Postprint: A Study on Influencing Factors of Knowledge Service Quality of Government WeChat Official Accounts

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Date: 2023-08-27T00:00:00+00:00

Abstract

[Purpose/Significance] In the big data environment, government services are gradually transitioning from information services to knowledge services. To improve the quality of e-government knowledge services, it is essential to understand the factors influencing the knowledge service quality of government WeChat official accounts. [Method/Process] This study extracts influencing factors of knowledge service quality, collects relevant data through questionnaires, employs SPSS and exploratory factor analysis to examine these factors, and constructs a model of influencing factors for knowledge service quality of government WeChat official accounts. [Results/Conclusion] Based on rotated component results, the findings indicate that influencing factors of knowledge service quality of government WeChat official accounts primarily encompass three dimensions: service process and system operation, knowledge quality, and public characteristics and sensory-psychological experience, including 21 specific indicators such as service type comprehensiveness and service security and privacy, thus establishing a foundation for the development of knowledge services through government WeChat official accounts.

Full Text

Preamble

Government WeChat Public Accounts: Research on Influencing Factors of Knowledge Service Quality

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Abstract

[**Purpose/Significance**] In the big data environment, government services are gradually shifting from information services to knowledge services. To improve the quality of e-government knowledge services, it is necessary to understand the factors that influence the knowledge service quality of government WeChat public accounts. [**Method/Process**] This study primarily refines the influencing factors of knowledge service quality, collects relevant data through questionnaires, and employs SPSS tools and exploratory factor analysis to construct a model of influencing factors for knowledge service quality of government WeChat public accounts. [**Result/Conclusion**] According to the rotated component results, the influencing factors of knowledge service quality of government WeChat public accounts are mainly divided into three dimensions: service process and system operation, knowledge quality, and public characteristics and sensory-psychological experience, encompassing 21 influencing factor indicators including service type comprehensiveness and service security/privacy. This lays a foundation for the development of knowledge services on government WeChat public accounts.

Keywords: Government WeChat public accounts; Knowledge service; Service quality influencing factors
Classification Number: G203
DOI: 10.13266/j.issn.0252-3116.2018.23.005

With the continuous deepening of government information disclosure, the development of e-government in the big data environment has encountered both opportunities and challenges, gradually evolving from traditional government services to government social media, and from information services to knowledge services. Essentially, knowledge service is a value-added service based on all information resources, driven by user needs and goals, oriented toward knowledge content, integrated into user decision-making processes, and designed to help users find or formulate solutions to problems [1]. Therefore, based on the integrated, dynamic, professional, personalized, and global characteristics of knowledge services, we should eliminate problems existing in information services such as dispersion, redundancy, multi-source heterogeneity, and sparse value, and meet the public's demand for efficient and shared services that are personalized and aggregated.

2 Literature Review

The 41st "Statistical Report on Internet Development in China" shows that as of December 2017, China's internet user population reached 772 million, with an internet penetration rate of 55.8%, exceeding the global average (51.7%) by 4.1 percentage points. Among them, 60% of netizens use online government services, and government new media facilitates intelligent government services [2]. This demonstrates that with the development of the "Internet Plus" era and the gradual integration of government with social media, the operation and

development of government knowledge services have been promoted. Therefore, this study takes government WeChat public accounts as the research object. Through a review of relevant domestic and foreign literature, we find that direct research on influencing factors of government knowledge service quality is rare in foreign studies. Related research mainly focuses on factors affecting the adoption of e-government services [3], evaluation systems for e-government service quality [4], models affecting user satisfaction in e-government service practice [5], empirical research on e-government service quality [6], and service quality of mobile government services [7].

Additionally, using "knowledge service quality + influencing factors" and "government WeChat public accounts + knowledge service + service quality influencing factors" as search terms, we conducted thematic searches in academic databases such as CNKI and Wanfang. The results show that domestic research on government knowledge services mainly concentrates on three aspects: government knowledge service platform system construction, government WeChat communication and promotion mechanisms, and enhancement of government knowledge service capabilities.

