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RESEARCH ARTICLE

Internet celebrities, public opinions and food system change in China: a new conceptual framework

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Abstract

Internet celebrities have powerful influence on public opinions and behaviors through affecting their feelings and attitudes. This study proposes a comprehensive framework which consists of individual-social-subjective-objective (IS-SO) dimensions to assess the influence of internet celebrities as opinion leaders on public's subjective values, consumption decisions, perceived cultural changes, and opinions on agribusiness rural development. The IS-SO framework is then applied to analyze an internet celebrity who is named Ms. Li, Ziqi and well-known for her beautiful and influential videos on food and rural issues in China. The findings confirms that the internet celebrities do influence the public's feelings, opinions, and emotional values at both the individual and societal levels. Specifically, the internet celebrity could change food system by promoting both the sales of related agricultural products and the positive image of rural society as well.

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1. Introduction

The internet has dramatically changed the way people communicate and interact. In particular, the recent emergence of social media platforms provides new tools for business marketing. As of June 2019, the number of Chinese netizens has reached 854 million, accounting for 61.2% of total population. The top five internet applications used by netizens are Instant Messaging (96.5%), Internet Video (short videos included) (88.8%), Search Engine (81.3%), Online News (80.3%), and Online Shopping (74.8%)[1]. The first two applications are both social media platforms, of which the wide usage partially indicate their extreme importance to people's lives, including their social opinions and purchase choices.

Internet celebrity is a cultural phenomenon fostered by the boom of social media. Social media provides the platforms for users to seek opinions, advice, and express themselves through interaction with others. Some of the users develop extensive social networks that attract wide attention and become what is referred to as internet celebrities (*Wanghong* in Chinese). By creating their unique images (Khamis *et al.*, 2017) and/or providing values to their followers (Li, 2018), Internet celebrities are often considered trustworthy and more accessible by their fans or followers (Djafarova and Rushworth, 2017, 2019). For these reasons they possess persuasive power (Freberg *et al.*, 2011) and reducing search costs as well as verification costs (e.g. Goldfarb and Tucker (2019)), to influence the opinions, attitudes and behavior of their followers. In the context of China, however, things are a little bit different (Abidin, 2018). The term 'internet celebrity' (Wanghong, literally 'person popular on the internet') does not always have a broadly positive meaning in the Chinese context. Internet celebrities include a variety of personas, and can be a profitable profession, an inspiring role models, or a morally condemnable byproduct of the internet economies (Zhang and De Seta, 2018).

Some recent studies have explored the impact of internet celebrities on consumer attitudes (De Veirman *et al.*, 2017; Jin *et al.*, 2019; Lim *et al.*, 2017; Park and Lin, 2020) and behavior (Djafarova and Rushworth, 2017, 2019). However, there is still limited literature that comprehensively assesses the impacts of internet celebrities. The impacts of internet celebrities are not limited to marketing and consumer attitudes. Because internet celebrities often exhibit domain-specific expertise which interact with the characteristics of followers, their influence are more credible and can be extended to the social realm (Khamis *et al.*, 2017). Therefore, internet celebrities become general online opinion leaders with ability to shape the preferences, opinions, attitudes, interests, and behavior of the public. Few studies, except for Casaló *et al.* (2018), have noticed this delicate but possibly close linkage between internet celebrities and online opinion leaders.

Opinion leadership, both online and offline, is related to what extent an individual is perceived to be a model for others, as well as to what degree the information provided by the individual is considered interesting and persuasive (Casaló *et al.*, 2018). Many studies have examined different aspects of the online opinion leadership, including the characteristics, motivation and identification (Li and Du, 2011; Lyons and Henderson, 2005; Winter and Neubaum, 2016). There is also research on the impacts of online opinion leaders in areas of marketing and advertising (Kwon and Song, 2015; Van der Merwe and Van Heerden, 2009), consumer attitudes and behavior (Casaló *et al.*, 2018; Djafarova and Rushworth, 2017, 2019; Zeng *et al.*, 2018, 2019), political engagement and political behavior (Park, 2013; Weeks *et al.*, 2017), news outlet trust (Turcotte *et al.*, 2015), and online learning (Li *et al.*, 2013). For instance, given that socially shared news is deemed more trustworthy (Turcotte *et al.*, 2015), Weeks *et al.* (2017) posit that online opinion leaders have the potential to shape the views of others in their network. Nevertheless, to our best knowledge, little research offers a comprehensive framework for analyzing the multidimensional impacts of online opinion leaders, which results in a vague perception of the diverse influence of online opinion leaders. Specifically, two research questions remain to be answered: (1) for internet celebrities as potential online opinion leaders, what impacts do they have on the subjective value judgement and behavioral decision-making of their followers and/or fans; and (2) how these impacts extend to the social realm. Furthermore, most previous research focuses on sectors such as marketing, politic engagement and online learning, but few studies have been conducted in the context of agribusiness and rural development.

To bridge these research gaps mentioned above, this study proposes a comprehensive individual-social-subjective-objective (IS-SO) framework to explore the multi-dimensional impacts of internet celebrities as online opinion leaders for agribusiness and rural development. The IS-SO framework incorporates individual subjective well-being, individual objective behavioral decision-making, perceived social/cultural change, and rural development. Specifically, we focus on an internet celebrity, Ms. Li Ziqi, who has gained prominence and popularity at home and abroad (Figure 1) for her beautiful and influential videos on rural issues about cooking Chinese food, traditional Chinese handicrafts, such as embroidery and idyllic rural life in China. One reason people like her so much, as one netizen commented on one of Li's videos about homemade wine, is that 'This girl is inspiring millions to return to their roots and live with the earth.' Ms. Li has 8.97 million subscribers on the international platform YouTube, 23.24 million and 38.93 million followers on two major social media platforms in China, Weibo and TikTok, respectively[1], in February 2020. While these data are updated as 17.10, 26.60, 51.87 million, respectively, in September 2022[2]. She broke the Guinness record for 'most subscriptions to a Chinese YouTube channel' with 14.1 million subscribers on 2nd February 2021, breaking her own record of 11.4 million on July 16, 2020. Ms. Li's success provides a valuable case study for our attempt to discuss the multiple impacts of internet celebrities on agribusiness and rural development. We take Ms. Li as a case to discuss how an internet celebrity, who also serves as a general online opinion leader, influences the subjective feelings, thoughts and the behavioral decision-making of the public.

We find that the internet celebrity has significant persuasive power to influence the public's feelings, thoughts, opinions, and emotional values at both the individual and social levels. The internet celebrity also has a powerful influence on her followers as well as fans, even from the intercultural world. Reducing the search costs, transportation costs and verification costs of consumers can be the economic reasons for the significant influence. Further, the impacts of the internet celebrity on the subjective dimension of the public may enhance the purchase intention for agricultural products and promote agribusiness, which promotes rural
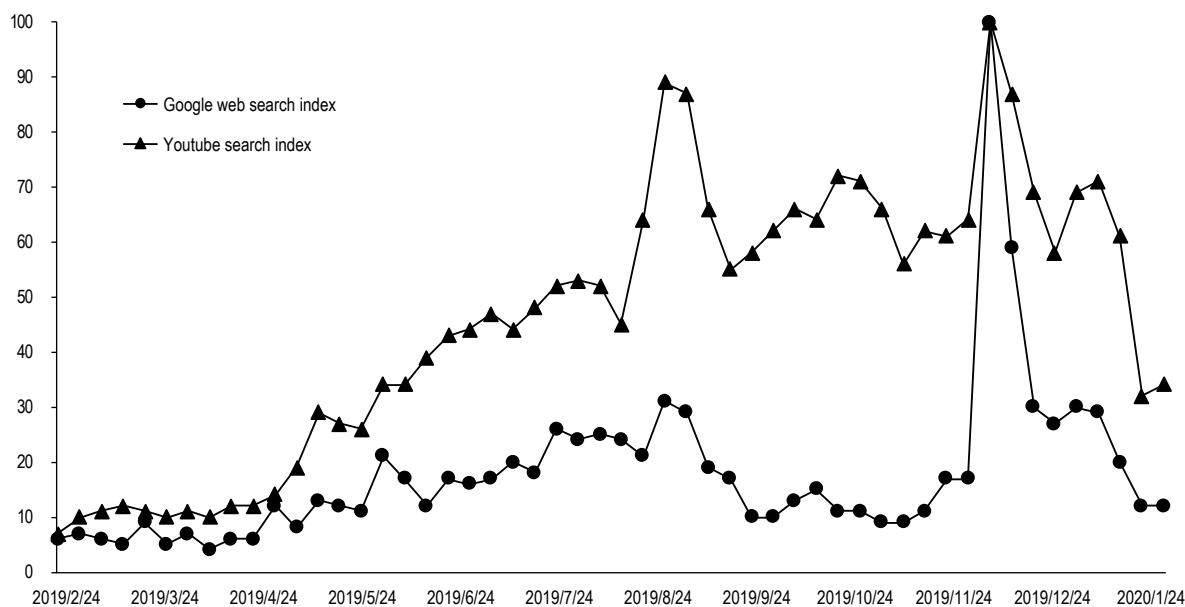
Figure 1. Google web search index and YouTube search index of Li Ziqi.

