

Research on the influential factor of consumer model based on online opinion leader

Fei Meng¹, Jianliang Wei^{2*}

¹Department of Public Foundation Zhejiang Police College, Hangzhou, Zhejiang, China, 310053

²School of computer and information engineering / contemporary business and trade research center Zhejiang Gongshang University, Hangzhou, Zhejiang, China, 310018

Received 26 March 2014, www.tsi.lv

Abstract

With the development of internet and e-commerce, online opinion leader becomes an important information resource which influences the purchase decision and behaviour model of online consumer, although the influential mechanism is still uncertain. In order to obtain a more precise user model, Grounded Theory is adopted in this paper and an interview table is designed according features of online opinion leader. Then, more than 20 online consumers concerning on opinion leader frequently in internet communities such as Taojianghu and Douban are selected for interview. After open coding, axial coding and selective coding on the interview materials, several findings are obtained: professional knowledge and interactive features of opinion leader influenced the purchase intension of consumer; characters such as visual cues and timeliness of recommended information from opinion leader have impact on consumer intension; consumer perceived value of product recommended by opinion leader influenced their purchase behaviour; and trust is the principle reason for consumer' acceptance on product information recommended by opinion leader.

Keywords: online opinion leader, grounded theory, consumer behaviour model

1 Introduction

The influence of word-of-mouth (WOM) on consumer behaviour has long been concerned. There are many researchers examine the effect of WOM in different fields, and they find that the impact brought by WOM in brands selection was far greater than newspaper ads, marketing staff, radio ads. With the popularity of online consumption, effect of e-WOM imposes on online consumer purchase decision have become a topic of great concern, especially the emergence of online opinion leaders, whose influence is more powerful and far-reaching.

Now the questions are: What kind of online opinion leader has more powerful impacts? What kind of recommendation information has more influential? To the first question, important characteristics between online opinion leader and ordinary consumer should be identified, and instinct characteristics of online opinion leader need to be described. To the second question, distinct features of the persuasive recommendation information should be recognized, as well as the dimensions to describe them. By now, these two questions are not solved yet in academic. This paper is dedicate to analyse the mainly characteristics of online opinion leader and features of the information their recommended, and Grounded Theory is adopted in this exploratory analysis.

2 Related research

2.1 INFLUENTIAL FACTORS OF CONSUMER BEHAVIOR MODEL

Studies on the effect of WOM origins from the communication persuasion theory made by Hovland (1953), which summarize factors affecting the results of communication into three categories: source, message and receiver. They change the persuasion result by affecting various factors around the disseminators, information content, communication channels and recipients [1]. Basis on this, factors which affecting the results of communication are divided into three kinds, namely, disseminators, the information itself, and recipients. According the Communication Persuasion Theory, consumers can be influenced in following aspects by WOM: First, the features of disseminator, especially the professional level and opinion leaders; second, the homophily of disseminators and recipient; Third, the characteristics of recipient, including the professional level and personal preferences [2].

2.2 INFLUENTIAL MECHANIZE OF CONSUMER BEHAVIOR MODEL

WOM plays an important role in the process of consumer's attitude form and behaviour model, and this is one of ideas that has been widely accepted in consumption behaviour

* *Corresponding author* e-mail: jianliang@zjgsu.edu.cn

[3]. Ennew, Banerjee & Li (2000) have indicated that WOM had a significant impact on the choice of products and services [4], since WOM is one of the most influential market information sources to consumers [5]. Many traditional WOM researchers, such as Engel (1969), confirmed a remarkable power that WOM had on consumer decision-making [6], including consumer purchase behaviour, brand selection and businesses choose [7].

With the development of Internet activities, researches on online WOM spread and consumer behaviour has become a hot issue. Smith (2002) studied the effect mechanism of information recommended by ordinary consumers to the decision of other consumer decisions [8], in which variable trust is adopted, as the mediating variable between consumer decision and three influential factors, including individual differences of recipient, characteristics of disseminators recommendation and purchasing target. Then, Cheung et al. (2008) further examined the homogeneous variables on this basis, and suggested that consumers were more inclined to accept the comments made by similar consumers and editors, the homogeneity between disseminators and recipients was positively correlated with WOM influence [9].

