

## Article

# The Impact of Internet Use on Citizens' Trust in Government: The Mediating Role of Sense of Security

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**Abstract:** With the rapid development of communication technologies, the Internet use has become the main channel for citizens to obtain information and knowledge. It has been widely established that Internet use can have a significant impact on citizens' expectations, perceptions, and behaviors. Government trust is the reasonable expectation of citizens on in the administrative activities of the government and its administrators, which should rightly be influenced by the behavior of citizens' Internet use. However, limited studies have investigated the relationship between Internet use and citizens' trust in the government. Therefore, in this study, the effect of Internet use on trust in the government was investigated using data from the 2017 Chinese Social Survey. The baseline regression results revealed that Internet use reduces trust in the government. This phenomenon was persistently observed after several robustness tests. A heterogeneity analysis revealed that Internet use negatively influenced citizens from Eastern and Western China, lower age groups, and agricultural households. Social amplification of the risk and the theory of rational choice revealed that a sense of security partially mediates the relationship between Internet use and citizens' trust in the government. Internet use reduces citizens' sense of security and subsequently decreases trust in the government. Our findings revealed establishing a network information supervision and public opinion guidance mechanism. At the same time, consider the role of social security services in resolving social risks. These initiatives are essential to ensure citizens' trust in their government.

**Keywords:** Internet use; sense of security; trust in the government; China; intermediary effect



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## 1. Introduction

Effective maintenance and enhancement of citizens' trust in the government is a critical topic of research [1–3]. Trust in the government refers to the expectations, evaluations, confidence, and satisfaction of citizens on the political process, administrative behavior, and level of public services of their governments [4–6]. Trust can be expressed as the gap between expectations of citizens and their perception of government operation [7]. Furthermore, trust can reflect the immediate and complex interaction between citizens and government. Trust plays a crucial role in consolidating the legitimacy of the government, maintaining the orderly operation of the political system, and improving the soft power of the country. With the rapid development and popularity of mobile Internet technology, the Internet has increasingly become a highly effective tool of information dissemination. Human society has entered an era of Internet communication. According to the 49th CNNIC report, by December 2021, the Internet penetration rate was 73.0% among the 1.032 billion people of China [8]. The rapid expansion of Internet usage in China has resulted in the Internet becoming the dominant information-sharing platform for netizens to participate in public affairs, exchange risk information, express political views, and commit to political actions. Unlike conventional media, Internet media is high speed and exhibits considerable coverage of information dissemination. The Internet can considerably influence public psychological activities and behaviors. With the advent of "high-risk

society”, various “gray rhinoceros” and “black swan” events have been reported on a large scale. A social risk amplification effect propagates through new network media and promotes the redistribution of risk discourse, which can reshape the cognitive attitude and awareness level of the public toward social risk and public security. Numerous online public opinion or crisis events caused by the COVID-19 epidemic have emerged on the Internet. These events not only considerably affect the happiness and sense of security of the public but also pose a challenge to the public governance ability and credibility of the government. Furthermore, such events can decrease the trust of citizens in the government [9]. The analysis of the survey data from 57 countries revealed that the trust of the public in government actions during COVID-19 was considerably affected, and most people provided a negative assessment of government responses. Widespread conspiracy theories in cyberspace directly or indirectly reduced the trust of the public in the government [10]. However, studies have revealed that rapid dissemination of quality information by the government during COVID-19 epidemic management improved the trust of the public in the government [11]. The findings of the different results fully reflect that the information media represented by the Internet plays an increasingly important role in the construction of government trust and continues to have an impact. Then, specifically in the field of Internet politics research, how does Internet use shape or influence citizens’ trust in the government, and how exactly does this process come about? Answers to the above questions will help governments formulate rational Internet development strategies.

With the widespread use of information technology and network politics, research on the relationship between Internet use and government trust has attracted considerable research attention. However, the findings have been inconsistent, and two distinct theoretical perspectives have been proposed. According to the first group, Internet use reduces the trust of the citizens in the government [12,13]. Due to rapid information dissemination on the Internet, governments assume that the content on the Internet may provide biased, exaggerated, or misleading political information, which can generate negative perceptions of their regimes in citizens. Network media has facilitated two-way communication and contact channels between people and dismantled the “top-down” monopoly information transmission structure of political institutions or conventional media. Unverified or false information can propagate exponentially through online interactions and facilitate the use of misleading information [14,15], which can degrade civic and political trust. Therefore, social media networks as the core power of the network model undermine the trust of the public in scientific expertise, government, and conventional news media [16]. Using data from South Korea, Porumbescu revealed that the use of e-government websites for information decreased citizens’ trust in the government. Therefore, social media network, as the core power of the network model, undermines the trust of the public in scientific expertise, the government, and conventional news media [17]. The negative effects of social media, represented by the Internet, have received considerable research attention during health crisis communication. Considering COVID-19 epidemic governance as an example, Limaye et al. [18] believed that digital social networks promoted misinformation, which undermined the public’s trust in the government and hindered public consensus and follow-up actions. Melki et al. [19] confirmed this conclusion. In contrast to the “weakening of trust theory”, Internet use may positively influence citizens’ trust in the government [20,21]. Governments are actively using the Internet and social media to communicate with citizens. By providing government information and services online, the transparency of government decision-making processes can be improved to help citizens to achieve superior, comprehensive, and easy access to complete information. This measure enhances public confidence in the government [22,23]. For example, as a response to the COVID-19 misinformation and the information epidemic in cyberspace, the Italian Health Ministry actively used its official Facebook to provide updated information to the online public and effectively mitigated the trend of weakening public trust in public institutions [24]. Similarly, because China was one of the first countries to be infected with COVID-19, government agencies adopted a four-stage strategy (response, diagnosis,

intervention, and evaluation) on social media to mitigate disinformation propagation of COVID-19 and reinforce public trust in the government to achieve desired objectives [25]. Information technology, especially the Internet, has promoted broad cooperation and citizen participation. As exemplified by the victory of US Democratic candidate Barack Obama in the 2008 election, although increased participation renders information fusion between organizations difficult, continued incentives for democratic rights can restore trust and confidence in the government [26].