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[1] China Internet Network Information Center (CNNIC). 2019. 'Statistical Report on Internet Development in China (44th)'. Available at: http://www.cac.gov.cn/2019zt/44/index.htm

[2] TikTok is a currently popular short video social media platform in China. Young users ageing 24-30 seek self-expression and social interaction by sharing short videos of dance, food, sports, parent-child, travel, traditional culture and other contents. Domestic daily active users in TikTok exceed 150 million and monthly active users exceed 300 million. All the data of followers/fans/subscribers is accessed online on 22nd, February, 2020.

development from both micro and macro dimensions. Finally, this study identifies heterogeneous responses to the powerful persuasiveness of the internet celebrity by her fans and followers.

The remainder of this study is organized as follows. Section 2 discusses related literature on internet celebrities and online opinion leaders; Section 3 presents the comprehensive IS-SO framework for the multidimensional impact analysis; Section 4 describes the survey design and data; Section 5 discusses our results; and Section 6 concludes this study.

2. Literature review

2.1 Internet celebrities: characteristics and impacts

Though a few studies found that internet could reshape agribusiness and rural development (Li *et al.*, 2021; Qi *et al.*, 2019; Zeng *et al.*, 2018, 2019), the mechanism, particularly the role of internet celebrities has not been well studied. Previous studies have identified and explored the characteristics of internet celebrities on different social media platforms, like Instagram (Casaló *et al.*, 2018) and Weibo (Li, 2018), and their influence on different business sectors (De Veirman *et al.*, 2017; Park and Lin, 2020). These internet celebrities have different labels, such as social media influencers (SMIs) (Freberg *et al.*, 2011), micro-celebrity (Khamis *et al.*, 2017), 'Instafamous' (Djafarova and Trofimenko, 2019; Jin *et al.*, 2019), and also dissimilar real identities, ranging from domain-specific experts, such as painters, photographers, to young boys or girls having handsome or pretty faces, to rich people who love to show off, and to bloggers who are perceived to have good taste in beauty, food or fashion. An internet celebrity, therefore, may not be well recognized in real life (Li, 2018), and not necessarily have a higher social status (Zhao *et al.*, 2018). Regardless of their labels or real identities, internet celebrities share some common characteristics: they create their own unique online image by disclosing (part of) their personal lives or providing valuable information or advice to other users (which is also where online opinion leaders are connected), and frequently interacting with other users to boost their online profiles, thus attracting more 'online traffic' – visibility and attention. The fundamental motive of internet celebrities is to seek a celebrity status and influence, and attempt to monetize this online traffic and influence whenever possible (Abidin, 2018; Hearn and Schoenhoff, 2016; Klein, 2013). Recognized internet celebrities should have at least the following characteristics: a certain number of fans or followers, high-level interactivity on their profile, and promising commercial value (Li, 2018). While in China, in addition to the above characteristics, the premise of becoming an internet celebrity is to have a keen ability to convert the online traffic into cash, which is not dependent on content production, but on the ability to maintain the fans' attention visually (Abidin, 2018). 'Internet celebrity' is becoming a profession, from amateur content creators and unwitting spoof video stars to popular opinion leaders and commercial influencers, which is both welcomed and condemned (Zhang and de Seta, 2018).

Normally, internet celebrities can shape the attitudes and guide behavior of people on their social network. In particular, they can parlay this influence into commercial arrangements. The continuous self-presentation of internet celebrities is often considered to be more authentic, more approachable, more attractive (Abidin, 2015; Freberg *et al.*, 2011), leading to perceptions of credibility and likeability of internet celebrities (De Veirman *et al.*, 2017; Jin *et al.*, 2019). This does contribute to reducing the search costs and verification costs (Goldfarb and Tucker, 2019). Park and Lin (2020) found that a match-up between the product and the internet celebrity has positive effect on the intention to buy due to the positive correlation of internet celebrity-product fit and the trustworthiness of the internet celebrity. In line with Park and Lin (2020), Casaló *et al.* (2018) noted that SMIs on Instagram increases consumer intention to follow the fashion advice posted on the account, which may affect companies' sales due to the credibility of internet celebrities. Djafarova and Rushworth (2017) showed that celebrities on Instagram are influential on young female's purchasing behavior. All these findings indicate that the ability to influence individual purchase decision-making is an influence that cannot be ignored for internet celebrities. Furthermore, because of the close and tight interaction between internet celebrities and their followers, fame and influence cultivated by 'ordinary' users on social media, as Khamis *et al.* (2017) argued, can be leveraged more widely (i.e. extended to the social

realm). To our best knowledge, however, few studies have examined the impacts of Internet celebrities on both individuals and social realm.

2.2 Online opinion leaders: characteristics and impacts

The definition of online opinion leaders in the literature is typically based on depicting four characteristics: (1) personality strength, like honesty, trustworthiness (e.g. Turcotte *et al.*, 2015; Winter and Neubaum, 2016), and innovativeness (e.g. Lyons and Henderson, 2005); (2) knowledge and expertise in specific domain (e.g. Bilinska and Sztangret, 2013; Schäfer and Taddicken, 2015); (3) extensive social networks and communication skills (e.g. Li and Du, 2011; Trepte and Scherer, 2010; Van der Merwe and Van Heerden, 2009); and (4) intermediary function and influence (e.g. Casaló *et al.*, 2018; Nisbet and Kotcher, 2009; Park, 2013). Online users who are more interested and engaged in domain-specific information seeking and disseminating, highly interconnected in their social networks and making continuous contribution, and to some extent being perceived as a model by their fans, thus being able to influence other individuals' thoughts, attitudes and behavior, are regarded as online opinion leaders. This generalized definition reflects the motives of online opinion leaders suggested by Winter and Neubaum (2016): disseminating information, persuading others as a way to seek influence, and creating a positive self-presentation. The framework to identify online opinion leaders is mainly based on the aforementioned characteristics and motives. For instance, Li *et al.* (2013) argued that online opinion leaders in the context of textual content share four features: expertise, novelty, influence, and activity. In the same context of written content, Li and Du (2011) established an identification framework including factors of blog content, author properties, reader properties, and the author-reader relationship. On visual-intensive social network sites like Instagram, however, originality and uniqueness of posts on an account are the key factors that lead to a perceived opinion leadership (e.g. Casaló *et al.*, 2018).

Compared to offline (traditional) opinion leaders who usually have a higher status, education and social standing (e.g. Li and Du, 2011), what is more important to opinion leaders on social media is their professional knowledge or expertise (e.g. Park, 2013) and communication skills, which can outweigh their expertise in specific domains (e.g. Trepte and Scherer, 2010). Most previous studies noted that online opinion leaders are usually domain- or subject- or topic- specific (e.g. Chakrabarti, 2013; Li *et al.*, 2013; Zhao *et al.*, 2018) because of their professional background and familiarity with specific issues. Domain-specific opinions leaders can also become general opinion leaders under certain conditions, due to a spillover of personality strength or widespread prominence and popularity (e.g. Winter and Neubaum, 2016; Van der Merwe and Van Heerden, 2009). As a result, there are various types of online opinion leaders, such as issue-, product-, behavior-specific opinion leaders, influential with personality strength, communicative early adopters, market-mavens, and bloggers (e.g. Nisbet and Kotcher, 2009).