(1) Research on Government Knowledge Service Platform System Construction. Sun Yanli et al. [8] constructed a service platform from the user demand perspective, including a knowledge resource database, knowledge website service system, heterogeneous data unified retrieval system, reference consultation system, and personalized customization service system. They argued that service concepts, network environment, user needs, and information technology significantly influence knowledge services. Xu Chenchen [9] systematically constructed a government portal website knowledge service platform architecture from the resource layer, knowledge layer, application layer, and service layer, deeply exploring issues such as government knowledge resource integration, government knowledge base construction, government business process reengineering, and knowledge service provision through portal websites, laying a theoretical foundation for government decision-making. Li Xia [10] built a knowledge service platform including knowledge acquisition modules, knowledge integration modules, knowledge service modules, and organizational environment through the knowledge system construction process for knowledge services, using key technologies such as semantic web and knowledge warehouses, providing complete resource support for different modes of knowledge services.

(2) Research on Government WeChat Communication and Promotion Mechanisms. Yan Yiwen et al. [11] constructed a process model of government WeChat information transmission from an information ecology perspective, including information, information transmission subjects, information transmission environment, and information transmission network structure, using the DEMATEL method to identify key influencing factors. Li Zongfu [12] conducted correlation analysis on factors affecting the service quality of government WeChat public platforms from an information ecology perspective, constructing an influencing factor system including information people, information and ser-

vices, and government WeChat environment, providing a theoretical basis for scientifically evaluating service quality and further improving comprehensive social utility. Liu Sisi [13] used questionnaire surveys to analyze problems in Beijing's government WeChat promotion mechanism, proposing improvements from strategic heights such as management innovation, communication interaction, training mechanism establishment, and strengthening linkages. Duan Yaoqing et al. [14] used correlation analysis and co-word analysis to explore the characteristics of easily accessible information on government WeChat public accounts from dimensions such as information title, form, content, and source, helping governments choose appropriate information arrangement strategies. Chen Zhenkun [15] used Berry's innovation diffusion model to identify factors affecting the diffusion of county-level government WeChat in Guangxi from three perspectives: motivation, government resources and obstacles, and external environment, finding that mobile phone user scale, internet broadband user scale, population resources, public financial resources, and inter-governmental learning and competition had the most significant impacts.

(3) Research on Enhancing Government Knowledge Service Capabilities. Xie Lingzi [16] argued that government new media is an effective way to build a knowledge service-oriented government, proposing paths to improve government new media service capabilities from establishing comprehensive collaborative models, precise positioning and communication, optimizing resource allocation, and improving government media literacy, thereby enhancing government decision-making and service capabilities. Zhang Jing et al. [17] based on knowledge construction mechanisms, provided knowledge service sharing and innovation services from individual, social, and website perspectives using self-organization, emergence, and liberalization mechanisms, laying a foundation for improving government knowledge service capabilities and promoting effective association between users and knowledge.

In summary, direct research on influencing factors of knowledge service quality of government WeChat public accounts is limited. Indirect research is mainly embedded in studies on knowledge service platform system construction, knowledge service capability enhancement, and government WeChat communication promotion mechanisms. Currently, the integration of government and social media is developing rapidly, and knowledge services play a significant role in solving problems such as multi-source heterogeneity and sparse value of information resources in the big data environment. Therefore, the research objective of this paper is to construct a model of influencing factors for knowledge service quality of government WeChat public accounts, laying a foundation for future government service improvement, helping citizens solve practical problems, improving decision-making efficiency, and enhancing government service quality.

3 Influencing Factors of Knowledge Service Quality of Government WeChat Public Accounts

3.1 Initial Acquisition of Influencing Factors

To obtain comprehensive and authoritative influencing factor indicators, this study collated and merged indicators mentioned and verified in existing research, then designed indicators suitable for government WeChat public accounts based on their characteristics. Initially, 24 influencing factors were selected and coded with definitions.