As a result of COVID-19 and subsequent measures to combat the disease, the role of social networks in influencing trust of citizens in the government and collective actions has been scrutinized. For example, a study using survey data from Pakistan found that user-generated content supporting government economic policies had a positive effect on perceptions of government performance during COVID-19; user-generated messages critical of government economic policies harmed public perceptions [27]. Another researcher pointed out that when government agencies provide quality information on social media, citizens' Internet use will increase their transparency and trust in the government agencies [28]. However, because of differences in systems, cultures, and practice scenarios, a theoretical consensus is yet to be formed on the relationship between Internet use and trust in the government. Numerous differences exist in the opinions of scholars. Furthermore, the following defects still exist in the implementation process of research: (1) most of the analytical data used in the existing studies were obtained from small-scale questionnaires or Internet searches, and the representativeness and accuracy of the data should be reconsidered. Thus, the accuracy of the results is reduced to a certain extent [2,11]; (2) although China is a developing country with the largest number of Internet users in the world, studies have considered data originating from many countries such as Europe and the United States. Survey data on the relationship between Internet use and the trust of the citizens in the government in China remains inadequate, and the representativeness of the research conclusions should be verified; (3) the influencing mechanism between Internet use and citizens' trust in the government is yet to be investigated. Most studies have investigated the influencing mechanism between Internet use and citizen trust in the government from macro perspectives, such as the transparency and interactivity of the Internet [29], the effect of the Internet on governance performance [21], and the interaction between citizens and government [30]. However, the influence of Internet use on citizens' psychological changes has been ignored. Subjective perceptions and psychological changes of citizens on social ecology are key predictors of government trust and individual actions [31,32]. These predictors provide a novel perspective on the effect of Internet use on government trust and can promote sustainable governance. Therefore, to overcome the shortcomings of existing studies, this study explained the effect of Internet use on government trust by using data from the 2017 Chinese Social Survey. This study presents the following innovation: (1) The data used in this study were obtained from a nationwide sampling survey project sponsored by Chinese official institutions. The survey has excellent data reliability and accurately reflects the relationship between Chinese citizens' Internet use and government trust and overcomes the sample selection defects of existing studies; (2) a psychological variable of sense of security was introduced and the risk social amplification theory was used to investigate the impact of Internet use on citizens' trust in the government from the perspective of individual psychological mechanism; (3) in addition to the least squares model, the propensity score matching (PSM) method was used to address the self-selection bias problems in Internet use. Lu et al. [21] revealed that some attributes of Internet users may influence both Internet usage behavior and trust in the government. Failure to remedy self-selection can result in biased results similar to those in the extant literature [33]; (4) unlike previous studies in which only the correlation between Internet use and citizens' trust in the government was analyzed in a general manner, this study discussed the heterogeneous relationship between Internet use and citizens' trust in the government from three aspects namely age, household registration, and region. Although some scholars believe that citizens of various ages, household registration, and regions

may exhibit distinct trust in the government [2,34], few systematic empirical tests have been conducted. This study filled this gap in understanding.

## 2. Theoretical Analysis and Research Hypothesis

### 2.1. Internet Use and Trust in the Government

The appearance of novel interactive media such as the Internet of Things has completely changed the manner in which people obtain information and communicate [35]. Unlike the regulatory strategies of coding, gate-keeping, and filtering of conventional media information dissemination, the sea quantization, personalization, decentralization, information autonomy, and self-organization of Internet media have gradually weakened the information monitoring function and reduced the possibility of gate-keeping of political information, which renders guaranteeing the authenticity and legitimacy of political information in cyberspace difficult. The “no threshold” of information production and interaction of Internet has allowed noninstitutional political participation and a window for citizens to challenge and question the official discourse and vent their social emotions. Internet users use online platforms as a public forum to express opinions on social and livelihood issues and implore the government to implement reforms through online public opinion monitoring. The fierce pursuit of the government by online users can damage the perception of political parties and governments. To attract consumers and realize traffic gains, online platforms dramatize news and negative social events, especially events that can result in a high degree of reduction of political figures. Therefore, citizens misunderstand real political situation, which can result in a decline in citizens’ trust in the government [36]. Increased material economy and social capital has shaped a group of modern citizens with post-materialist values. Such citizens, when faced with diverse and heterogeneous information on the Internet, are adept at using reflective cognition and critical comparison to construct and pursue independent “truths” on social affairs and less likely to be swayed by the transparent and responsive information of the government, which directly fuels skepticism in the government [37]. We proposed the following hypothesis:

**Hypothesis 1 (H1).** *Internet use significantly and negatively affects citizens’ trust in the government, and the higher the frequency of Internet use, the lower the citizens’ trust in the government.*

### 2.2. Mediating Role of Sense of Security in the Relationship between Internet Use and Citizens’ Trust in the Government

The social amplification of risk (SARF) theory describes how the availability of information in social media affects public frames, perception, and reaction to risks [38]. Previous empirical studies have examined the function of conventional media (newspapers, television, etc.) as “information dissemination stations” that subsequently create a “ripple effect” of risk and change the perception of the public regarding a risk. Unlike the conventional media’s “one-to-many” information dissemination, new media from the Internet has developed into a “many-to-many” network communication system with complex and diverse digital media types, “near-reduction” media content, and instantaneous dissemination of network nodes. This trend promotes the “technological coupling” of novel media and risk amplification, which promotes risk diffusion, strengthens risk experience, increases risk uncertainty, and exacerbates the consequences of risk amplification and public risk perception. With the outbreak of unexpected public events, online media has become the “primary battlefield” for people to obtain information, discuss issues, and vent their emotions. Fringe public opinions may mislead the public regarding risks by spreading unreliable information and false assertions to the society, which could intensify people’s fear and anxiety of social risks and result in a reduced sense of security. Considering the “stigmatization” of nuclear power off the coast of China as an example, scholars have confirmed that online media has created a “mirror effect” in risk signal dissemination. Media stigmatization and information filtering of radioactive substances contaminating the

environment and posing a threat to people's health are recycled, which amplifies nuclear power risks, deepens public fears of nuclear power technology, and triggers "chain reactions" such as antinuclear movements and violent protests [39]. Therefore, we proposed the following hypothesis.