Impacts of online opinion leaders have been examined on sectors such as marketing and consumption, political participation, online learning, and media trust. For marketing and consumption, online opinion leaders tend to gather, disseminate information, and create knowledge base for less informed consumers (e.g. Chakrabarti, 2013), while consumers, in turn, rely on and can be influenced by these opinion leaders who have relatively more knowledge and information about different products in the market (e.g. Kwon and Song, 2015). This can enhance purchase intention (e.g. Casaló *et al.*, 2018) and even promote purchase behavior (e.g. Djafarova and Rushworth, 2017, 2019).

In the sector of political engagement and behavior, online opinion leaders tend to be more likely to attempt to persuade others about politics (e.g. Weeks *et al.*, 2017) and make a contribution to individuals' involvement in political processes (e.g. Park, 2013) due to their higher motivations of information seeking, mobilization, and public expression. In the sector of online learning, Li *et al.* (2013) suggested that opinion leaders are respected sources of information and novel ideas in their respective online learning communities, enabling other learners' timely adoption of new knowledge, skills and attitudes, which contributes to facilitating knowledge sharing and enhancing the efficiency of collaborative learning. In the field of media trust, Turcotte

et al. (2015) pointed out that recommendations from perceived opinion leaders have a positive effect on news outlet trust, which influences news-following and news-seeking behavior.

2.3 The distinctions and connection between internet celebrities and online opinion leaders

It's worth noting that internet celebrities and online opinion leaders are both connected with and distinct from each other (Figure 2). Though Casaló *et al.* (2018) have noticed the delicate but possibly close linkage that an internet celebrity could become an online opinion, the relationship between internet celebrities and online opinion leaders has not been well revealed in the literature. On the one hand, there are overlaps between internet celebrities and online opinion leaders. Both of them have intensive interactions with their fans or followers to continuously gain attention. Generally speaking, both have knowledge or expertise in specific domain, and both are trusted by their fans or followers, thus being influential on their fans or followers. This close connection can be transformed into commercial value, as well as individual self-esteem and spiritual satisfaction.

On the other hand, especially considering internet celebrities in the context of China, motivation is the most significant dividing line between internet celebrities and online opinion leaders. The fundamental motive of an internet celebrity, just as Abidin (2018) pointed out, is to turn the online traffic and influence into real cash, while the primary driving force of online opinion leaders is attempting to be regarded as models by their fans, influencing others, by gathering and disseminating information, sharing knowledge and so on. Moreover, it should also be noted that internet celebrities generally have a considerable number of fans or followers, but their social status is not necessarily higher in the general sense, and may even face moral condemnation (e.g. Zhang and De Seta (2018)). On the contrary, online opinion leaders have relatively higher social status while they do not deliberately pursue the increasing number of fans or followers.
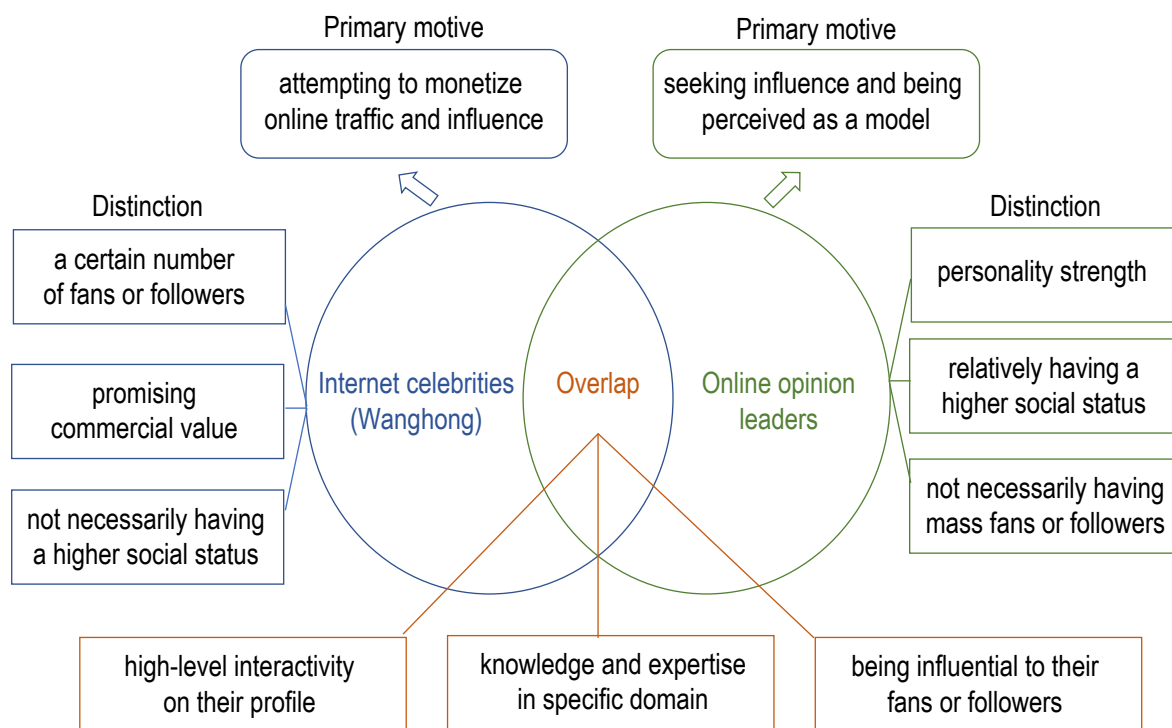

Figure 2. The distinctions and connection between Internet celebrities and online opinion leaders.

Therefore, if an internet celebrity changes the strategy, expanding her/his influence in social realm, improving social status and gaining widespread reputation in addition to pursuing commercial value, then she/he can become a general online opinion leader, to shape the preferences, opinions, attitudes, interests, and behavior of the public. Similarly, domain-specific online opinion leaders can also become general online opinion leaders, if they gain widespread prominence and popularity, e.g. resulting from spillover of personality strength.

2.4 Internet celebrities as opinion leaders in agriculture

Internet celebrities may not particularly have intentions to shape the social political perspective, but they do affect the social opinions in an unintended way. One of the most important motives of internet celebrities in the context of agriculture, who are also perceived as general online opinion leaders due to their personal traits and popularity, is also to turn their 'online traffic' into real cash. By promoting their own agricultural and sideline products, and showing the beautiful side of rural life, they contribute to rural development. Although few studies have examined the impact of internet celebrities in the agricultural sector on rural development, many studies have identified positive impacts of internet-based rural e-commerce on rural development (Li, 2017; Lin *et al.*, 2016; Liu *et al.*, 2015; Zhang *et al.*, 2018), while rural e-commerce is closely related to internet celebrities in the context of agriculture. For instance, Lin *et al.* (2016) highlighted that rural e-commerce reconstructed a hybrid rurality that appeared in various rural reconstruction processes, such as rural rules, feelings and beliefs, the pace of life, and daily space. Therefore, in order to comprehensively assess the impact of internet celebrities as opinion leaders, it is imperative to include their impact on rural development.

Although the impacts of internet celebrities as online opinion leaders differ across sectors, some shared effects exist. First, online opinion leaders have advantages and intermediary functions in gathering and disseminating various kinds of information demanded by the public. This contributes to reducing the search cost and verification costs (e.g. solving the asymmetric information issue) of consumers in the Internet-based markets (e.g. Strader and Shaw (1999), Goldfarb and Tucker (2019)). Second, the perceived personality strength of online opinion leaders (e.g. more credible) and their efforts to 'persuade' others, make them capable to shape preferences, affect feelings, thoughts, and attitudes on certain issues, change behavior of the public, and generate new demands. These shared impacts provide a base for a comprehensive analysis framework that this study attempts to propose.

