

Study on the Influence of Tiktok on the Bridging of The Digital Divide of Zhejiang Residents

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Abstract: China's digital economy is at a stage of rapid development, the digital economy has become an important engine to promote China's economic development, and our society is developing in the direction of digital. While vigorously supporting the development of digital economy, we should also be vigilant about the existence of digital divide, pay attention to the coordination between the two, and strive to bridge the digital divide is imminent. Short video users account for more than 88% of the current Internet users in China, and Tiktok is the top application in the short video industry, which plays a non-negligible role in bridging the digital divide. Therefore, this study takes the influence of Tiktok on the bridging of the digital divide of Zhejiang residents as the research theme, and carries out the design and research of its research program.

Keywords: Tiktok, Digital divide, Research program, Design.

1. Research Background

China's digital economy is in a stage of rapid development, and the digital economy has become an important engine to promote China's economic development, and China's society is developing in a digital direction. The white paper "Working Together to Build a Community of Shared Future in Cyberspace" released by The State Council on November 7, 2022, calls for joint efforts to bridge the digital divide, promote internet culture exchanges and mutual learning among civilizations, strengthen support and help for vulnerable groups, and promote the benefits of Internet development to people in different countries and regions. According to the Digital China Development Report, China's digital economy will reach 50.2 trillion yuan in 2022, ranking second in the world in terms of total volume.

While vigorously supporting the development of the digital economy, we should also be alert to the existence of the digital divide, pay attention to the coordination between the two, and strive to bridge the digital divide is urgent. And "wherever smart phones can be popularized, almost everyone is watching short videos", short video users account for more than 88% of the current Chinese Internet users, and Tiktok is the top application in the short video industry, which plays a non-negligible role in bridging the digital divide. This survey will focus on the investigation and analysis of the current situation and influencing factors of digital divide bridging in Zhejiang Province, so as to promote the bridging of the digital divide commonly faced by the current society and share the dividends brought by digital technology. Therefore, the theme of this survey is determined to be: investigation on the influencing factors of Tiktok in promoting the bridging of the digital divide among Zhejiang residents.

2. Basis of Investigation

2.1. Research objectives

First, we will investigate the current situation of the digital divide among Zhejiang residents and the influencing factors of Tiktok on the bridging of the digital divide. We will investigate the current situation of the digital divide in

Zhejiang Province from three aspects: access, usage and knowledge. Combined with the usage of Tiktok users, we will analyze the influencing factors of Tiktok in promoting the bridging of the digital divide. Lay the foundation for the research and discussion on how to promote the bridging of digital divide.

By investigating the influence factors of Tiktok on the bridging of digital divide from both internal and external aspects, this paper analyzes the effect of Tiktok on the bridging of digital divide, and provides reference for promoting the smooth implementation of the bridging of digital divide.

In addition, through field interviews with relevant staff of government information department, representatives of Internet industry practitioners and representative groups facing digital divide in Zhejiang Province, combined with existing empirical data analysis, systematic suggestions and measures for the implementation of bridging the regional digital divide are explored from a practical and professional perspective.

2.2. Significance of research

(1) Taking Zhejiang Province as the scope of the investigation, a scientific and reasonable measurement index model of the influencing factors of the regional digital divide is constructed to provide reference for suggestions on the development path of bridging the regional digital divide.

(2) Analyze the current situation, influencing factors, effects and mechanism of Zhejiang Tiktok on the bridging of digital divide. In the context of the booming digital economy, with the help of the powerful influence and universality of Tiktok APP, the paper actively and vigorously promotes the narrowing and even bridging of the digital divide in the whole society from the perspectives of the government, industries and individuals, and truly share the "digital dividend".

2.3. Research content

In the process of questionnaire survey, the team members should fully explain the purpose and significance of the survey, ask the selected respondents to fill in the questionnaire, and organize and input the completed questionnaire in the

later stage. In the process of filling out the questionnaire, they should carefully answer the questions raised by the respondents, so that the respondents can give rational answers after fully understanding the meaning of the questionnaire, and ensure the authenticity and reliability of data acquisition. The main contents of the questionnaire survey include:

(1) Basic personal information survey of users of Tiktok APP, including age, gender, occupation, income level, education level, marital status, location, urban and rural status, etc.