**Hypothesis 2 (H2).** *Internet use considerably and negatively affects citizens' sense of security.*

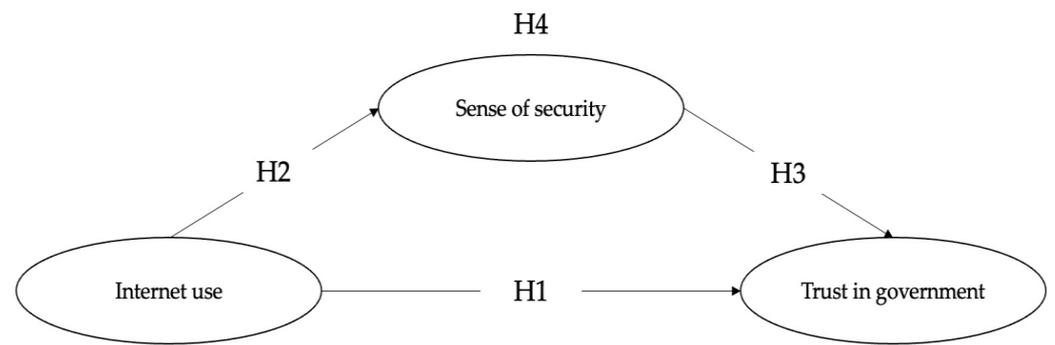
The institutionalist paradigm based on rational choice theory and social exchange theory focuses on the effect of government performance on citizens' trust. Trust in the government is considered as a game or social exchange behavior of citizens on the government's ability to provide public services and their performance. Trust in the government is a rational choice and subjective evaluation of citizens' information of political, economic, and sociocultural performance of the government. As rational economic people, citizens will open the valve of trust exchange with the government when the government meets their growing material and cultural needs [40,41]. The social exchange "chain" consisting of the "output" of public services and "input" of citizens' trust in the government operates in an orderly manner, and the government's credibility and political legitimacy steadily increases. By contrast, citizens' trust in the government declines. In Chinese discourse, under the political system of the people's mandate and legal public power, maintaining public safety and preventing and resolving major social risks are responsibilities of the government and its constituent departments. The government actively improves the quality and level of public safety services to continuously satisfy citizens' requirements and expectations for social safety to effectively enhance citizens' sense of access, happiness, and security, and strengthen citizens' trust in the government. Social exchange theory has been validated empirically. A study revealed that respondents with low perceptions of food risk and positive ratings of economic growth and anticorruption performance exhibited high levels of trust in the competence, benevolence, and honesty of the government [31]. Therefore, we proposed the following hypothesis:

**Hypothesis 3 (H3).** *A positive effect of a sense of security on citizens' trust in the government.*

With the rapid development of social media technologies, the impact of Internet use on citizens' sense of security has been gradually confirmed [42]. Internet media constructs a novel risk society amplification field through technology and culture coupling and shapes people's "cognitive matrix" of social risk and security scenarios through the "symbolic reality" of media effects. In the process, citizens' risk fear is increased rapidly and generates a sense of insecurity. A sense of security can be defined as an individual's general perception of how safe they feel and the extent to which they feel protected from socially threatening events [43]. According to responsible government and risk attribution theory, people attribute "I am afraid", "I am scared", and "insecure" to government inaction and ineffective governance. Just after a crisis, citizens want to personalize the cause and responsibility for the disaster and link it to those in power and those in control to share anxiety, panic, and discontent and expect to reduce the likelihood of a recurrence of the disaster [44]. Driven by rational choice and social exchange consciousness, along with a weakened sense of security and the government's ability to provide public safety services, citizens lower their subjective evaluation of the effectiveness of government public services and form an expectation gap, which directly reduces citizens' trust in the government. For example, one study found that citizens' insecurity negatively affects trust in public institutions [45]. Therefore, we proposed the following hypothesis.

**Hypothesis 4 (H4).** *Sense of security plays a partial mediating role in the relationship between Internet use and citizens' trust in the government.*

Based on the previous research hypothesis, we constructed a relationship model between Internet use and citizens' trust in the government. As shown in Figure 1.



**Figure 1.** The relationship model.

### 3. Method

#### 3.1. Data Sources

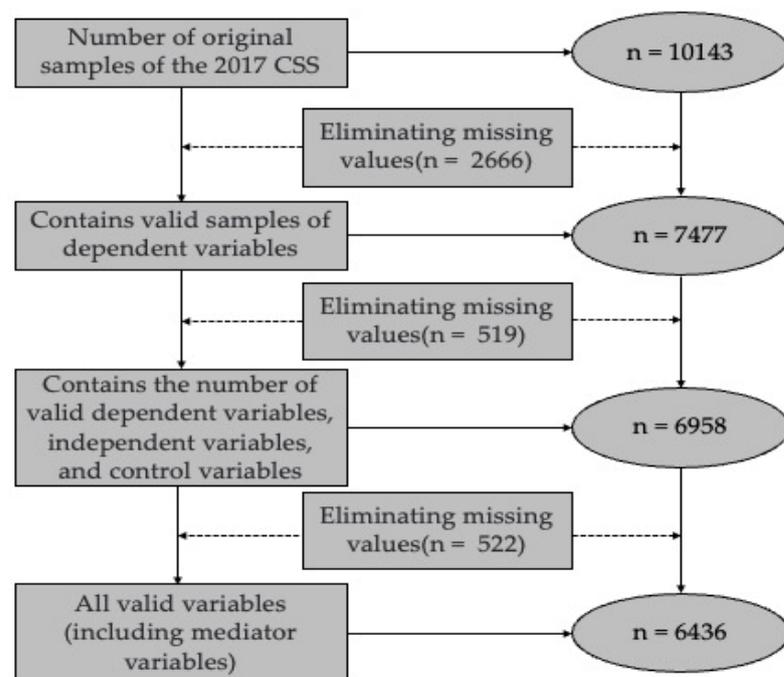
Data from the 2017 Chinese Social Survey were used in this study. The survey is a nationwide large-scale continuous sample survey project initiated by the sociology Research Institute of the Chinese Academy of Social Sciences. The purpose of this survey is to obtain the data of the social changes in China during the transition period through the long-term longitudinal survey of the citizen's labor and employment, family and social life, social attitudes, and other aspects. The survey is a biennial longitudinal survey, using the household interview probability sampling method, covering 31 provinces (autonomous regions and municipalities directly under the Central Government), including 151 districts (cities and counties) and 604 villages (neighborhood committees), with 7000 to 10,000 households interviewed each time. In terms of implementation and management, the CSS survey relied on universities and research institutions across the country to establish local survey teams; offered a 3–5-day training course for supervisors and interviewers, and conducted various interview simulations; developed the field teamwork methodology; designed a series of survey process management; and was equipped with efficient logistical support. In the quality control process, a certain percentage of questionnaires was audited at each survey site, provincial, and national level to ensure the quality of the questionnaires, and all questionnaires would be entered twice. In addition, the project team anonymized the data information to ensure that respondents would not be negatively affected in any way as a result of their participation in the survey. The data collected by this method has been well used in existing studies [42]. Based on the interrelationship between the variables of Internet use, sense of security, and trust in the government, a valid baseline sample of 10,143 observations was obtained for this study. The data cleaning process and sample selection are shown in Figure 2.