3. Methods

3.1 Analysis framework

Literatures have well proved that internet celebrities and online opinion leaders can shape the attitudes and guide behavior of people on their social network. In other words, they do have both subjective and objective impacts on their fans or followers. Furthermore, fame and influence cultivated by internet celebrities and online opinion leaders on social media can be leveraged more widely due to the immediacy and connectedness of the Internet, these impacts can be extended to the social realm (Khamis *et al.*, 2017), whether intentionally or not.

We propose an IS-SO framework to comprehensively explore the diverse effects of internet celebrities, as shown in Figure 3. First, on the horizontal dimension, we define the role of online opinion leaders both at the individual and the societal levels. Second, on the vertical dimension, we consider both subjective and objective impacts. The two dimensions lead to four interconnected quadrants of the IS-SO framework.

First, attitudes cause behavior by influencing behavioral intention, which can be related to the theory of planned behavior (TPB). At both the individual and the societal level, the subjective value judgment of individuals may promote their behavioral decision-making by influencing the attitudes (e.g. trust) of fans or followers. This explains the interconnection of IS-IO and SS-SO quadrants. Second, people pay attention to certain person or things because it touches their ideas or emotions. This affects people's value judgments,
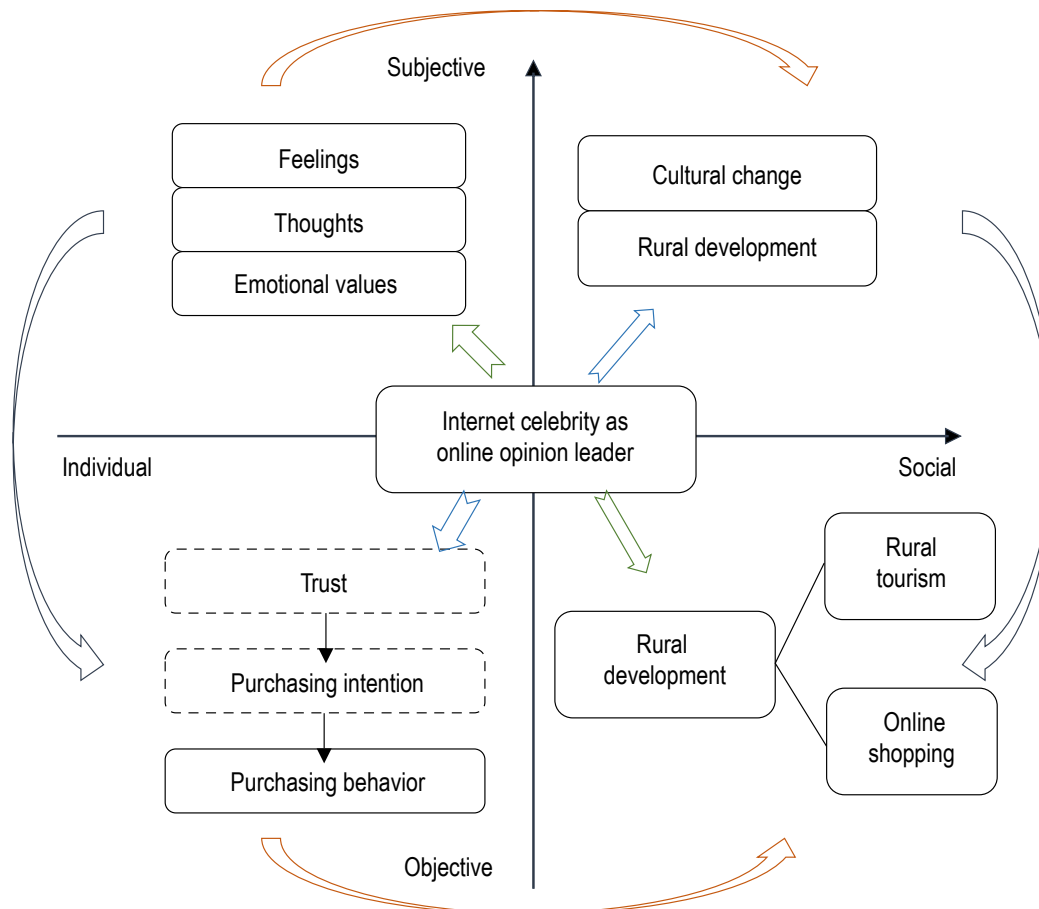
Figure 3. IS-SO framework of multidimensional impacts of internet celebrities.

not only for specific person or things, but also for meso- and macro-level social cognition. For instance, one of Ms. Li's videos showing homemade wine in her beautiful farmyard, changed people's traditional views of rural life as dirty, harsh and poor. Similarly, individual behavioral decision-making can be aggregated to the societal level under certain conditions. Therefore, the IS-SS and IO-SO quadrants can be interconnected.

Ms. Li has not only used these beautiful and influential videos to promote agricultural products sale, but also to portray herself as an advocate of traditional Chinese culture. She has been loved by her fans and followers both at home and abroad, and each of her well-crafted videos has received hundreds of thousands of comments and retweets. Li Ziqi has influenced Chinese fans' yearning for idyllic life and love for natural beauty, and overseas fans' understanding and appreciation of traditional Chinese culture. She has become a general online opinion leader. Her impacts are multi-dimensional and beyond the agriculture sector, and the IS-SO framework proposed by the study helps to comprehensively understand her success.

The influence of internet celebrities as online opinion leaders in agriculture from the literature can be categorized into each quadrant:

Individual-subjective (IS) quadrant: this section focuses on the impacts of internet celebrities on the feelings, thoughts, and emotional values of their followers and fans, so as to link with the subjective well-being of followers and fans.

Individual-objective (IO) quadrant: this section considers the influence of internet celebrities in the context of agriculture on the purchasing behavior of their followers and fans. Previous studies show that

consumer behavior is tightly related to consumer attitudes and trust (e.g. Casaló *et al.*, 2018; Djafarova and Rushworth, 2017, 2019). Therefore, our analysis of consumption behavior incorporates consumer trust, purchasing intention, and purchasing behavior.

Social-subjective (SS) quadrant: this section includes two subsets: the effects of internet celebrities on the public's opinions and thoughts on cultural change, especially intercultural change, as well as the public's opinions and thoughts on the rural development. It is worth to note that societal-level opinions and thoughts are highly related to individual-level opinions and emotional values.

Social-objective (SO) quadrant: this section focuses on the public's consumption decision-making on rural tourism and online purchase of agricultural products, which is directly related to rural development. The consumption of agricultural products recommended by internet celebrities at the individual level is linked to societal-level consumption of agricultural products, thereby establishing the connection between the individual-objective quadrant and the social-objective quadrant.

4. Survey design and data

4.1 Survey design

This study uses primary data from an online survey that was conducted through the largest commercial online survey company in China between January 16th to 19th, 2020 (see Supplementary Materials S1 for details on the survey company). A simple random sampling method was applied.

This study used 'the Confidence Doctrine' concept[3], comprising of: (1) institution confidence; (2) development path confidence; (3) theory confidence; and (4) culture confidence, a signature political philosophy for the Communist Party of China to explore the impacts of internet celebrities on respondents' perception of sociocultural change. Besides, given that Li Ziqi has gained attention and popularity overseas, we proposed two additional indicators, Intercultural exchange (it helps attract more foreigners to learn about Chinese culture) and National Pride Promotion (it promotes the national pride of the people and makes them more confident in foreign exchanges), to measure the correlation between internet celebrities and respondents the public's perception of intercultural change (see Supplementary Table S1 for details).

We included five measures related to agriculture, rural areas, and farmers, specifically: (1) promoting farmers' income; (2) extending the food industry chain; (3) attracting young people to return to the countryside (Lin *et al.*, 2016; Zhang *et al.*, 2018); (4) improving the image of the countryside; and (5) attracting rural tourism, to explore the connection between internet celebrities in the context of agriculture and the opinions and thoughts of the public about rural development in this study. An additional indicator, the persistence of internet celebrities' influence, is also included. Besides, we set up five indicators for the possibility that respondents involve in rural development based on the above six measures (see Supplementary Table S2 for details).