3.2 Improvement of Influencing Factors

Based on the initial 24 influencing factor indicators, questionnaires were distributed via WeChat and QQ platforms to users who use or follow government WeChat public accounts. A total of 92 questionnaires were collected, with 87 valid responses (95% validity). Through analysis of open-ended question responses and removal of factors essentially identical to questionnaire content, two new influencing factors were added: knowledge understandability and service participation. The improved influencing factors are shown in Table 1 .

The revised influencing factors reflect public perception of knowledge service quality of government WeChat public accounts, indicating that service quality is influenced to some extent by the 26 factors in Table 1, providing a foundation for subsequent model construction.

4 Model Construction of Influencing Factors

4.1 Data Collection and Descriptive Statistical Analysis

4.1.1 Data Collection Based on the observation variables in Table 1, a final questionnaire was designed. The questionnaire consists of two parts: basic information of respondents, and public evaluation of knowledge service quality based on personal experience using a 5-point Likert scale. The survey was conducted via WeChat and QQ platforms from December 2017 to February 2018 (three months). A total of 296 questionnaires were collected, with 277 valid responses (94% validity), meeting the predetermined sample size.

4.1.2 Descriptive Statistical Analysis Analysis of the 277 valid questionnaires reveals respondent characteristics shown in Figure 1 [Figure 1: see original paper]. The male-to-female ratio is 43.7% to 56.3%, with respondents aged 18-30 and 31-40 accounting for 89.2% of the sample, showing typical and representative age structure. The majority (82.6%) have undergraduate or graduate education, indicating good knowledge literacy and capabilities in knowledge exchange, acquisition, and application. In terms of usage frequency, 94.5% reported frequent, occasional, or rare use, showing improved awareness of knowledge services. Occupations include students, farmers, enterprise/company employees, government workers, public institution staff, and entrepreneurs, with relatively

balanced proportions indicating comprehensive sample coverage. The online distribution eliminated geographical limitations, broadening the respondent base and meeting diverse knowledge service needs across fields.

To better understand the importance respondents attach to each factor, SPSS 21.0 was used for descriptive statistical analysis, yielding means and standard deviations shown in Table 2 . The mean for public usage experience is the lowest at 3.54, while all other variables exceed 3.54 and approach 4, indicating high recognition of the extracted factors. Nineteen variables have standard deviations $ $1, showing some variation in recognition among users, which is acceptable. The remaining variables have standard deviations <1, indicating consistent recognition. Therefore, the extracted influencing factors are reasonable.

4.2 Data Analysis and Conclusions

4.2.1 Reliability Analysis Using SPSS 21.0, Cronbach's α coefficient was used to test questionnaire reliability and validity. As shown in Table 3 , the overall Cronbach's α is 0.960 (>0.7), indicating high reliability and suitability for further factor analysis.

4.2.2 Factor Analysis Applicability Test Using SPSS 21.0, KMO sampling adequacy and Bartlett's sphericity test were conducted to verify factor analysis suitability. As shown in Table 4 , the KMO value is 0.967 (>0.5) and Bartlett's test p<0.001, reaching significance level, confirming that the data are suitable for factor analysis.

Using principal component analysis and varimax rotation with eigenvalues >1 as the criterion, three common factors were extracted with cumulative variance explanation of 61.094% (see Table 5), indicating the final sample data adequately represent original variable information.

In the rotated factor loading matrix, five variables had loadings <0.5 across three factors: service participation, service humanization, knowledge comprehensiveness, knowledge integration, and service process simplicity. These were removed, not because they lack meaning, but because they had lower public recognition compared to other indicators. With social media development and more comprehensive government services, these five indicators could be recommended as forward-looking factors for future infrastructure development.

4.2.3 Discussion of Factor Analysis Results Factor analysis yielded the rotated component matrix shown in Table 6 . The 21 variables were reorganized and renamed to determine factors influencing knowledge service quality.