#### 3.2. Variable Selection

- Trust in the government

Trust in the government is typically measured by conducting attitudinal surveys that request citizens for opinions related to the level of trust in their country's government (ordinal answer scale) or whether they trust the government (binary answer scale) [6]. In this study, select fixed-order response data were used for the direct measurement of trust in the government institutions and staff from the 2017 CSS. In the questionnaire, respondents were asked "Do you trust the following institutions?" Options included the central government, county and district governments, township governments, and courts, and "Do you trust the following people?", covering "police, judges, and party officials", and respondents answered "Total distrust", "Less trusting", "More trust", and "Very trusting" in seven areas based on their expectations of the behavior of government and public officials and rated them on a score of 1–4, with higher scores representing more trust in the government. For accurately defining government trust, the reliability and validity of the questionnaire were tested before using a factor analysis to downscale the

seven indicators, and the results revealed that the Cronbach's alpha coefficient among the indicators was 0.8913, which exhibited a high internal consistency. Second, the Kaiser–Meyer–Olkin (KMO) coefficient among the seven indicators was 0.836, and the  $p$ -value of Bartlett's sphere (Bartlett) test was 0.000, which indicated the suitability for a factor analysis. Finally, the principal component analysis was used to analyze the seven indicators, and the public factor "trust in the government" was introduced into the model as the dependent variable.



**Figure 2.** Data cleaning process and sample selection.

- Internet use

Internet use refers to the public's access to Internet services by using cell phones, computers, and other terminal devices. To ensure the accuracy of the study results, the effects of "whether or not you use the Internet" and "Internet use frequency" on trust in the government were investigated separately. In the CSS2017 questionnaire, respondents were questioned "Do you usually go online?" with values of 1 and 0 assigned to "go online" and "do not go online". The CSS2017 questionnaire asked respondents how often they used the Internet to browse political news, entertainment news, find information, chat, and make friends, and participate in or retweet discussions. The response options included "Never", "Several times a year", "At least once a month", "At least once a week", "More than once a week", and "Almost every day", which were assigned a value of "0 to 5" in that order. For model calculations, the Cronbach's alpha coefficient was 0.9153, which indicates that these five indicators had a high internal consistency. In this study, the mean values of these five indicators were calculated to constitute the "Internet use frequency" variable.

- Sense of security

A sense of security is the subjective evaluation and psychological feeling of social order, social stability, the effectiveness of public services, and social welfare, which corresponds to the pain, anxiety, and worry caused by "insecurity" in life. In terms of measurement methods, questionnaires or scales have been designed to direct question respondents to obtain their subjective feelings, perceptions, and evaluations on security [46–48]. A sense of security is a complex multidimensional construct and includes a range of personal, economic, social, and political security. In the CSS2017 questionnaire, respondents were asked "How do you feel secure in the following areas of society today?" The question

options included “personal and family property”, “personal”, “transportation”, “health care”, “food”, “labor”, “personal information, privacy”, “environment”, and “society”. Respondents had the option to answer “Very insecure”, “Not too secure”, “Relatively secure”, and “Very secure”, corresponding to 1–4, respectively, with higher scores reflecting a higher sense of security. The Cronbach’s alpha coefficient, KMO, and Bartlett’s sphere (Bartlett’s) test  $p$ -value for the nine security levels were 0.8586, 0.900, and 0.000, which indicated that the aforementioned variables exhibited high internal consistency. Through the factor analysis of the nine indicators, a public factor was finally extracted and named as the “sense of security” factor as a mediating variable in model calculations.

### 3.3. Control Variables

This study ensured the robustness of the study results by introducing control variables. Based on existing studies, considering the effect of economic capital on trust in the government, this study controls for demographic variables represented by gender, age, marital status, education level, household registration, income, and job status [49,50]. Since social trust considerably affects citizens’ trust in the government, this study focused on social trust variables represented by neighbor trust, friend trust, and stranger trust; finally, considering the effect of social equity and quality of life on trust in the government, this study investigated life satisfaction and the sense of social justice. The definitions and descriptive statistics of all variables are presented in Table 1.

### 3.4. Analytical Model

This study used OLS to analyze the factors influencing citizens’ trust in the government. The ordinary least squares regression model is as follows.

$$Trust_i = \alpha_1 + \beta_0 Internet_i + \gamma_1 \chi_i + \delta_i \quad (1)$$

In Equation (1),  $i$  represents individual observations,  $i = 1, 2 \dots n$ ;  $Trust_i$  represents trust in the government;  $Internet_i$  represents Internet use;  $\chi_i$  represents all control variables;  $\delta_i$  is a random error term; and  $\beta_0, \gamma_1$  is the coefficient to be estimated.

As suggested by the aforementioned theoretical hypothesis, the sense of security may play a mediating role in the effect of Internet use on trust in the government. To test this hypothesis, an ordered regression test (three-step approach) was used to construct the model [51]:

$$Trust_i = \alpha_1 + \lambda * Internet_i + \beta_1 X_i + \delta_i \quad (2)$$

$$Security_i = \alpha_2 + \mu * Internet_i + \beta_2 X_i + \delta_i \quad (3)$$

$$Trust_i = \alpha_3 + v * Internet_i + \psi * Security_i + \beta_3 X_i + \delta_i \quad (4)$$

In the aforementioned equation,  $Trust_i$  represents the level of trust in the government,  $Internet_i$  indicates Internet use,  $Security_i$  indicates the sense of security; and  $\lambda, \mu, v, \psi, \beta_1, \beta_2,$  and  $\beta_3$  are the coefficients to be estimated. Equation (2) tests the influence relationship between Internet use and trust in the government. Equation (3) tests the influence relationship between Internet use and sense of security. Equation (4) tests the influence of Internet use on trust in the government through the sense of security; according to the stepwise test, if the coefficient  $\lambda$  in the first step is significant, the second test can be performed; if the coefficients  $\mu$  and  $\psi$  are significant, the third test, which tests whether the coefficient  $v$  is significant, is continued.