This study used two measures, 'do you often travel to the countryside' and 'how often do you purchase agricultural products online' to examine the influence of internet celebrities on respondents' behavioral decisions. Detailed questions of the full survey are listed in the Supplementary Materials.

We first conducted a pilot survey with 22 valid samples, of which 19 (86.36%) respondents have heard of Li Ziqi, and 15 of them (78.95%) expressed willingness to purchase agricultural and sideline products recommended by Li Ziqi. We made some adjustments to the original questionnaire and added three questions concerning the influence of the Internet celebrity on consumer behavior: 'Have you ever bought a product

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[3] The 'Four Confidences' concept, proposed by the CPC to celebrate the 95th anniversary of its founding, officially, highlights the cultural foundation, essence and ideal of socialism with Chinese characteristics.

recommended by Li Ziqi', 'What kind of products have you bought' and 'Have you ever bought products recommended by other internet celebrities in the context of agriculture'.

A total of 1,051 samples were obtained from the formal survey. In addition to responses to the survey questionnaire, the data also include the time spent completing the questionnaire. The average answering time for those who answered 'Have heard of Li Ziqi' was 374.4 seconds (SD=65.05). The samples were validated by time spent completing the survey and the logic of the responses, resulting in 953 valid samples or a retention rate of 90.68%. Of the 953 samples, 721 respondents (75.66%) answered 'Have heard of Li Ziqi', which formed the sample for analysis in this study. Such a high rate of answering 'Have heard of Li Ziqi' mirrors the imminent impact of the Internet celebrity.

4.2 Data description

The IP addresses of the valid samples were distributed in 30 provinces (excluding Tibet) in mainland China, 1 in Hong Kong, and 8 in foreign countries. In terms of regional distribution, 50.62% were in the east, 22.88% in the central region, 19.42% in the west, and 5.96% in the northeast, which is largely in line with the trend of migration that people move from underdeveloped regions to the developed eastern region in China[4].

The subsample (n=721) who 'have heard of Li Ziqi' was mainly comprised of female (63.25%) respondents, 84.19% of them are younger (age between 20 to 40) users, and 62.55% are married (Table 1). Respondents were asked to identify their educational attainment from elementary and below (1.39%), junior high school (2.08%), high school (5.55%), bachelors (81.69%) to postgraduates and above (9.29%), therefore the sample was primarily comprised of well-educated respondents. Respondents were also asked to self-report their personal monthly income (CNY, yuan), from 2,000 and below (14.15%), 2,001-5,000 (18.59%), 5,001-8,000 (28.29%), 8,001-12,000 (22.88%), 12,001-16,000 (7.91%), 16,001-20,000 (5.13%), and 20,000 and above (3.05%). More than half of the sample earned a salary between 5,000 to 12,000, and this partly resulted from the fact that the sample was primarily comprised of employees, with 41.33% employed by private and foreign enterprises, 28.57% employed by state-owned enterprises and institutions, 15.53% of the respondents are full-time students, 9.99% are self-employed or freelancers, 3.33% are public servants, 0.97% are retired and 0.28% unemployed. Besides, 90.15% of the respondents have currently lived in urban areas while only 70.18% have been registered as urban citizens due to the Hukou system in China. Interestingly, 32.87% of the sample were members of Communist Party of China. This implies that the sample slightly bias towards young, female and urban people in comparison to the general public.

The respondents learned about Li Ziqi mainly through online advertising (58.67%), online news introductions (56.45%), and recommendations from friends and colleagues (42.16%). They followed Li Ziqi on two major social media platforms, Weibo (62.73%) and TikTok (59.72%) in China, and 13.23% subscribed Li Ziqi's YouTube account. The vast majority (83.08%) of the respondents spent 1-3 hours per week viewing information about Li Ziqi, e.g. news reports, videos uploaded by Li Ziqi, and interacted with Li Ziqi on social platforms, and 11.65% of the respondents spent 3-5 hours following Li Ziqi. The respondents were asked to indicate how much they liked Li Ziqi on a 11-point Likert scale, from 'Very dislike'(0) to 'Like very much'(10), with an average score of 6.85 (SD=1.96, range=0 to 10). The top-five reasons why the respondents liked Li Ziqi were: beautiful rural life showed on the videos (28.99%), as an original gourmet food producer (17.75%), high-quality content of the videos (14.98%), hands-on way of lifestyle (13.31%), and life wisdom (11.23%).

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[4] According to the data of the 7th national population census (2020) conducted by the Chinese government, the registered population in the eastern region accounts for 39.93%, the central region accounts for 22.88%, the western region accounts for 19.42% and the northeast region accounts for 6.98%.

Table 1. Demographic information of the full sample.

Variable	Definition	Mean	Std. Dev.	Min	Max
Age	[13, 64]	30.222	8.068	13	64
Gender	0=Male and other gender, 1=Female	0.632	0.482	0	1
Marriage	1=Married, 2=Unmarried, 3=Other	1.390	0.518	1	3
Education	1=Elementary school and below, 2=Junior high school, 3=Senior high school and equivalent, 4=Bachelors and equivalent, 5=Masters and above	3.954	0.596	1	5
Income	Monthly income (CNY, *yuan*), 1=[0, 2,000], 2=[2,001, 5,000], 3=[5,001, 8,000], 4=[8,001, 12,000], 5=[12,001, 16,000], 6=[16,001, 20,000], 7=[20,001, ...)	3.194	1.487	1	7
Job	1=Employees of state-owned enterprises and institutions, 2=Public servants, 3=Employees of private and foreign enterprises, 4=Self-employed or freelancers, 5=Full-time students, 6=Retirees, 7=Unemployed	2.853	1.434	1	7
Residence	0=Rural areas, 1=Urban areas	0.902	0.298	0	1
Hukou	0=Rural residents, 1=Urban residents	0.702	0.458	0	1
Party member	if one is the CPC member, 0=No, 1=Yes	0.329	0.470	0	1

5. Results and discussions

This study adopted two strategies to identify the multidimensional impacts of the internet celebrity as online opinion leaders on the agribusiness and rural development. First, we divided the respondents into followers and non-followers, based on whether they followed Li Ziqi on at least one social media platform, and found 69.21% were followers (SD=0.46). Second, respondents with a rating score higher than the average (6.85) were grouped as fans (i.e. admirers) of Li Ziqi, based on their self-reported ratings of likeability for Li Ziqi, and vice versa as non-fans. The Fans accounted for 57.84% (SD=0.49). Combining the two identification strategies, among all respondents who have heard of Li Ziqi, 23.72% were neither followers nor fans, 7.07% were fans but not followers, 18.45% were followers but not fans, and 50.76% were both followers and fans.

5.1 Individual-subjective (IS) dimension

Table 2 shows the correlation between the measures of the respondents' feelings, thoughts, emotional values and being followers/fans of the internet celebrity. From the perspective of following, individual feelings and thoughts are significantly positively related to whether a participant has followed Li Ziqi. In terms of emotional values, the pride brought to respondents by that many foreigners like Li Ziqi are significantly related to whether to follow. The pride brought by the magnificent natural scenery shown in the videos uploaded by Li Ziqi indicates a weak correlation between whether to follow, and the pride brought by the diverse food culture shown in the videos is not related to whether to follow.

In terms of whether to admire, all three aspects are relatively highly, significantly related to whether to be fan. It is worth noting that, except for the '*I think I can live such an idyllic life*' item, the correlation between all the measures of whether to admire is greater than that of whether to follow. This suggests that the more internet celebrities are admired by their fans, the stronger impacts they can have on their fans psychologically via the information they disseminate, the recommendations they make, and the advice they give. Different from previous literature that did not distinguish followers and fans (e.g. Khamis *et al.*, 2017), this study identifies heterogeneous responses of followers and fans to internet celebrities.

Table 2. Correlation of whether to follow and admire in the IS dimension.