(2) Analyze the current situation of digital divide from three aspects: digital access, use and knowledge.

(3) The usage of Tiktok users, including duration, frequency, function and purpose of Tiktok use.

(4) Investigate the influencing factors of Tiktok on bridging the digital divide. Based on relevant literature and theoretical research, summarize the influencing factors into internal factors and external factors, and use Likert scale to conduct observation and investigation.

(5) The effect of Tiktok on the bridging of digital divide.

2.4. Research methods

The research methods adopted in this survey include copywriting survey, network survey, questionnaire survey and in-depth interview.

2.4.1. Copywriting method

Conduct desk analysis and research on existing materials and other secondary materials, use the Internet, campus database and other resources to search keywords "Tiktok", "digital divide", "digital divide bridging", and sort out and summarize the retrieved relevant journal literature, doctoral papers, etc. It is expected to achieve the following results through the copywriting investigation: define the digital divide and Tiktok, and define the research theme; Create research model by referring to the existing research results; Provide guidance for the later questionnaire design.

2.4.2. In-depth interview method

In order to ensure the effectiveness of this research, an in-depth interview was conducted for analysis before the establishment of the research model. The interview mainly adopts semi-structured form. The interviewees are asked questions according to the interview outline, and then flexibly ask questions according to the answer content, so as to enrich the interview materials continuously and record them. This research is mainly divided into face-to-face in-depth interviews and online interviews to effectively ensure the comprehensiveness of interview materials. The interview content of each interviewee is divided into five parts: basic demographic characteristics information, current situation of digital divide, usage behavior of Tiktok APP, influencing factors of Tiktok on bridging digital divide, and influencing effect of Tiktok on bridging digital divide. Select familiar groups around to conduct in-depth interviews, summarize and refine the answers of interviewees, and determine the scope of survey objects; Determine the rationality of the investigation hypothesis; Improve the investigation and research model.

2.4.3. Field questionnaire survey

Modify and adjust the questionnaire after conducting a small pre-survey of the field questionnaire. Only the confirmed questionnaire should be carried out for large-scale field survey. Through street interception or home invasion, first through preliminary observation, judge whether the

survey object meets the sample requirements. Then, through brief communication, we can further predict whether the investigation object is the sample we are looking for. After the investigation of the survey objects meeting the sample requirements, the on-site examination paper immediately, and give small gifts to show gratitude.

2.4.4. Network survey

The purpose of issuing questionnaires through the Internet is mainly random access on the network, which has two aspects: on the one hand, the network survey was used to conduct a pre-survey before the formal survey to test the reliability and validity of the preliminarily designed questionnaire; In the formal investigation, in order to save the investigation cost and improve the efficiency of the investigation, a small amount of survey sample data is collected by using the network survey.

3. Research and Design

3.1. Research objects

In order to facilitate the statistical research, and according to the actual situation of the survey subjects, the survey subjects are required to meet the following conditions: permanent population or short-term resident population in Zhejiang province (such as students from other provinces).

3.2. Survey area

There are 11 prefecture-level cities in Zhejiang Province: Hangzhou City, Ningbo City, Wenzhou City, Jiaxing City, Huzhou City, Shaoxing City, Jinhua City, Quzhou City, Zhoushan City, Taizhou City, Lishui City. In the field survey, the selection of sample areas is based on the consideration of regional distribution and implementation difficulty, and the residents are randomly distributed by city to ensure distribution in 11 cities. As the research team is located in Wenzhou, the plan accounts for 30%, Hangzhou as a typical provincial capital accounts for 20%, and the remaining 9 cities account for 50%. The distribution was made according to the number of population.

3.3. The sample size of the survey

The determination of sample size is directly related to the testing methods used in the scale. Confirmatory factor analysis and regression methods are used for this survey data, which has certain requirements on the sample size.