Common Factor 1 includes nine indicators: service type comprehensiveness, service timeliness, service privacy security, service value, platform security, platform stability, service fairness, service accessibility, and service concept. Service type comprehensiveness has the highest loading (0.740), indicating that the

public most values one-stop knowledge services that save time and energy, solve practical problems efficiently, and avoid fragmentation and redundant investment. Service timeliness and value reflect user emphasis on obtaining knowledge services that meet or exceed expectations within appropriate timeframes. Platform security and stability ensure smooth system operation, while users also value personal privacy protection. As service-oriented government innovation develops, better and more direct public service is essential for improving knowledge service quality, as is accurate understanding of service components. Therefore, Common Factor 1 emphasizes service process characteristics and system stability, and is named **Service Process and System Operation**.

Common Factor 2 includes six indicators: knowledge understandability, knowledge reliability, knowledge richness, knowledge practicality, public needs and expectations, and service interaction fluency. Service interaction fluency, though related to knowledge content features, loads on both factors (0.506 and 0.524). Following factor analysis conventions, it was integrated into Factor 1 based on conceptual fit. Public needs and expectations, while conceptually closer to public characteristics, loaded on knowledge features, possibly because users connect knowledge content characteristics with their needs during service experiences. For a reasonable and mature influencing factor system, this study categorizes it under Factor 2, which is named **Knowledge Quality**.

Common Factor 3 includes six indicators: public knowledge literacy, public usage experience, service personalization, public usage habits and preferences, interface design friendliness, and interface design aesthetics. Service personalization refers to customized and precise knowledge services that enhance satisfaction. From the user perception perspective, service personalization loads with public characteristics, indicating users understand personalization as both customized content and personalized experience during usage. Interface design aesthetics and friendliness were renamed as public visual experience and public operational experience, belonging to the framework layer of user experience design [18]. Based on this analysis, six indicators including public knowledge literacy were integrated into **Public Characteristics and Sensory-Psychological Experience**, which will undergo further reliability and validity testing.

The preliminary model of influencing factors for knowledge service quality of government WeChat public accounts is shown in Figure 2 [Figure 2: see original paper].

4.3 Reliability and Validity of the Influencing Factor Model

To improve knowledge service quality, the constructed model's validity and reliability were tested, with results shown in Table 7 . All three dimensions—Service Process and System Operation, Knowledge Quality, and Public Characteristics and Sensory-Psychological Experience—show reliability indices and KMO values >0.8, indicating high internal consistency. Each dimension's observation variables adequately reflect the common factor characteristics. The cumula-

tive variance contribution reaches 61.094%, showing the 21 retained variables preserve original information. Therefore, the model in Figure 2 demonstrates high rationality and reliability, providing a foundation for government WeChat public account development and decision-making.

Conclusion

Based on user perception and data analysis, this study constructed a multi-dimensional model of influencing factors for knowledge service quality of government WeChat public accounts, yielding the following conclusions:

Service Process and System Operation is the most significant dimension. System operation includes platform stability and security, ensuring smooth operation and orderly service processes, responding to national "Internet Plus Government Services" initiatives. Service type comprehensiveness has the highest loading, reflecting strong public demand for one-stop services and indicating government progress in addressing fragmentation and redundant investment. Service interaction fluency and other process indicators provide breakthrough points for integrating social media with government knowledge services.

Knowledge Quality is a key factor as services evolve from information to knowledge. It includes knowledge understandability, reliability, richness, and practicality, meeting public demands for personalized and professional services. Knowledge understandability has prominent loading, distinguishing government WeChat accounts from other types by serving diverse audiences including education, healthcare, and party information disclosure. Government should ensure knowledge content is accessible, providing precise and convenient services.

Public Characteristics and Sensory-Psychological Experience includes public knowledge literacy, usage experience, habits/preferences, and needs/expectations. Building a service-oriented government requires not only solving practical problems but also providing personalized, professional services. Public characteristics enable service personalization and drive platform development. Visual and operational experiences, though currently less recognized, affect usage time and sensory experience, warranting future platform improvement considerations.

In the knowledge economy era, developing government WeChat public accounts and improving knowledge service quality presents both challenges and opportunities. This model provides foundational conditions for integrated social media services, though empirical research is needed to enhance its applicability and promote the development of government social media services.

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Author Contributions

Wang Ping: Research conceptualization;
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Note: Figure translations are in progress. See original paper for figures.