Aspects	Items	Followers	Fans
Feelings	Watching her video is pleasing and makes me feel happy (yes=1. No=0)	0.3016***	0.4735***
	The content of video is relaxing, which helps me relieve stress (yes=1. No=0)	0.2440***	0.3841***
	Her life is my ideal life (yes=1. No=0)	0.2632***	0.3132***
Thoughts	I think I can live such an idyllic life (yes=1. No=0)	0.1982***	0.1884***
	She made me more determined in my goal (yes=1. No=0)	0.2979***	0.3582***
	I am proud of magnificent natural scenery of our country (yes=1. No=0)	0.0689*	0.2859***
Emotional values	I am proud that our country has a diverse food culture (yes=1. No=0)	0.0272	0.2555***
	She is loved by so many foreigners, making me proud (yes=1. No=0)	0.1787***	0.3181***

Table 3 shows respondents' scores on how Li Ziqi affects their feelings, thoughts and emotional values (range=0 'totally disagree' to 10 'totally agree'). The results further support that the influence of internet celebrities, within the IS dimension, on the follower-non-follower and fan-non-fan groups is different. Firstly, column 1 in Table 3 shows that Li Ziqi has the strongest impact on the emotional values of the respondents (the average score of the three measures is at top 3), among which, the pride brought by the magnificent natural scenery shown in the videos scores the highest. Besides, internet celebrities have a greater impact on the individual feelings of respondents. In other words, respondents' following, likeability, and possible interaction with internet celebrities will likely reduce the pressure of respondents and make them happiness, which may contribute to the subjective well-being of the respondents. The impact of internet celebrities on shaping thoughts of the respondents, especially thoughts about the goals and ideals of life, are relatively weak compared with the other two aspects.

Column 4 in Table 3 indicates that, without controlling for other individual and macro characteristics, in terms of the average difference (AD) of the three aspects of non-followers and followers, whether to follow Li Ziqi significantly affects the respondents' thoughts (AD=-1.357), followed by the respondents' feelings (AD=-1.211), and the impact on their emotional values is relatively small and insignificant (AD=-0.424). Column 7 in Table 3 shows whether to admire Li Ziqi has significant effects on the respondents' feelings (AD=-1.812), thoughts (AD=-1.433), and emotional values (AD=-1.199). Compared with non-fans, fans might believe that Li Ziqi's influence on their subjective values is greater. Furthermore, the difference between fans and non-fans is generally higher than that between followers and non-followers (by comparing the absolute values of column 4 and 7).

5.2 Individual-objective dimension

Table 4 shows that both the indicators, whether to follow and whether to admire, are significantly related to respondents' purchase decision-making, and the correlation gradually increases from source credibility to purchase intention, then to purchase behavior. Interestingly, although the influence of internet celebrities on respondents' purchase decision-making differs between follower-non-follower and fan-non-fan groups as in the IS dimension, the difference of the impact is contrary to the difference of that in the IS dimension. That is, followers, rather than fans, are more influenced by internet celebrities in their purchase decision-making, which can be linked to the literature on source credibility (e.g. Djafarova and Rushworth, 2017), search costs reduction, and verification costs reduction (e.g. solving the asymmetric information issue) (Goldfarb and Tucker, 2019; Strader and Shaw, 1999). For instance, Park and Lin (2020) found that the trustworthiness of internet celebrities, rather than their attractiveness, has a significant effect on purchase intention, while

Table 3. Scores and differences of followers and fans with aspects of the individual subjective dimension.

Items	Full sample (1)	Non-followers (2)	Followers (3)	Difference (4)=(2)-(3)	Non-fans (5)	Fans (6)	Difference (7)=(5)-(6)
Watching her video is pleasing and makes me feel happy (0-10)	7.415 (2.084)	6.473 (2.280)	7.834 (1.844)	-1.361*** (0.160)	6.260 (2.167)	8.257 (1.533)	-1.997*** (0.139)
The content of video is relaxing, which helps me relieve stress (0-10)	7.405 (2.094)	6.640 (2.234)	7.745 (1.935)	-1.106*** (0.164)	6.464 (2.192)	8.091 (1.726)	-1.627*** (0.146)
Her life is my ideal life (0-10)	6.861 (2.412)	5.910 (2.686)	7.285 (2.152)	-1.375*** (0.188)	5.977 (2.589)	7.506 (2.050)	-1.529*** (0.173)
I think I can live such an idyllic life (0-10)	6.413 (2.591)	5.644 (2.851)	6.756 (2.391)	-1.111*** (0.205)	5.842 (2.696)	6.830 (2.431)	-0.988*** (0.192)
She made me more determined in my goal (0-10)	6.191 (2.457)	5.095 (2.509)	6.679 (2.457)	-1.585*** (0.189)	5.161 (2.399)	6.942 (2.218)	-1.781*** (0.173)
I am proud of magnificent natural scenery of our country (0-10)	7.986 (2.003)	7.779 (2.269)	8.078 (1.868)	-0.299* (0.161)	7.316 (2.303)	8.475 (1.586)	-1.159*** (0.145)
I am proud that our country has a diverse food culture (0-10)	7.958 (1.962)	7.878 (2.198)	7.994 (1.848)	-0.116 (0.158)	7.372 (2.264)	8.386 (1.579)	-1.014*** (0.158)
She is loved by so many foreigners, making me proud (0-10)	7.512 (2.214)	6.919 (2.384)	7.776 (2.083)	-0.857*** (0.176)	6.688 (2.431)	8.113 (1.822)	-1.425*** (0.158)

Table 4. Correlation of whether to follow and admire within individual-objective dimension.

Aspects	Items	Followers	Fans
Purchase decision-making	Do you believe that the products Li Ziqi recommends are safer than those of other online stores (Yes=1, No=0)	0.2313***	0.1669***
	Will you buy products recommended by Li Ziqi (Yes=1, No=0)	0.3874***	0.2410***
	Did you purchase products recommended by Li Ziqi (Yes=1, No=0)	0.5039***	0.2783***

Kwon and Song (2015) suggests the trustworthiness of internet celebrities closely related to their knowledge, experience about products or services, and content displayed through videos. This result indicates that, to a certain extent, the purchase decision-making of our sample respondents is relatively rational.

Respondents were asked to make a binary 0-1 choice about whether internet celebrities affect their purchase decision-making, and the results are consistent with the IS dimension, as shown in Table 5. It confirms that the influence of internet celebrities on purchase decision-making are different in the follower-non-follower and fan-non-fan groups. Column 1 of Table 5 denotes that 88.2% of the respondents trust the recommendations made by Li Ziqi, 80.3% of the respondents report their intention to buy, and 58.8% of the respondents ultimately purchase the products recommended by Li Ziqi. Column 4 in Table 5 shows that, without controlling for other individual and macro characteristics, followers trust internet celebrities more than non-followers, and are more willing to purchase their recommended products. Specifically, the proportion of trust converted into purchase intention is 97.21% (0.906/0.932), which is consistent with the findings of the relevant literature (Casaló *et al.*, 2018; Djafarova and Rushworth, 2017, 2019; Park and Lin, 2020); the proportion of purchase intention that ultimately transformed into purchase behavior is high at 83.22% (0.754/0.906). Similarly, between the fans and non-fans, column 7 of Table 5 denotes the same conversion path. However, the fact that the absolute value of the difference in column 4 is significantly larger than that

Table 5. Proportions and differences of followers and fans within individual-objective dimension.

Items	Full sample (1)	Non-followers (2)	Followers (3)	Difference (4)=(2)-(3)	Non-fans (5)	Fans (6)	Difference (7)=(5)-(6)
Do you believe that the products Li Ziqi recommends are safer than those of other online stores? (Yes=1, No=0)	0.882 (0.323)	0.770 (0.422)	0.932 (0.252)	-0.162*** (0.025)	0.819 (0.386)	0.928 (0.259)	-0.109*** (0.024)
Will you buy products recommended by Li Ziqi? (Yes=1, No=0)	0.803 (0.398)	0.572 (0.496)	0.906 (0.292)	-0.334*** (0.030)	0.691 (0.463)	0.885 (0.320)	-0.194*** (0.029)
Did you purchase products recommended by Li Ziq? (Yes=1, No=0)	0.588 (0.493)	0.216 (0.413)	0.754 (0.431)	-0.537*** (0.034)	0.428 (0.496)	0.705 (0.457)	-0.277*** (0.036)

in column 7 indicates that the disparity of purchase decision-making between followers and non-followers affected by internet celebrities is much higher than that between fans and non-fans.