2.3 WOM AND ONLINE PURCHASE

Park, Lee & Han (2007) suggest that online information search behaviours of consumers before buying are always positively related to purchase decisions [10]. Based on this, Shaver (2007) found that online information searching behaviour is increasing while conducting a study monitor the difference of U.S. consumer attitude from 2000 to 2005, and found the purpose of people search for online product information is to improve their decision-making capacity [11]. Compared with consumer searching, the impact of online recommendations is more significant on consumers' final purchase decisions. Some researchers found that online book reviews was very important on book sales based on the data of Amazon.com and BN.com [12]. Compared with ordinary products, decision-making on experience goods can be influenced much easier by online reviews, as well as new coming products. Meanwhile, positive WOM can strengthen the tie between consumers trust and their desire to purchase online, and enhance the reliability of consumer perception as well [13].

2.4 OPINION LEADERS AND ONLINE PURCHASING BEHAVIOUR

Chevalier & Mayzlin's research indicated that online comments made by participants with high reputation and exposure in platform such as Amazon had a deep influence on product sales [12]. Lim and Chung (2014) pointed out that the influence of opinion leaders was positively related to their familiarity of product. When opinion leaders have more related knowledge and more familiar with the

product, indicating a higher expertise degree, they will more likely become the consulting person for consumer who is seeking for product recommendation information [14]. Meanwhile, influence of the recommended information transmitted by opinion leaders was closely related with transfer distance, i.e., the number of users in information transmission [15].

In summary, although many researchers have paid great attention on the relationship between WOM and consumer purchasing behaviour, but rarely literatures is from the perspective of opinion leaders, let alone a systematic study on the influential mechanism is lacked. Therefore, it is necessary to resort to a qualitative research to summarize a theoretical context close to reality of online opinion leader and its influential factors.

3. Research methods

3.1 METHOD SELECTION

3.1.1 Segregation index

With the development and application of computer and information technology, traditional methods rely on experience are not important as usual, researchers begin to use computer and network method to work out problems which traditional methods are hard to resolve [16, 17]. Refer to our topic, social network is becoming more and more popular to analyse the relationship between opinion leader and consumer behaviour, and method such as segregation index is suitable for finding the influential of opinion leader's attribute on its follower, i.e. the number and structure of follower's community. Its basic steps are as follows:

$$Seg = \frac{E(X) - X}{E(X)}, \quad (1)$$

in which $E(X)$ present the expected number of cross-group ties, X presents the number of observed cross-group ties. Mixing matrix need created first, and next is two indicator matrixes which can be used to generate the Mixing matrix (M).

$$M = \begin{matrix} I' & A & I \\ (k \times k) & (k \times n) & (n \times n) \end{matrix} \begin{matrix} & & I \\ & & (n \times k) \end{matrix} \quad (2)$$

According to different principles, there are two ways to get segregation index.

(1) Freeman Segregation Index.

Here $A=+1$ and $B=-1$ represent the nodes types, p is the mixing matrix where entry p_{ab} with $a, b \in \{A, B\}$ counts the number of links connecting a a-type node with a b-type node. Freeman Segregation Index can be expressed as:

$$FSI = \frac{[E(p_{AB}) + E(p_{BA})] - [p_{AB} + p_{BA}]}{[E(p_{AB}) + E(p_{BA})]} \quad (3)$$

(2) Spectral Segregation Index.

For each type $X \in \{-1, +1\}$, define the Spectral Segregation Index with $SSI(x)$ as the largest eigenvalue of A_x . Since that

$$d_{\min}(x) \leq \bar{d}(x) \leq SSI(x) \leq d_{\max}(x), \quad (4)$$

in which, $d_{\min}(x)$ refers the minimum degree of the nodes associated with agents of type x in the sub-graph W composed of nodes hosting an agent of type x , $\bar{d}(x)$ means the average degree and $d_{\max}(x)$ means the maximum degree. Then, we have Spectral Segregation Index as follow:

$$SSI(x) = \frac{SSI(x) - d_{\min}(x)}{d_{\max}(x) - d_{\min}(x)}. \quad (5)$$

3.1.2 Grounded analysis

In this study, Grounded Theory (GT) is adopted for selecting opinion leader and ordinary consumer to conduct in-depth interviews, analysing and mining the interview data, and core category reflecting the opinion leaders' impact on consumers in the online environment is eventually extracted. Considering the relationship in this scope, a suitable theoretical model is built. In other words, using grounded analysis method must have a field to be studied first. Then, through a systematic collection and procession of data, concepts and theories sprout out from the field are extracted, thereby a new theory can be explored and obtained. In this process data collection and procession is very important. Walker and Myrick pointed out that the Grounded Theory must be based on realistic data, and theoretical framework can obtained only through in-depth analysis, thus grounded analysis has a strong dependence on the data [18]. Simultaneously, the target of grounded analysis is to confirm a statement of a certain phenomenon which required to be studied, which is very suitable for the situation of online opinion leader and its impact on consumer purchase intention, thus we choose Grounded Theory as our research method.