**Table 1.** Variable definition and descriptive statistics.

Variable	Coding Scheme for the Response	Mean	SD
Trust in the government <sup>a</sup>	Four categories: 1 = Total distrust to 4 =Very trusting	3.0297	0.6346
Internet use frequency	Never = 0, Several times a year = 1, At least once a month = 2, At least once a week = 3, Many times a week = 4, Almost every day = 5	1.2004	1.6408
Sense of security <sup>b</sup>	Very insecure = 1, Not too secure = 2, Relatively secure = 3, Very secure = 4	2.8602	0.4936
Age	Age in 2017	46.654	14.223
Educational level	Elementary school and below = 1, Secondary school = 2, College and above = 3	1.8033	0.6803
Income	Log of total personal income in 2016	7.8233	3.8638
Neighbor trust	Total distrust = 1, Less trusting = 2, More trust = 3, Very trusting = 4	3.0041	0.6813
Friend trust	Total distrust = 1, Less trusting = 2, More trust = 3, Very trusting = 4	3.1012	0.6767
Stranger trust	Total distrust = 1, Less trusting = 2, More trust = 3, Very trusting = 4	1.4692	0.6819
Life satisfaction	Very dissatisfied = 1, Very satisfied = 10	6.7178	2.1987
Sense of social justice	Very unfair = 1, Not too fair = 2, Fairer = 3, Very fair = 4	2.7547	0.6669
Variable	Coding Scheme for the Response	N	Percentage (%)
Internet use	Uses = 1	4069	40.12
	Not use = 0	6074	60.74
Gender	Male = 1	4536	44.72
	Female = 0	5607	55.28
Marital status	Unmarried/Divorce or widowed = 0	1945	19.19
	Married/Cohabiting = 1	8192	80.81
Household registration	Rural = 1	6981	68.89
	Urban =0	3153	31.11
Job	Have a job	6366	62.76
	Have no job	3777	37.24

<sup>a</sup> Represents the average of seven aspects of citizens' trust in the government. <sup>b</sup> Represents the average of 9 aspects of citizens' sense of security.

## 4. Results

### 4.1. Baseline Regression

According to the model requirements, the variables were first tested for correlation and covariance to avoid bias in the estimation results because of the presence of severe multicollinearity. After the tests, the mean value of variance inflation factor (VIF) of all the variables was 1.43, and the maximum value of VIF of the individual variables was less than 10, which indicated that no severe covariance problem occurred among the variables. Columns (1), (2), and (3) in Table 2 report the regression results for the effect of Internet use on trust in the government. Columns (1) and (2) investigate the effect of Internet use and related control variables on trust in the government, whereas column (3) continues to control for province fixed effects based on the first two columns, with a regression coefficient of  $-0.095$  and significant at the 1% level, which indicates that Internet use considerably reduces citizens' trust in the government. Thus, Hypothesis 1 is verified. Next, to ensure the robustness of the model regression results, columns (4), (5), and (6) of Table 2 detail the regression results of the effect of Internet use frequency on citizens' trust in the

government. The regression coefficient in column (6) is  $-0.015$ , which is significant at the 10% level and indicates that a significant negative effect of Internet usage frequency exists on trust in the government.

**Table 2.** Regression results of Internet use and trust in the government.

Variable	Trust in the Government					
	(1)	(2)	(3)	(4)	(5)	(6)
Internet use	$-0.341^{***}$ (0.023)	$-0.096^{***}$ (0.027)	$-0.095^{***}$ (0.027)			
Internet use frequency				$-0.085^{***}$ (0.006)	$-0.014^*$ (0.008)	$-0.015^*$ (0.008)
Gender (1 = male)		$-0.124^{***}$ (0.021)	$-0.124^{***}$ (0.023)		$-0.125^{***}$ (0.021)	$-0.126^{***}$ (0.023)
Age		$0.007^{***}$ (0.001)	$0.007^{***}$ (0.001)		$0.008^{***}$ (0.001)	$0.007^{***}$ (0.001)
Marital status (1 = married)		$-0.100^{***}$ (0.028)	$-0.102^{***}$ (0.029)		$-0.104^{***}$ (0.028)	$-0.106^{***}$ (0.029)
Income		$-0.010^{***}$ (0.003)	$-0.011^{***}$ (0.003)		$-0.011^{***}$ (0.003)	$-0.011^{***}$ (0.003)
Household registration (1 = Agricultural household)		$0.059^{***}$ (0.025)	$0.056^{**}$ (0.025)		$0.064^{***}$ (0.024)	$0.061^{**}$ (0.025)
Educational level		$-0.043^{**}$ (0.020)	$-0.042^{**}$ (0.020)		$-0.048^{**}$ (0.020)	$-0.047^{**}$ (0.021)
Neighbor trust		$0.231^{***}$ (0.022)	$0.232^{***}$ (0.022)		$0.230^{***}$ (0.022)	$0.232^{***}$ (0.022)
Friend trust		$0.190^{***}$ (0.022)	$0.189^{***}$ (0.022)		$0.189^{***}$ (0.022)	$0.189^{***}$ (0.022)
Stranger trust		$0.025^*$ (0.014)	$0.027^*$ (0.014)		$0.024^*$ (0.014)	$0.027^*$ (0.014)
Life satisfaction		$0.063^{***}$ (0.005)	$0.063^{***}$ (0.005)		$0.062^{***}$ (0.005)	$0.063^{***}$ (0.005)
Sense of social justice		$0.528^{***}$ (0.019)	$0.527^{***}$ (0.020)		$0.529^{***}$ (0.019)	$0.531^{***}$ (0.020)
Job (1=Have a job)		$0.034$ (0.025)	$0.037$ (0.025)		$0.035$ (0.025)	$0.038$ (0.025)
Provincial fixed effect	NO	NO	YES	NO	NO	YES
Constant	$0.1496^{***}$	$-3.2303^{***}$	$-3.1239^{***}$	$0.1141^{***}$	$-3.2712^{***}$	$-3.1739^{***}$
R-squared	0.0286	0.3190	0.3205	0.0207	0.3178	0.3194
Observations	7477	6958	6893	7453	6937	6872

Robust standard errors are in parentheses; \*  $p < 0.1$ , \*\*  $p < 0.05$ , and \*\*\*  $p < 0.01$ .