5.3 Social-subjective dimension

■ *Impacts on cultural changes*

Table 6 shows that both the indicators, whether to follow and whether to admire, are significantly related to respondents' emotional values regarding cultural changes. The magnitudes of the correlation coefficients on the perceived emotional values of sociocultural changes and those of intercultural changes are close. Similar to the IS dimension, the correlation between whether to admire and the sociocultural changes as well as intercultural changes are greater than that between whether to follow and cultural changes. This again suggests that the more respondents are psychologically admiring internet celebrities like Li Ziqi, the more their subjective values such as feelings, thoughts, and emotional values may be affected by the celebrities. It implies that the internet celebrity does increases the cultural confidence about China, which is particularly embedded in the traditional rural China showed by the beautiful videos of Ms. Li Ziqi.

Respondents were asked to rate (range=0 'totally disagree' to 10 'totally agree') how internet celebrities influenced their opinions and emotional values about cultural change. The results are shown in Table 7. Column 1 of Table 7 denotes that for sociocultural changes, the perceived emotional values of respondents from culture confidence, institution confidence, and development path confidence is higher than that from theory confidence. The perceived emotional values of respondents brought by intercultural changes (average score=7.495) is significantly higher than that of sociocultural changes (average score=7.113). We

Table 6. Correlation of whether to follow and admire within the social-subjective dimension: cultural changes.

Aspects	Items (brev.)	Followers	Fans
Cultural change	Culture confidence strengthening (Yes=1, No=0)	0.2510***	0.3617***
	Institution confidence strengthening (Yes=1, No=0)	0.2682***	0.2737***
	Development path confidence strengthening (Yes=1, No=0)	0.2539***	0.3052***
	Development theory confidence strengthening (Yes=1, No=0)	0.1720***	0.2797***
Intercultural change	Cultural export (Yes=1, No=0)	0.1603***	0.3184***
	National pride strengthening (Yes=1, No=0)	0.2188***	0.3393***

Table 7. Scores and differences of followers and fans within the social-subjective dimension: cultural changes.

Items	Full sample (1)	Non-followers (2)	Followers (3)	Difference (4)=(2)-(3)	Non-fans (5)	Fans (6)	Difference (7)=(5)-(6)
Culture confidence strengthening (0-10)	7.294 (2.171)	6.477 (2.527)	7.657 (1.884)	-1.180*** (0.170)	6.375 (2.357)	7.964 (1.745)	-1.589*** (0.153)
Institution confidence strengthening (0-10)	7.264 (2.212)	6.694 (2.423)	7.517 (2.064)	-0.823*** (0.176)	6.539 (2.391)	7.791 (1.908)	-1.252*** (0.160)
Development path confidence strengthening (0-10)	7.187 (2.209)	6.347 (2.475)	7.561 (1.970)	-1.214*** (0.172)	6.398 (2.411)	7.763 (1.851)	-1.365*** (0.159)
Development theory confidence strengthening (0-10)	6.705 (2.415)	5.734 (2.498)	7.136 (2.249)	-1.402*** (0.188)	5.931 (2.442)	7.269 (2.235)	-1.338*** (0.175)
Culture export (0-10)	7.838 (2.062)	7.342 (2.271)	8.058 (1.924)	-0.716*** (0.164)	7.069 (2.219)	8.398 (1.742)	-1.329*** (0.148)
National pride strengthening (0-10)	7.151 (2.260)	6.410 (2.608)	7.481 (2.004)	-1.071*** (0.178)	6.253 (2.440)	7.806 (1.869)	-1.552*** (0.161)

cautiously conclude that the impact of internet celebrities on emotional values from intercultural change is stronger. Compared with respondents' individual subjective perceptions (IS dimension), their perceived emotional values brought by intercultural change is lower than the individual emotional values brought by the internet celebrity, but higher than their individual feelings and thoughts. The perceived emotional values of respondents brought by sociocultural change is lower than their individual emotional values and feelings, but higher than the individual thoughts.

Comparing the differences in follower-non-follower and fan-non-fan groups with regard to the perceived emotional values brought by socio- and inter-cultural changes, the results suggest that, the perceived emotional values brought by sociocultural changes are higher than that brought by sociocultural changes in the follower-non-follower groups, and the opposite holds in the fan-non-fan groups. Furthermore, the fact that the absolute value of the difference in column 4 is greater than that in column 7 also indicates that, regarding cultural changes, the difference in perceived emotional values aroused by admiration is higher than that aroused by following.

■ *Impacts on rural development*

Table 8 shows that both the indicators, whether to follow and whether to admire, are significantly related to the respondents' thoughts and opinions on rural development. As expected, the correlation coefficients between whether to admire and the thoughts and opinions on rural development are greater than that between whether to follow and thoughts and opinions on rural development.

Respondents were also asked to rate (range=0 'totally disagree' to 10 'totally agree') how internet celebrities affected their opinions and thoughts about rural development. As shown in column 1 of Table 9, respondents believe that internet celebrities in the context of agriculture, like Li Ziqi, could play a better role in enhancing the image of the countryside and attracting rural tourism. The evaluation about benefiting farmers and keeping a long-lasting influence is also positive, but respondents believe that the influence of the internet celebrity is not strong enough to attract more young people to return to rural areas to start businesses. These results are consistent with the respondents' thoughts about the possibility that they get involved in rural development. Respondents feel that they know more about the rural areas, agriculture, and farmers through internet celebrities in the context of agriculture (average score=7.173), but when they evaluate the possibility that

Table 8. Correlation of whether to follow and admire within social-subjective dimension: rural development.

Aspects	Items (brev.)	Followers	Fans
Opinions	Rural tourism attraction (Yes=1, No=0)	0.1393***	0.2788***
	Changing stereotype and image enhancement of rural areas (Yes=1, No=0)	0.1207***	0.3027***
	Added value and famers' income increment (Yes=1, No=0)	0.1106***	0.2728***
	Lasting and extensive promotion of agriculture and rural areas (Yes=1, No=0)	0.2190***	0.2661***
	Marketing imitation and industry-chain extension (Yes=1, No=0)	0.1577***	0.3236***
	Attraction of businesses in rural areas (Yes=1, No=0)	0.2006***	0.2490***
Thoughts	Knowing more about the agriculture, rural areas and farmers (Yes=1, No=0)	0.2180***	0.3136***
	Confidence of great work in rural areas (Yes=1, No=0)	0.2528***	0.3132***
	Rural tourism promotion by oneself (Yes=1, No=0)	0.2112***	0.2986***
	Marketing imitation by oneself (Yes=1, No=0)	0.2432***	0.2867***
	Business confidence strengthening (Yes=1, No=0)	0.2560***	0.3039***

Table 9. Scores and differences of followers and fans within the social-subjective dimension: rural development.