3.2 GROUNDED ANALYSIS STEPS

The procession of Grounded Theory can be classified into five stages and nine steps as following: research and design, collection of information, data compilation, data analysis and documentary comparison [19].

1) Stage I: Research and design

Step 1: Literature discussion. The literature discussion is a pre-understanding in order to improve the theoretical sensation. In the process of conducting literature discussion, questions and preliminary ideas of the research should be clearly defined, and unrelated variables should be excluded in order to improve the external validity of the study.

Step 2: Case selection. The purpose of Grounded Theory is forming a theory which can be explained through data analysis of purposive sampling.

2) Phase II: Information collection

Step 3: Design a stringent data collection methodology to build a database of case studies. Variable data collection methods can be applied to gather information, such as participant observation, interview and text analysis.

Step 4: Enter research place. Researchers can use flexible data collection methods when collecting data in the practical place, focusing on the immediate theme and particularity cases.

3) Phase III: Data compilation

Step 5: Data compilation. Data compilation includes related notes, records and filled data analysing, in which events can be sorted by time.

4) Phase IV: Data analysis

Step 6: First case analyse. Data analysis includes three sub-steps, namely, open coding, axial coding and selective coding.

a) Open coding: open coding includes data decomposition, inspection, comparison, conceptualizing and subcategorizing. Firstly, the collected data is conceptualized, then is the sub-scope and nominate process. The process of sub-scope means combining set of concepts into a scope which include many sub-scopes.

b) Axial coding: the main purpose of axial coding is to establish links between the scope and sub-scopes, find out the causal relationship between scopes, and establish a theoretical framework. The axial coding comes after open coding, which analyse conditions and context of the phenomenon, the strategy and result in action (or interactive).

c) Selective coding: The purpose of selective coding is to identify the core themes. At first, core category and link the core category with other scope systematically are selected. Then we supplement and improve the unrefined scope after obtaining the relationship between the scopes. Core category is the centre, which combines all other areas.

Step 7: Theoretical sampling. The purpose of sampling is to form a new theory, which gathering commons in different samples to form certain theory. After open coding, axial coding and selective coding analysis, the first case could be transmitted into a preliminary theory. Then, to analyse the second case to obtain another theory and verify whether the second theory is coincide with the first case. If not, comparing and amending the two theories to form a more complete theoretical model. After that, return to the second step, and purposive sampling numbers of typical cases to analysis, until the new theory becomes saturation.

Step 8: Theoretical saturation. The initial theory obtained must be tested and fitted with new samples. If the theory is consistent in different situation, we call it is theoretical saturation.

5) Phase V: Documentary comparison

Step 9: Comparing the new theory and the existing documents. If they conflict, theory revision should be implemented. If not, such comparison can help find universalization deductive recognition which is helpful to improve the external validity.

It can be perceived that the analysis process of grounded method is critical to refine conclusions. As Walker and Myrick said, grounded analysis is a circle process of data collection and analysis. Based on the theory in pre-stage form, using the cases and other theories to validate the new theory, we can revise and improve the theory constantly, and ultimately form a theory which can reflect the object phenomenon [18].

4. Grounded research design and data collection

The purpose of grounded analysis is to demonstrate the typical object of aimed phenomenon. According to the theme of this paper, the investigators need to satisfy conditions as follows: be familiar with Internet, visit various social networking sites and e-commerce sites frequently, be interested in opinion leaders and have times of their information gathering history.

Investigators are interviewed by face-to-face, and we found that opinion leaders with high degree of attention are mainly from online community and blog forum. According to the frequency of use and the tendency of respondents, four typical platforms are ultimately selected, including Taobao, Taojianghu, Douban and Tianya. Moreover, two fashion websites: Onlylady and YOKA are selected as well, as a data implement. Numbers of followers and relevant information recommended by the opinion leaders in the above sites are also chosen, in order to enrich the collection of information.

