of the mth dimension, and $\mathrm{SQ_m}$ denotes the quality of service in the mth dimension. The calculation results are shown in Table 11:

Table 11. The overall information service quality of the Tiktok government accounts

Dimensions	Service quality	Weight	Overall information service quality
Convenience	−0.62	0.130	−0.4543
Reliability	−0.56	0.324	
Responsiveness	−0.31	0.239	
Empathy	−0.46	0.130	
Trust	−0.33	0.177	

From the data in Table 11, it can be seen that the overall information service quality of TikTok government accounts is -0.4543 < 0, indicating that the level of the overall information service quality of Wuhan's TikTok government accounts has not yet met the level expected by the public and needs improvement and optimization.

5. Conclusions, implications, and limitations

5.1. Conclusions

Based on the SERVQUAL model and scale, and the gaps model of service quality, in this paper, we designed an evaluation model and an evaluation indicator system for the information service quality of TikTok government accounts from the public perspective, and identified the problems in the current information service of TikTok government accounts through the analysis of empirical study data. The study in this paper can be used as a model for the theory and method of future research on the information service quality of TikTok government accounts and as a theoretical reference for government agencies to manage TikTok government accounts. Moreover, it is helpful for government agencies to identify the problems in the current information service quality of TikTok government accounts and strengthen the management of TikTok government accounts.

The SERVQUAL model and scale are also applicable to the study of the information service quality of TikTok government accounts after they are modified and reinterpreted. The SERVQUAL scale can not only be used in the evaluation of the quality of services in the service industry, but can also be used in the evaluation of the service quality of emerging government media such as TikTok government accounts. Furthermore, the trust dimension composed of "government response", "frank and disclosure", "government credibility", and "government capacity" also affects the public's evaluation of the information service quality of TikTok government accounts. Hung *et al.* (2013) also showed that trust is one of the key factors that affect the acceptance of mobile e-government service users.

The overall reliability and validity of the model and indicator system used in formal surveys are good. According to the results of the analysis of valid questionnaire data collected from the empirical survey, whether it is in terms of the questionnaire on the actual perceived quality or the questionnaire on the ideal expected quality, the Cronbach's α of each evaluation item is above 0.7, and the Cronbach's α of some evaluation items is greater than 0.8. In the KMO's Test of Sphericity and the Bartlett's Test of Sphericity, the KMO value is greater than 0.9, indicating that the internal correlation is very high. In factor analysis, the rotated five factors have good convergence discrimination. The rotated factors' structure is generally consistent with the established model for evaluation of the information service quality of TikTok government accounts, which plays a supporting role in the subsequent analysis of the information service quality.

The overall level of the information service provided by Wuhan's TikTok government accounts has not yet met the ideal expectations of the public. This paper uses the modified indicator system in the empirical study of the information service quality of Wuhan's TikTok government accounts. The survey results show that the difference between the actual perceived quality and the expected quality is negative, suggesting that the public is dissatisfied with the service quality under the 18 indicators included in the indicator system. In other words, with regard to convenience, reliability, responsiveness, empathy and trust, Wuhan's TikTok government accounts fail to meet the expectations of the public. The difference between the actual perceived quality and the expected quality of service in the "responsiveness" dimension is the smallest, demonstrating that Wuhan's TikTok government accounts can manage to meet the public expectations in terms of the efficiency and effect of short video service provided by the account as well as video update frequency. At the same time, it can be seen that the difference between the actual perceived quality and the ideal expected quality of service in the "convenience" dimension is the largest, indicating that the public are not positive enough with respect to information access at Wuhan's TikTok government accounts.

5.2. Limitations and prospects

The information service of TikTok government accounts has become an essential part of e-government service. There is still a lack of studies of the service quality of TikTok government accounts in the academic community. In addition, evaluating the information service quality of

TikTok government accounts is a systematic and comprehensive process. The study in this paper has some limitations:

1. When the indicator system modified after pre-survey is used in the empirical study, the analysis through SPSS shows that although the reliability and validity of the questionnaire are relatively good, it is still far from enough to use the 18 detailed indicators to evaluate the overall service quality of TikTok government accounts. When the "principal component analysis" technique is used for factor analysis, the cumulative contribution rate of variance reaches 69.4%, and the final evaluation indicator system is not very mature. For the related studies in the future, it is necessary to draw on the more mature theories and models of the studies of service quality in the relevant field, and build a more mature indicator system for the evaluation of service quality of TikTok government accounts by using the expert method and other scientific methods, soliciting opinions from various parties, and prudently selecting indicators.
2. In this paper, the TikTok government accounts of which the information service quality is evaluated refer to all TikTok government accounts officially opened in Wuhan. However, as the performance of different types government accounts may vary, future studies of government accounts can focus on a certain type of accounts for specific analysis. In addition, our future research will reach out for a survey of some top ranked and high quality TikTok government accounts in China, e.g. Changsha Release, so to further verify our proposed evaluation indicator system by comparing with the findings in this paper.

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