Items	Full sample (1)	Non-followers (2)	Followers (3)	Difference (4)=(2)-(3)	Non-fans (5)	Fans (6)	Difference (7)=(5)-(6)
Rural tourism attraction (0-10)	7.545 (2.094)	7.108 (2.359)	7.739 (1.936)	-0.631*** (0.167)	6.862 (2.351)	8.043 (1.724)	-1.181*** (0.152)
Changing stereotype and image enhancement of rural areas (0-10)	7.516 (2.032)	7.149 (2.176)	7.679 (1.994)	-0.531*** (0.163)	6.796 (2.181)	8.041 (1.739)	-1.245*** (0.146)
Added value and famers' income increment (0-10)	7.158 (2.123)	6.806 (2.304)	7.314 (2.020)	-0.508*** (0.170)	6.480 (2.294)	7.652 (1.841)	-1.172*** (0.154)
Lasting and extensive promotion of agriculture and rural areas (0-10)	6.842 (2.154)	6.135 (2.324)	7.156 (1.997)	-1.021*** (0.170)	6.171 (2.310)	7.331 (1.890)	-1.160*** (0.157)
Marketing imitation and industry-chain extension (0-10)	6.742 (2.072)	6.252 (2.257)	6.960 (1.948)	-0.708*** (0.165)	5.957 (2.125)	7.314 (1.834)	-1.357*** (0.148)
Businesses in rural areas attraction (0-10)	6.437 (2.278)	5.752 (2.502)	6.741 (2.103)	-0.989*** (0.180)	5.773 (2.314)	6.921 (2.126)	-1.148*** (0.166)
Knowing more about the agriculture, rural areas and farmers (0-10)	7.173 (2.283)	6.428 (2.403)	7.505 (2.148)	-1.077*** (0.180)	6.336 (2.411)	7.784 (1.974)	-1.449*** (0.164)
Confidence of great work in rural areas (0-10)	6.849 (2.360)	5.955 (2.469)	7.246 (2.198)	-1.292*** (0.184)	5.984 (2.424)	7.480 (2.100)	-1.496*** (0.169)
Rural tourism promotion by oneself	6.760 (2.429)	5.955 (2.641)	7.118 (2.240)	-1.163*** (0.191)	5.911 (2.483)	7.379 (2.193)	-1.468*** (0.175)
Marketing imitation by oneself	6.413 (2.457)	5.518 (2.601)	6.812 (2.282)	-1.294*** (0.192)	5.589 (2.444)	7.014 (2.289)	-1.426*** (0.178)
Business confidence strengthening	5.947 (2.552)	4.968 (2.548)	6.383 (2.433)	-1.414*** (0.199)	5.039 (2.499)	6.609 (2.384)	-1.570*** (0.184)

they would go to rural areas for entrepreneurship, such as developing rural tourism and promoting agricultural products, the scores are relatively low. This suggests that respondents of our sample were more inclined to be a consumer than a producer or marketer. Further, comparing the absolute values of the coefficients in columns 4 and 7 suggests that the difference in the impact of internet celebrities on opinions and thoughts about rural development caused by admiration is also higher than that caused by following.

5.4 Social-objective dimension

As shown in Table 10, both indicators, whether to follow and whether to admire, are not correlated to rural tourism, which differ from the respondents' opinions on the SS dimension where respondents' evaluation of internet celebrities' contribution to promoting rural tourism is high (Table 8). One possible explanation is that internet celebrities do influence the willingness of respondents to travel to rural areas, but whether this intention is converted into behavior may be more determined by other individual or macro factors such as the income of the respondents.

Table 11 denotes that there is no significant difference in decision-making related to rural tourism between followers and non-followers, and the fan group and non-fan group neither. Respondents' online purchases of agricultural products are significantly related to whether to follow, as well as whether to admire. Respondents' general online purchase behavior is consistent with purchase decision-making in the IO dimension, that is, the difference of purchase behavior between followers and non-followers affected by internet celebrities is much greater than that between fans and non-fans.

Table 10. Correlation of whether to follow and admire in the social objective dimension.

Items	Definition	Followers	Fans
Do you often travel to the countryside?	1=Yes, 0=No	-0.0065	0.0496
How often do you purchase agricultural products online?	1=never, 2=one to two times annually, 3=one to two times monthly, 4=one to two times weekly, 5=almost daily	0.2709***	0.2051***

Table 11. Features and differences of followers and fans in the social objective dimension.

Items	Full sample (1)	Non-followers (2)	Followers (3)	Difference (4)=(2)-(3)	Non-fans (5)	Fans (6)	Difference (7)=(5)-(6)
Do you often travel to the countryside? (Yes=1, No=0)	0.347 (0.476)	0.351 (0.478)	0.345 (0.476)	0.006 (0.038)	0.319 (0.467)	0.367 (0.483)	-0.048 (0.036)
How often do you purchase agricultural products online? (Yes=1, No=0)	2.680 (0.775)	2.365 (0.800)	2.820 (0.722)	-0.455*** (0.060)	2.493 (0.766)	2.815 (0.754)	-0.322*** (0.057)

6. Conclusions and policy implications

6.1 Main finding

This study proposes a comprehensive IS-SO framework to analyze the multidimensional impact of internet celebrities. To our best knowledge, this is one of the first studies to note the distinctions and connection between internet celebrities and online opinion leaders, especially in the context of China, and to explore the influence of internet celebrities from both individual and societal dimensions. And it is also one of the first studies to focus on the sector of agriculture, and to distinguish the heterogeneous responses of fans and followers' groups. Internet celebrities as online opinion leaders can affect the public's feelings, thoughts and emotional values, as well as the public's opinions and emotional values on national cultural construction and social development, which can further change the public's purchase decision-making and lead to positive effects on socio-economic development.

Internet celebrities who also serve as general online opinion leaders have strong persuasive power, and contribute to reducing the search costs as well as verification costs of consumers. They have the ability to significantly influence the public's feelings, thoughts, opinions, and emotional values at both the individual and societal levels, which can improve the subjective well-being of the public. Particularly, the internet celebrity in the context of agriculture in this study has a significant influence on her followers and fans regarding intercultural changes. Further, this influence of internet celebrities on the subjective values of the public affects purchase decision-making, e.g. enhancing the public's willingness to purchase agricultural products and converting this willingness into actual agricultural consumption, thereby connecting to rural development from both micro and macro dimensions.

Another finding of the study is the heterogeneous responses of fans and followers' groups to the powerful persuasiveness of internet celebrities. In the subjective dimension, the feelings, thoughts, emotional values, and opinions of the fans group are more affected by internet celebrities than the followers group. In addition, the differences in perception and behavioral decisions between fans and non-fans are greater than those between followers and non-followers, due to the difference in psychological likeability to internet celebrities. Furthermore, the behavioral decisions on the objective dimension of the follower group are more affected by internet celebrities, resulting in the difference in behavioral decisions between followers and non-followers greater than the difference between fans and non-fans.

6.2 Policy implications

In a digital era, some successful internet celebrities show powerful influences on reshaping social opinions and changing individual attitudes and behaviors. The internet celebrity, Li Ziqi, born in such a background, attracted millions of followers and fans, and reshaped the views of people from different nations towards food and rural issues in China. In addition, she promoted agribusiness and convinced her followers to purchase her agricultural products through online shopping.

Internet has changed policy making and business model. Agriculture is no exception. Governments and businesses should pay attention to the Internet celebrities, support them, brand them, and pattern them. On the one hand, Li Ziqi's videos showed the beautiful and romantic sides of the rural life in China, and changed people's traditional views which was a life of being dirty, harsh and poor. It could help strengthen price of rural life and promote rural consumption. On the other hand, she had obtained a large number of fortunes through advertisement and direct sales of agricultural production to her followers. It might help attract more people to start businesses in agriculture sector or in rural areas. The improvement of rural value and the possible return of talents to agriculture sector and rural areas are the policy goals that the government hopes to achieve when implementing the rural revitalization strategy. The model of Ms. Li has been prevalent and will be more prevalent beyond in China.

6.3 Extensions

There are several limitations in this study. First, our sample was drawn from an opt-in internet platform so may not be fully representative of the Chinese population. Second, the subset of the respondents who reported never heard of Li Ziqi was not examined. These respondents may follow or admire other internet celebrities in the agriculture sector (even if these internet celebrities do not share the same popularity as Li Ziqi). Further research can incorporate other internet celebrities in the context of agriculture for analysis. Third, although we used multiple indicators in the measurement of the subjective dimension, the measures in the objective dimension were limited to consumption related decisions, which may lead to an insufficient evaluation of the impacts of internet celebrities on the objective dimension. More measurements of the actual involvement in rural development, like whether having started small business in rural areas and whether having participated in NGOs that promote rural development, could be taken into consideration in further research. Finally, we primarily carried out the correlation analysis to explore the multidimensional impacts of internet celebrities qualitatively. It will be interesting to use quantitative methods to capture any causal relationship. More research should be done for this topic for agribusiness and rural development.

Supplementary material

Supplementary material can be found online at https://doi.org/10.22434/IFAMR2022.0062.

Table S1. Additional indicators: intercultural exchange and national pride promotion.
Table S2. Additional indicators: persistence of internet celebrities' influence, and indicators for the possibility that respondents involve in rural development.
Materials and methods S1. Introduction to The Survey Company.

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