Twenty five people are finally interviewed, including college students, enterprises and workers, freelancers and network sellers, etc. The respondents are quite young, mainly at the age of 18 to 40 years old. Ten people are less than 22 years old, twelve people are 23 to 30 years old, and three people are above 30 years old. To ensure consistency of data collection, and facilitate the compilation and comparison process, all objects are interviewed by the authors personally. The time for each interview maintains from 20 to 40 minutes. The main content of the interview is shown in Table 1.

TABLE 1 Interview table based on Grounded Theory

	Main content
Part 1 Basic information	①Your gender, age, level of education, profession?
Part 2 Attention behaviour	①How long have you been searching for product information by Internet?
	②How long have you noticed the online opinion leaders?
	③Remember the latest impressive product you have bought since of opinion leaders, which places did you get the recommendation?
	④What advantages of the product have?
	⑤Would you usually communicate with online opinion leaders? Or concern hers/his interaction with others?
Part 3 The main interview	①How much does opinion leaders' recommendation influence your purchase decisions? These effects mainly present in which aspects?
	②What factors influence your evaluation to the recommendation information?
	③Do you have a lot interaction with opinion leader? Do you think they have professional knowledge?
	④Do you think there is some similarity between you and the opinion leader? Whether this would affect your acceptance to hers/his advice?

5. Data analysis and factors affecting model construction

On the basis of the interviews, open coding, axial coding and selective coding are conducted gradually. The whole interviewed case is named "A", and the English letter "A" is adopted in order to facilitate subsequent analysis.

Open coding is the foundation of all the coding in Grounded Theory. After original data gathering through in-depth interviews and observations, comparative analysis is used to develop concept. We finally extracted 40 concepts by analysing and comparing the recorded data on "opinion leaders' impact on consumers purchase intention", which concluded based on the existing literatures and interviews' terminology.

As Larossa (2005) described, the concept here could be a word, a phrase or a short sentence, but no matter what

form of expression, it must be able to accurately reflect the nature of the interview connotation [20]. According to this principle, the concepts are classified, and 12 scopes (A1-A12) are ultimately obtained as following: professional knowledge of opinion leader, product involvement of opinion leaders, interactivity of the opinion leaders, popularity of the opinion leaders, visual clues of recommended information, timeliness of recommended information, consistency of recommended information, homogeneity of consumers, functional value, emotional value, trust and purchase intension. Details are shown in Table 2.

Based on this, Table 3 illustrates the process of open coding, the whole process involves a lot of information and contents, but partial process of the coding is presented since of space limitation.

TABLE 2 Interview table based on Grounded Theory

No.	Categories	Concepts
A ₁	professional knowledge of OL	product knowledge, expert, authority
A ₂	product involvement of OL	consumer experience, product preferences
A ₃	interactivity of OL	interaction, tie strength, familiarity
A ₄	popularity of OL	social status, public image, celebrity, forum leader
A ₅	visual clues of RI	present form, visually appealing, impact
A ₆	timeliness of RI	information update, timeliness, fashion
A ₇	consistency of RI	recommend consistency, similar product, similar viewpoint
A ₈	consumer homogeneity	personality, hobbies, interests and values
A ₉	functional value	product quality, performance, reliability, durability
A ₁₀	emotional value	pleasure, excitement, happiness, sense of identity
A ₁₁	trust	capacity, goodwill, honesty
A ₁₂	purchase intension	product certainty, product interest, product desire

Note: OL refers to opinion leader, RI refers to recommended information

5.2 AXIAL CODING AND PARADIGM MODEL

In this chapter, linkages between the scopes are analysed step-forward, especially the link of the scope and their corresponding sub-scopes. Then, a further information re-integration to develop the key scope is executed. There are six parts in axial coding: causality conditions, phenomenon, context, intermediary conditions, action/interaction strategies, and results. In this phrase, a paradigm model is needed to further excavate the meaning of scope, which is an important analysis tool in axial coding. After sorted and analysed the six parts in online

opinion leader case, the main scope paradigm model of this study is finally obtained, as shown in Figure 1.