In addition, most control variables were significantly correlated with citizens' trust in the government. For example, gender ( $r = -0.124$ ,  $p < 0.01$ ), marital status ( $r = -0.102$ ,  $p < 0.01$ ), income ( $r = -0.011$ ,  $p < 0.01$ ), and educational level ( $r = -0.042$ ,  $p < 0.05$ ) showed a significant negatively correlation with citizens' trust in the government. Age ( $r = 0.007$ ,  $p < 0.01$ ), household registration ( $r = 0.056$ ,  $p < 0.05$ ), neighbor trust ( $r = 0.232$ ,  $p < 0.01$ ), friend trust ( $r = 0.189$ ,  $p < 0.01$ ), stranger trust ( $r = 0.027$ ,  $p < 0.1$ ), life satisfaction ( $r = 0.063$ ,  $p < 0.01$ ), and sense of social justice ( $r = 0.527$ ,  $p < 0.01$ ) showed a significant positive correlation with citizens' trust in the government. However, it is noteworthy that having a job does not have a significant effect on citizens' trust in the government.

#### 4.2. Robustness Test

First, the independent variable was replaced. In this study, we replaced Internet use with Internet use frequency and observed the effect of this variable on government trust. The regression results are presented in column (1) of Table 2. The estimation results revealed that the Internet use frequency is significantly and negatively related to trust in the government.

Second, the dependent variable was replaced. Since the 1990s, increasing satisfaction with government public service provision has been leveraged by the Chinese government to maintain trust in the government [52]. The empirical results also revealed that citizens' satisfaction with government performance and public service supply is a key indicator that affect citizens' trust in the government [53]. Higher government performance evaluation or satisfaction with government public services significantly increases citizens' trust in the government [31]. This study replaced trust in the government with satisfaction in government work for robustness testing. In the CSS2017 questionnaire, the investigators examined citizens' satisfaction with government in 13 categories, including medical services, social security, environmental protection, economic development, crime fighting, and information disclosure. The variables were measured in the same manner as trust in the government. Respondents answered "very bad", "not very good", "relatively better", and "very best" responses for each of the 13 items. The Cronbach's alpha coefficient for the 13 items was 0.9428, and the KMO value was 0.957, which indicated excellent internal consistency of the variables. The data for the 13 dimensions can be summed and averaged to form the variable "government job satisfaction". The regression results using the ordered prohibit model are presented in column (2) of Table 3. The results revealed that a significant negative correlation existed between Internet use and government job satisfaction at the 5% level, and the probability that citizens who use the Internet feel the "very best" about government jobs decreases by 7.4% compared with those who do not use the Internet. The regression results after the dependent variable are consistent with the results of previous studies and provide ample evidence of the robustness of the negative effect of Internet use on trust in the government.

**Table 3.** Robustness test.

Variable	Replace Independent Variable	Replace Independent Variable	Change the Coding of the Dependent Variable	Propensity Score Matching Method
	Trust in the Government	Satisfaction of the Government Work	Trust in the Government	
	(1)	(2)	(3)	(4)
Internet use		−0.066 ** (0.033)	−0.082 *** (0.027)	−0.092 * (−1.91)
Internet use frequency	−0.015 * (0.008)			
Control Variables	YES	YES	YES	YES
Provincial fixed effect	YES	YES	YES	YES
Constant	−3.1739 ***	—	−3.0787 ***	1.8244 ***
R-squared/Pseudo R2	0.3194	0.0312	0.2971	0.3902
Observations	6872	6600	7429	6958

Robust standard errors are in parentheses; \*  $p < 0.1$ , \*\*  $p < 0.05$ , and \*\*\*  $p < 0.01$ . In the match, the caliper's parameter number is set to 0.05. The  $t$ -value is in parentheses in column (4).

Third, changing the encoding of the dependent variable. In the robustness test, we adjusted the coding order of trust in the government to "1–5", which corresponded to "Total distrust", "Less trusting", "Hard to say", "more trust", and "Very trusting". The

Cronbach's alpha coefficient among the seven indicators was 0.8811, and the KMO value was 0.829. The regression results are presented in column (3) of Table 3, which revealed that Internet use is significantly and negatively correlated with trust in the government at the 1% statistical level. This result indicated that Internet use still reduces citizens' trust in the government.

Fourth, the propensity score matching method (PSM) was used to divide the sample into a treatment group (using the Internet) and a control group (not using the Internet), and a counterfactual framework was constructed to investigate the causal relationship between Internet use and trust in the government. A caliper matching design was used for the treatment and control groups, and a balance test was performed. Before matching, the standard deviations between the control variables in the treatment and control groups were large and exhibited obvious systematic differences; after caliper matching, the standardized deviations of all control variables except for the core variables were less than 10%, and the  $t$  and  $p$  tests indicated that the differences of the control variables in the treatment and control groups were eliminated to achieve the effect of a randomized experiment. Column (4) in Table 3 reports the average treatment effect on the treated (ATT) calculated using the PSM for the effect of Internet use on trust in the government. The results revealed that, after eliminating the differences between variables, the  $t$ -value of ATT was  $-1.91$ , and Internet use was significantly negatively related to trust in the government at the 10% level. This result indicated that the loss effect of Internet use on trust in the government still exists, which validated the findings of the baseline regression.

#### 4.3. Heterogeneity Effect

This study discussed heterogeneity at three levels, namely regional, age, and household registration. The regression results are presented in Table 4.

**Table 4.** Heterogeneity effect.

Variable	Region			Age		Household Registration	
	Eastern	Central	Western	High	Low	Agricultural	Non-Agricultural
Internet use	−0.098 ** (0.044)	−0.055 (0.045)	−0.140 *** (0.053)	−0.055 (0.035)	−0.126 *** (0.044)	−0.120 *** (0.034)	−0.038 (0.045)
Control variables	YES	YES	YES	YES	YES	YES	YES
Provincial fixed effect	YES	YES	YES	YES	YES	YES	YES
R-squared	0.3299	0.2990	0.3339	0.3257	0.3003	0.3119	0.3657
Constant	−3.4561 ***	−3.0560 ***	−3.1361 ***	−3.2874 ***	−3.3719 ***	−2.8767 ***	−3.4432 ***
Observations	2796	2234	1863	4293	2600	4676	2217

Robust standard errors are in parentheses. \*\*  $p < 0.05$ , and \*\*\*  $p < 0.01$ . Eleven provinces are in the eastern region, eight provinces are in the central region, and twelve provinces are in the western region; Age\_High ( $\geq 41$  years); Age\_Low ( $\leq 40$  years).

