

# The Study of the Impact of E-commerce Participator on Online Reputation Formation

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**Abstract:** Nowadays, with e-commerce developing by leaps and bounds, online reputation problem is one of the most important problems which need to be solved. The study of the impact of e-commerce participator on online reputation formation can provide decision basis for the parties and constraint their behavior. Through the definition of the e-commerce participator, studying e-commerce subject to find out which can affect online reputation formation to a large degree. This paper finds the influential factors by using literature theory analysis and the questionnaire. *Via* the construction of the six-dimensional factors index system of 24 quantitative indicators, design model of online reputation formation influenced by E-commerce participator. In empirical research, questionnaires be made again to collect data, the model has been revised 3 times to work out that it has 13 index with 5 parts. Finally draw the appropriate conclusions for each of the main effects on e-commerce online reputation formation.

**Keywords:** Electronic commerce, empirical analysis, impact study, online reputation.

## INTRODUCTION

With the development of the information technology and the popularization of the Internet, the rise of the e-commerce has changed business pattern of the traditional commercial activities [1]. Comparing with traditional business pattern, e-commerce deepens segregation degree of time and space for each business side. This makes two sides cannot identify each side identification, so that the initial trust cannot be built [2, 3]. And then this accelerates the transformation of two sides' form and contents of trust. The lagged development of online reputation has become the main factor which restricts efficient and health development of e-commerce [4].

Recently, scholars who are in domestic and overseas have given more interest to the factors which influence online reputation [5-9]. Mcknight&Chervany presented the theoretical model of formation process of reputation behavior. They believed that the formation of the reputation includes change process of from reputation faith to reputation willing and then to the reputation behavior [10]. Yanchun Zhu Liu, and Wei Zhang presented simulation research on the base of model building [11]. Dengke Yuan constructed evaluation model of the risk of online reputation on the base of game theory [12].

Nowadays, the study of the online reputation and its influencing factors mainly focuses on the quantitative analysis by constructing model [13-15]. Most put emphasis on explaining how online reputation influences e-commerce and what kind of element influences online reputation. However,

there is no a systematic interpretation about how online reputation generates, also no explain when and where generate during the transaction process. Mostly, we use deductive theory to choose influencing factors. When verifying the selection of influencing factors, we mainly use the empirical research, but the reliability of the data of empirical research are not easy to control.

E-commerce participators of online transaction have different characteristics. So each subject has different influence on the online reputation [16]. Alreck and Settle study the online shopping behavior from the aspect of time-saving. They found that online shopping was believed can save more time than traditional shopping pattern. However, in order to save time, the frequency that customers who choose to shop online have no relation with his or her level of time pressure, but significantly correlate with the time of online and work [17]. From the side of influence of seller in online reputation, Shujuan Zhang *et al.*, believes that seller using modification of language and semantic would affect online reputation [18].

In the study of the effect of e-commerce participator in online reputation, systematic and gathered study of influence research of each subject on online reputation is dispersed. Meanwhile, every researcher has different partition about the e-commerce subjects. Without a unified specific name, most researches are incomplete. But isolation of each subject would make repeat calculation of some influencing factors or thoughtlessness of interaction.

To study the influence of e-commerce participator on online reputation has a significant function on improving reputation degree of related trade subjects in e-commerce, ensuring a safer online transaction, improving amount of online transaction and so on [19]. In this paper, the subjects of

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**Table 1. The influence factors of literature theory analysis.**

Subjects	Representatives of Researchers	Influencing Factors
Seller	GuangXing Song Zhaoji Yu, <i>et al.</i>	Scale and figure, conformity of goods description, after-sales service, interaction degree, personal qualities, existing judgment, accumulate reputation, fake good reputation, hired delete, amount of stocks
Buyer	Shuxian Ji, Minli Jin, <i>et al.</i>	Experience, tend to trust, external recommend, risk perception, personal qualities, income, times of transaction, money of transaction, vicious mutual evaluation, public praise, ability of communication, pay in time
Website	Xuefeng Zhao Xiangyang Liu, <i>et al.</i>	Convenience, authentication system, judgment system, information safety, dispute resolution mechanism
Logistics	Minli Jin, Fanhuan Gong, <i>et al.</i>	Convenience, information check, track system, service pattern, force majeure, measure of compensation, punctuality, quality of transportation, update rate of transportation facilities
Govt	Yuan Li, <i>et al.</i>	Law environment, punishment, guarantee service platform, amount of base, online police
Supplier	Yang Ji, <i>et al.</i>	Price competition, quality of goods, on time delivery, amount of stocks