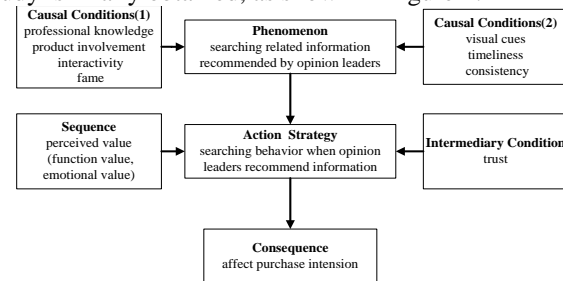


FIGURE 1 Main scope paradigm model

TABLE 3 An example of open coding on opinion leaders' influence

Data records	Open coding			
	conceptualization	categorization	category property	property dimension
This OL know many brands, familiar with product feature and function(a ₁)	product knowledge a ₁	1. a ₁ , a ₂ , a ₃ conceptualization as: professional knowledge (A ₁)	1. nature of professional knowledge: comprehension, type, status	comprehension: strong/weak type: many/few status: high/low
This OL is very professional, and a well-known expert in this area (a ₂)	expert a ₂			
.....
This OL bought too many similar products, very experienced(a ₄)	purchase experience a ₄	2. a ₄ , a ₅ conceptualization as: product involvement of OL (A ₂)	2.nature of product involvement: familiarity, likeness, input	familiarity: high/low likeness: strong/weak input: much/little
She have a preference for such products, particularly to one of them (a ₅)	product preference a ₅			
.....
This recommendation is very impressive, with video and detailed usage (a ₁₄)	forms a ₁₄	5. a ₁₃ , a ₁₄ , a ₁₅ conceptualization as: visual cues of RI (A ₅)	5. nature of visual cues: forms, clearness, content arrangement	forms: many/few clearness: high/low content arrangement: good/bad
Pretty product pictures, clearly show product details, and very attractive(a ₁₅)	visual appeal a ₁₅			
.....
She recommended some new products, which I do not familiar with(a ₁₇)	timeliness a ₁₇	6. a ₁₆ , a ₁₇ , a ₁₈ conceptualization as: RI timeliness (A ₆)	6. nature of timeliness: update frequency, products follow up	update frequency: high/low products follow up: fast /slow
This net advisor is very fashion, his recommendation reflect the latest vogue (a ₁₈)	latest vogue a ₁₈			
.....

This OL's recommendation always have a good quality (a ₂₇)	product quality a ₂₇	9. a ₂₇ , a ₂₈ , a ₂₉ , a ₃₀ conceptualization	9. nature of function value: quality, durability	quality: good/bad durability: good/bad
Since he have used a lot products, his recommendation is always easy and suit to use (a ₂₈)	performance a ₂₈	as: perceived function value of consumer (A ₉)		
.....
The recommendation of experts is more reliable, and helpful to understand the advantages and disadvantages (a ₃₅)	ability a ₃₅	11. a ₃₅ , a ₃₆ , a ₃₇ conceptualization as: trust (A ₁₁)	11. nature of trust: ability, standard, honest	ability: high/low standard: high/low honest: reliable/unreliable
.....
The product in F' blog is nice, as well as its packaging (a ₃₈)	product affirm a ₃₈	12. a ₃₈ , a ₃₉ , a ₄₀ conceptualization as: purchase intention (A ₁₂)	12. nature of purchase intention: willingness, desire	willingness: strong /weak desire: strong/weak
I have never try this, it seems an interesting recommendation, I would try it next time (a ₃₉)	product interest a ₃₉			
Seeing lots of professional are using this, I am ready to buy one (a ₄₀)	product desire a ₄₀			
	(40 concepts total)	(12 scopes total)		

5.3 SELECTIVE CODING AND MODEL VARIANTS

The purpose of selective coding is to develop the core category. Depending on the interactive comparison of the original data, concepts and categories, especially relationships among scopes, Core category is refined which can best reflects the essence of the phenomenon, as

well as the baseline around the core scope. The analysis in this process is quite abstract, and four core scopes are extracted, including professional knowledge, product involvement, interactivity and visual cues. Based on this, variable definitions and dimensions between traditional e-commerce environment and online social business environment are compared, as shown in Table 4.