First, Internet use is significantly negatively associated with trust in the government at the 5% and 1% levels in the eastern and western regions, and the negative effect is higher in the western than in the eastern region of China. However, we found no significant correlation between Internet use and citizens' trust in the government in the central region. The estimation results indicated that regional differences are apparent in the negative effect trend of Internet use on citizens' trust in the government. This phenomenon could be attributed to the level of economic development and Internet coverage in the eastern region being higher than those in the central and western regions. Citizens can access complex network information in a short time. Distinguishing the true and false information promptly is difficult, and making accurate decisions when facing the bombing and information vortex of redundant information infection results in the loss of trust in the government. Unlike the

eastern region, the Internet coverage in the western region is limited, and citizens exhibit a simple method to obtain information, which renders it difficult for netizens to have a correct perception of government trust in a situation with a limited information load. By contrast, the economic development and Internet penetration in the central region are between the eastern and western regions, and effective Internet services and public opinion guidance render a negative effect between Internet use and trust in the government less obvious.

Second, Internet use and trust in the government were significantly negatively correlated at the 1% level for the low age groups. This result indicated that an age variability exists in the effect of Internet use on citizens' trust in the government. According to the 2020 Statistical Survey on Internet Development in China, as of March 2020, the proportion of Chinese Internet users aged 20–39 reached 42.3%, which was considerably higher than the other age groups. Citizens in the lower age group are in the shaping stage of political socialization, and although these citizens use the Internet, their lack of social experience, relative lack of information cognition and discrimination ability, and interest in chasing hot news results in rational judgment or even a swarm in the case of bad online information or online rumors, which exacerbates the potential risk of government mistrust.

Finally, the Internet use of agricultural household citizens was significantly and negatively related to trust in the government at the 1% level, whereas nonagricultural households were not significantly affected. This phenomenon could be attributed to nonagricultural household citizens being exposed to and using the Internet earlier or a mature and stable stage of Internet use that has resulted in them being accustomed to and developing a certain ability to recognize various types of news or opinions in cyberspace. These citizens can resist the erosion of inaccurate information on the Internet. Due to the limitations of Internet penetration or consumption ability, agricultural citizens have yet to fully adapt to information and instant network interactions on the Internet and remain vulnerable to Internet rumors or inaccurate information. These citizens subsequently generated negative feelings toward the government.

#### 4.4. Mechanism Analysis: The Mediating Role of Sense of Security

A mediation effect model was constructed using the sequential regression test method to observe the relationship between Internet use, sense of security, and trust in the government. The details are presented in Table 5.

**Table 5.** Mechanism analysis: the mediating role of the sense of security.

Variable	Sense of Security		Trust in the Government	
	(1)	(2)	(3)	(4)
Internet use	−0.128 *** (0.027)		−0.095 *** (0.027)	−0.066 ** (0.028)
Sense of security		0.190 *** (0.013)		0.189 *** (0.013)
Control variables	YES	YES	YES	YES
Provincial fixed effect	YES	YES	YES	YES
Constant	−2.3252 ***	−2.7733 ***	−3.1239 ***	−2.7210 ***
R-squared	0.1926	0.3457	0.3205	0.3463
Observations	7887	6436	6893	6436

Robust standard errors are in parentheses; \*\*  $p < 0.05$ , and \*\*\*  $p < 0.01$ .

Column (1) in Table 5 reports the effect of Internet use on the sense of security. The results revealed that the regression coefficient is negative at the 1% level, which indicated that Internet use significantly reduces the sense of security of citizens. H2 is verified.

Column (2) in Table 5 reports the estimated results of the sense of security on trust in the government, and the variables are significantly positively correlated at the 1% level. This result indicated that the increase in the sense of security contributes to citizens' trust in the government. H3 is verified. Column (4) in Table 5 reports the estimation results of Internet use on citizens' trust in the government after the inclusion of a sense of security. The results revealed that Internet use is significantly negatively correlated with government trust at the 5% level. The sense of security is significantly positively correlated with trust in the government at the 1% level, and the regression coefficient of Internet use after adding the mediating variable is reduced compared with the coefficient in column (3) of Table 5. Thus, the mediating mechanism of Internet use weakened trust in the government by reducing citizens' sense of security exists.

To verify the mediating role of a sense of security between Internet use and trust in the government, the robustness test of the mediating effect using the coefficient product test and bootstrap method were conducted. On the one hand, the results revealed that the *z*-value of the Sobel test was  $-3.638$ , which is significant at the 1% statistical level, and the total share of the mediating effect was 24.06%. The results of the coefficient product test and the sequential regression test exhibited excellent homogeneity, which confirmed the mediating effect of a sense of security. On the other hand, the results of 1000 times of the Bootstrap self-sampling showed that the confidence interval of *\_bs\_1(ind\_eff)* was  $[-0.032, -0.009]$ , excluding 0, indicating the existence of a mediation effect. Thus, H4 is verified.

## 5. Discussion

Trust in the government is a key factor in maintaining the legitimacy and sustainability of a political system. Democratic regimes cannot sustain themselves if citizens' trust in the government is not enhanced and maintained [54]. Although scholars have recognized the importance of trust in the government for its public service capacity, project investment, and democratic institutions and have elucidated the causal mechanisms of government trust, limited studies have focused on the effect of Internet use on government trust. With the increase in the number of Internet users, the Internet is increasingly becoming a tool for citizens to obtain information and communicate, which significantly affects their subjective mindset, behavioral perceptions, and political participation [36,55,56]. To enhance the existing studies, this study empirically analyzed the relationship between the influence of Internet use on government trust by using large-scale survey data in China. This result revealed the mechanism of the effect of Internet use on trust in the government from the perspective of citizens' subjective sense of security.