The sample sampling formula (see Formula 1) was used for calculation.

$$n_0 = \frac{1}{\left(\frac{1}{N} + \frac{d^2}{\mu_{\alpha/2}^2}\right)} = \frac{N\mu_{\alpha/2}^2 PQ}{Nd^2 + \mu_{\alpha/2}^2 PQ} = \frac{N\mu_{\alpha/2}^2 P(1-P)}{Nd^2 + \mu_{\alpha/2}^2 P(1-P)} \quad (1)$$

N in the formula is the total number of people. According to the main data Bulletin of Zhejiang Province Population in 2022, the population of Zhejiang Province at the beginning of 2023 is 65.77 million, so $N = 65,770,000$.

Set the confidence degree as 99%, we can find in the table, the statistic required for 99% confidence degree is 2.58, continue to set the maximum allowable absolute error $d = 5\%$, under normal circumstances, we do not know the value of P, take the value of 0.5 when the degree of sample variation is the largest, and put it into formula 1 to calculate the initial sample size:

$$n_0 = \frac{65770000 \times 2.58^2 \times 0.5 \times (1-0.5)}{65770000 \times 0.05^2 + 2.58^2 \times 0.5 \times (1-0.5)} \approx 666 \quad (2)$$

Since there will be some error in the survey process, in order to ensure that the validity of the questionnaire reaches 90%, the sample size should be:

$$n_1 = \frac{666}{0.9} = 740 \quad (3)$$

Referring to the sample size used by other scholars in their previous studies on cities as the scope of investigation, most of them are larger than 200, so the sample size of about 740 is reasonable.

The sample quota is allocated according to the population of the selected survey area. The specific sample size allocated by each region is shown in Table 1 below.

Table 1. Population size and sample distribution

Serial Number	City	Population at the beginning of 2023	Number as a percentage of total	Quantity of sample allocation
1	Hangzhou	12.38 million	20%	≥148
2	Wenzhou	9.68 million	30%	≥222
3	Ningbo	9.62 million	11%	≥82
4	Jinhua	7.13 million	8%	≥59
5	Taizhou	6.68 million	8%	≥59
6	Jiaxing	5.55 million	6%	≥44
7	Shaoxing	5.35 million	6%	≥44
8	Huzhou	3.41 million	4%	≥30
9	Lishui	2.51 million	3%	≥22
10	Quzhou	2.29 million	3%	≥22
11	Zhoushan	1.17 million	1%	≥8
Total		65.77 million	100%	≥740

3.4. Interview subject identification

The interview time should be 0.5-2 hours, the number of interview samples should be about 40, and the identity requirements of the interview subjects should be at least involved in 11 cities in Zhejiang Province.

In the process of in-depth interview, the interviewer will flexibly deal with the interview outline according to the actual situation, not limited to the order of the interview outline, encourage the interviewer to think positively, recall and describe the question in detail, and ask the interviewer timely.

After the interview, the interviewee records were numbered with a combination of letters and Arabic numerals. When the interview content was sorted out, the interview records (text and audio) were transcribed into word text data, and the answers were summarized according to the unified code.

4. Questionnaire Framework Design

According to the research idea of this research, this research is expected to study the current situation of the digital divide of Zhejiang residents, the influencing factors of Tiktok's promotion of the bridging of the digital divide, and its impact effect.

In terms of the current situation of the digital divide, referring to the study of Li Li (2022), we design the current situation of the digital divide into three parts: digital access gap, digital use gap and digital knowledge gap, to study the current situation of the digital divide of Zhejiang residents.

In terms of influencing factors for Tiktok to promote the bridging of digital divide, we carried out the questionnaire design through internal and external factors. The external

factor designed the questionnaire according to commonly used economic, legal and policy, social and cultural factors, while the internal factor designed the questionnaire with reference to Tan Xiaoyun (2021) and Li Yuhan (2022) and other research ideas. Four parts of the questionnaire, namely download, operation, function and content, were designed as independent variables in the study.