TABLE 4 Variant definition and dimension contraction in different environment

		Traditional environment	Socialized environment
Expertise	definition	professional knowledge of recommender	comprehensive and systematic product knowledge of recommender
	dimension	professional knowledge, authority, expert	professional knowledge, experiences, product knowledge
Product Involvement	definition	product preference, time spending	product preferences and involvement
	dimension	product preferences, energy cost and time concern concerning	product preferences, energy cost, online information concerning and transmission
Interactivity	definition	social tie strength between individuals	tie strength between individual and website, individual and opinion leader
	dimension	importance, contact frequency, relationship type	online linkage, interactive information, website relationship
Visual Cues	definition	picture display	various types of information presented by recommender
	dimension	clear, well organized	various forms, detail picture, clear video

On this basis, the mainline of this study can be stated as follows: due to the shortage of product-related information, consumers tend to take the recommendation from experienced opinion leaders on related products. Opinion leaders' effect on consumer purchase intention is subjected to their characteristics such as professional knowledge and product involvement, as well as features of information recommended, like interactivity and visual cues.

6 Discussions and results

Currently, e-commerce is becoming more and more popular and wide spreading, and role of online opinion

leaders on consumer purchase and behaviour model is increasing significant, especially in the field of online purchase decision-making. Through the interviews of online community users, and qualitative analysis based on Grounded Theory, several results which are significant for online user model are found:

- 1) Characteristics of opinion leader.

Compared to traditional opinion leaders, the online opinion leaders have many new features, their product knowledge is richer and social network is wider. Just as the words of two grounded interviewers: "Opinion leaders" comments on product contains much of professional knowledge, letting me aware systematic product knowledge and insight understanding about the

product” and “When you are hesitate in selection, it is better to ask others or directly to the opinion leaders for advice”, suggesting that the professional knowledge and interactivity of opinion leaders plays an important role on consumer behaviour, as well as in user model construction.

2) Features of recommendation information.

Compared with general public reputation, recommendation of opinion leaders is distinct in richer visual cues and stronger timeliness. Just as the viewpoints of two grounded interviewers: “Product recommendation has a detailed description and a very clear picture” and “When I see a new product of this brand, the immediate comments from opinion leaders help me know better about this product”, suggesting that features such as visual clues and timeliness of recommendation influence consumer behaviour, and the corresponding model.

3) Consumer perceived value.

Consumer perceived value is an important psychological factor which influences consumer purchase intension and model construction. When the product recommendation makes a high perceived value, consumers tend to generate an interest for the product. Just as the looking of two grounded interviewers: “The product he recommended in his blog seems interesting and quite simple to use, and the raw material is also quite reliable, it should be in good quality” and “I really like the package she bought, and now a lot of people want to buy one, I would be fashionable if I have one”, indicating that consumers perceived value of the products recommended

by the opinion leaders also have an impact on consumer behaviour.

4) Intermediary role of trust to behaviour model

Opinion leaders’ impact on consumer purchase intention need an intermediary mechanism, depending on Grounded Theory, we summarized that opinion leaders often bring a sense of trust to consumers, which would further affect their purchase intension. The interviews show that the most important reason of the interviewee’s acceptance of recommendation is their trust on opinion leaders. The professional knowledge, product involvement, interactivity and fame of opinion leaders, the visual cues, consistency and timeliness of the recommended information, and the functional value and emotional value consumer perceived, may affect the generation of trust.

Acknowledgement

The work was supported by the supported by the National Social Science Foundation of China (No.12CTQ028), Humanities and Social Science Foundation of Chinese Ministry of Education(No. 13YJC870019), Zhejiang Nonprofit Technology Research Projects (No. 2013C33060), Special Foundation on Innovation Team Building and Personnel Training of Zhejiang (No.2013F20008), Contemporary Business and Trade Research Center of Zhejiang Gongshang University which is the Key Research Institute of Social Sciences and Humanities Ministry of Education.

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Authors	
	<p>Fei Meng, born in January, 1980, Yining, Xinjiang Province, China</p> <p>Current position, grades: the assistant professor of Zhejiang Police College, China. University studies: Ph. D degree in Information Science from Nanjing University in China. Scientific interest: e-commerce and information service. Publications: more than 20 papers. Experience: teaching experience of 3 years, 2 scientific research projects.</p>
	<p>Jianliang Wei, born in May, 1980, Hangzhou, Zhejiang Province, China</p> <p>Current position, grades: the associate professor of Zhejiang Gongshang University, China. University studies: Ph. D degree in Information Management Engineering from Nanjing University in China. Scientific interest: e-commerce and information service. Publications: more than 30 papers. Experience: teaching experience of 5 years, 5 scientific research projects.</p>