First, based on the 2017 survey data in China, the empirical study revealed that Internet use considerably reduces citizens' trust in the government, and the higher the frequency of Internet use, the lower citizens' trust in the government. This conclusion is consistent with the findings of Im et al. [13], who revealed that the more time individuals spend on the Internet, the lower their trust in the government and the lower the level of citizen compliance. This finding strongly rejects the results of Lu et al. [21], who concluded that Internet use has a significant positive impact on Chinese Internet users' trust in the government. The reasons for the various study results may originate from the variability of the study sample and the survey population, as well as the research methodology [57]. Current academic studies on the effect of Internet users reveal two distinct trains of thought in the findings. Most researchers generally agree Internet use considerably increases citizens' household income and expenditure [58], can help citizens maintain existing relationships, and facilitate the establishment of new social ties, reduce problems, such as loneliness and psychological depression, and continuously enhance citizens' subjective well-being [59,60]. By contrast, significant negative effects of Internet use are apparent, especially if citizens have problems or overuse them [61]. Zhang et al. [55] used data from the 2016 China Household Survey and revealed that Internet use significantly reduced citizens' satisfaction with their living conditions and environmental quality. Furthermore, some researchers believe that people who spend a lot of time on the Internet may suffer from phobias [62],

which reduces the perceptions in their quality of life [63]. Thus, a rational view of the various roles of the Internet in the development of human society should be considered. Therefore, the positive functions of the Internet for citizens' lives and social development should be exploited, and the negative effects should be considered.

Second, the mechanism analysis revealed that Internet use negatively affects citizens' trust in the government by reducing their subjective sense of security. The Internet and social media have changed the information flow throughout society, which can usher in a rapid change in information exchange and interpersonal behavior patterns [64]. The Internet can help citizens rapidly search, access, and share information; enhance their ability to address and respond to various social issues formally or informally; and positively influence their subjective perceptions of the safety of the social environment. By contrast, in an uninterrupted and open online environment, a second opinion or a local voice may disseminate unreliable information and false assertions to society, which misleads the public's understanding of risks and renders citizens' concerns of issues increasingly exponentially with the increase in online interactions, which easily triggers collective panic and increases citizens' insecurity regarding the environment and state they live in [65,66]. Qian et al. [67] pointed out that Internet use increases citizens' perceptions of risk, leading to a decline in citizens' sense of security and subjective quality of life. At the same time, the impact of Internet use on citizens' sense of security was more pronounced during the crisis. During the COVID-19 pandemic, a lot of fake news or misinformation was spread on social networks and media and directly contributed to citizens' sense of insecurity [68]. A sense of security is formed by people's experience of the government's ability to ensure society and people remain safe as they perform their daily lives. Citizens who lack security or exhibit a reduced sense of security may perceive the government as incapable of maintaining public safety [2]. Based on the social exchange theory, citizens' reduced recognition of the government's ability translates into a sense of distrust in the government and public institutions. As Wroe [69] pointed out in his study, citizens' job insecurity led to lower trust in politicians, political parties, and political institutions and less satisfaction with the performance of democracy. Another study showed that, in Ireland, where the crisis was relatively hard hit, the economic crisis created widespread economic insecurity among citizens and caused their trust in institutions to plummet. After the economy recovered, citizens have been blaming the government for the crisis, and political trust remains low [70].

Third, a significant heterogeneity was observed in the negative effect of Internet use on citizens' trust in the government in three aspects, namely region, age, and household registration. The current findings of many indicate heterogeneity in the effects of Internet use. For example, Lu et al. [21] revealed that the beneficial effects of Internet use on trust in the government differed between genders and age groups. Zhu et al. [71] used 6205 geographically distributed Chinese rural household survey data, and an empirical analysis revealed that Internet use negatively affects rural citizens' perceptions on social equity, which varies significantly across age groups, geographic regions, and genders. Thus, the findings of this study provide strong evidence for the heterogeneity of the impact effects of Internet use.

Fourth, the study also has important policy implications. On the one hand, the supervision mechanism should be established for Internet information production, construction, and dissemination. The review and supervision of cyberspace information should be increased moderately, and the coordinated supervision system between the government, Internet platforms, industry associations, and netizens should be optimized. Platforms such as new government media and press conferences should promptly publish information on deliberation, decision-making, and policy implementation that the public pays close attention to and strive to build a transparent and responsive government. On the other hand, the sense of security is a vital variable affecting citizens' trust in the government. Therefore, the government should prevent and resolve the political, economic, cultural, social, and environmental risks; optimize the diversified social welfare supply system;

consider the role of the social security safety net in resolving social conflicts and complex risks; and effectively enhance citizens' sense of security and trust in the government.

## 6. Conclusions

### 6.1. Major Findings

Using data from the 2017 CSS, we systematically examined the effect and mechanism of Internet use and sense of security on trust in the government and provided theoretical explanations and micro evidence to assess the political and social effects of the Internet. The findings suggest the following: First, the Internet usage considerably reduces citizens' trust in the government, and the higher the frequency of Internet usage, the lower the citizens' trust in the government. Second, there is considerable heterogeneity in the negative impact of Internet use on citizens' trust in the government by region, age, and household registration. Citizens living in the eastern and western regions, lower age groups, and citizens with an agricultural household registration experience a more dramatic decline in trust in the government. Third, the sense of security partially mediates the relationship between Internet use and citizens' trust in the government.

### 6.2. Limitations and Future Directions

However, our study is not without limitations. First, the data used in this paper originated from the authoritative database in China, and the sample is sufficient and representative. However, the data structure is cross-sectional, and depicting the impact of Internet use and sense of security accurately on trust in the government from a dynamic panel perspective is difficult. Second, the factor analysis was used to aggregate the seven dimensions into a representative public factor of trust in the government, which reflected more comprehensively the citizens' trust in various dimensions of the government. However, the hierarchical differences in the effects of Internet use and sense of security on the trust of the central and local governments were not highlighted. Studies have confirmed that numerous differences exist in citizens' trust in the central and local governments in China [72]. In the following study, we directly measured citizens' trust in central and local governments by collecting primary data and subsequently investigated the impact of Internet use and the differences in trust between the central and local governments.

**Author Contributions:** Z.W. was mainly responsible for the overall conception and design of this study, wrote the manuscript, and carried out the statistical analysis. H.L. carried out the data investigation and result analysis. M.Z. provided financial support for the project. L.Z. undertook the conceptual design, data analysis, and revision of the paper. T.L. carried out the investigation and data collation work and the language polishing for the manuscript. All authors have read and agreed to the published version of the manuscript.

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