In terms of the impact of Tiktok on the bridging of digital divide, we designed a three-part questionnaire on the bridging effect of digital access gap, the bridging effect of digital use gap and the bridging effect of digital knowledge gap, which echoes the current situation of digital divide and is used as the dependent variable in the study.

According to the model designed in this survey and relevant data, the Likert scale in this questionnaire was designed. Based on the data analysis results of the pre-survey, the scale was modified and adjusted. After careful consideration and careful screening, the scale with 3 first-level dimensions, 9 second-level dimensions and 38 measurement items was finally obtained:

(1) 3 first-level dimensions

1) State of the digital divide

2) Influential factors of Tiktok in bridging the digital divide

3) The impact of Tiktok on bridging the digital divide

(2) 9 second-level dimensions

1) Digital Divide Awareness

2) Digital Access Divide

3) Digital Usage Divide

4) Digital Knowledge Gap

5) External Factors

6) Internal factors

7) Digital access gap bridging effect

8) Digital usage chasm bridging effect

9) The effect of bridging the digital knowledge gap

(3) 38 measurement items

1) Are you aware of the digital divide?

2) Do you think you have a digital divide?

3) You have very easy access to mobile phones, computers and other digital devices.

4) You can connect to wireless or mobile networks very easily.

5) You can download all kinds of applications very easily.

6) You are very skilled in using social functions (such as text chat, voice and video calls, moments of interaction, etc.).

7) You are proficient in using information functions (such as reading news, searching for information, etc.).

8) You are very skilled at using life functions (such as payment transfer, shopping, taxi hailing, etc.).

9) You are very skilled in using entertainment functions (such as watching videos, watching dramas, playing games, etc.).

10) You can use public service functions (such as bank self-service machines, hospital self-service machines, etc.) very easily.

11) You have a good understanding of what is being discussed on the Internet, news, trending searches, and the meaning of words.

12) You can quickly learn digital devices, software, Internet information and more.

13) You will be able to distinguish between real information, false information, and fraudulent information on the Internet.

14) You have a good sense of the pros and cons of digital products (equipment, software).

15) The current economic environment (i.e. income, savings, market dynamics, etc.) prompts me to use.

16) The current technological environment (e.g., communications, networking, security, etc.) prompts me to use.

17) The current policy and legal environment prompts me to use.

18) The current natural environment (e.g., climate, geography, ecology, etc.) prompts me to use.

19) The present resource environment (air, water, electricity, etc.) prompts me to use.

20) The current Socio-cultural environment motivates me to use.

21) The current international exchange environment encourages me to use.

22) Downloading Tiktok is easy.

23) Registering for Tiktok is simple.

24) Tiktok's interface is simple and clear.

25) The operation of Tiktok is simple and easy to learn.

26) Tiktok is rich in features.

27) The function of Tiktok is very practical and suits me well.

28) The content on Tiktok is very informative.

29) The content on Tiktok is easy to understand.

30) The content on Tiktok is very timely.

31) The content on Tiktok is very accurate and to my liking.

32) Content on Tiktok is healthy and upward.

33) The content on Tiktok is real and reliable.

34) I think Tiktok helped me get closer to the digital age.

35) I think Tiktok has helped me better use digital devices such as mobile phones and tablets as well as apps such as Wechat and Taobao.

36) I think Tiktok helps me get all kinds of information and knowledge on the Internet better and more conveniently.

37) I think Tiktok helps me judge the veracity of information more accurately.

38) I think Tiktok helps me have a better sense of the pros and cons of digital products (devices, software).

5. Conclusion

This study mainly focuses on the research theme of "the impact of Tiktok on the bridging of the digital divide of Zhejiang residents", and carries out the research on the research program design. First, it carries out in-depth thinking and planning from the aspects of research purpose, research significance, research content and research methods, and then carries out the design research through the research design and questionnaire framework design. In order to provide a preliminary basis for the follow-up field questionnaire and interview survey.

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