**Table 2. The influence factors of the questionnaire.**

Corresponding Subjects	Influencing Factors
Seller	Offering service, ability of communication, promise of service, comment of service level, changing comment, quality of goods, present, reference of existing comment
Buyer	Intentional odium, experience of purchase, ability of bargaining, always good reputation, recommend to others, buy a lot one time, repeat buying
Internet	Reveal of user's private information, design of page, safety of payment platform, stability of website, reliability of recommend goods, sort order
Logistics	Delivery time, guarantee of goods quality, perfection of express item tracking system, risk of transportation, force majeure, choice of corporation, contact information, whether goods can be examined
Government	Perfection of laws and regulation, manners of supervision and administration, penalties on violators
Supplier	Quality of offered goods, corresponding with seller, stability of supply
others	Impostor signs for the express, steal and kidnap express goods, allograph, paste up for reputation

e-commerce are defined as direct subjects (buyer, seller) and indirect subjects (websites, Logistics, government, *et al.*). Based on these views, this paper perfects the theory and examines practice. It focuses on the study of the influence of e-commerce participator in online reputation formation. And it analyzes quantitative index of each subject for the reference and perfection of related subjected.

**INFLUENCE MODEL OF E-COMMERCE PARTICIPATORS IN ONLINE REPUTATION FORMATION**

**The Analysis of Influencing Factor of E-commerce Participator in Online Reputation Formation**

Under the guidance idea of gathering all points, the paper summarizes influencing factors of each e-commerce subject on the formation of online reputation. Since there exists regional difference on the development of e-commerce, we choose literatures of scholars of mainland China as main reference, as shown in Table 1.

In order to understand the influencing factors of e-commerce subjects in formation of online reputation roundly, on the basis of extracted influencing factors by using theoretical analysis, according to the analysis of inquiry data by using questionnaire survey, the interviewees propose a more comprehensive supplement which aims at the influence of e-commerce on formation of online reputation, as in Table 2.

As shown in above Table 2, most of influencing factors corresponds with the result which comes from literatures arrangement. There are some factors which have never been mentioned in former literatures, like force majeure of logistics, etc. What needs to be noticed is that there are some answers like impostors. But these all belong to principal part of accidental events. Impostors belong to the poor regulation of logistics. Brushing the credibility belongs to fraudulent behavior of sellers.

According to the literature theory analysis and questionnaire arrangement, we combined same or similar factors to-

**Table 3. The index system for online reputation formation influenced by E-commerce participator.**

	Factors	Measurement Index	Measurement Meaning
Online reputation formation influenced by E-commerce participator	Seller	VOLAMOUNT	Reflecting situation of scale, capital turnover and stock
		Cost performance of offered goods	Reflecting situation of goods conformity and price
		Valid communication frequency	Reflecting ability of communication and bargaining
		Accumulated reputation	Reflecting personal qualities, influencing decision of buyer
		Good reputation of service	Including after sale, interaction degree and feedback
		Fraud frequency	Measuring frequency of changing comment
	Buyer	Purchase frequency	Reflecting experience of consume willing and income
		Valid communication frequency	Reflecting ability of bargaining and risk perception
		Accumulated reputation	Reflecting personal qualities and in time payment
		Fake comment frequency	Measuring intentional odium, habit of comment good
		Frequency of spread-Recommend	Measuring word –of –mouth effect and situation of repeat buying
	Website	Perfection of security system	Including situation of authentication, information and security of payment
		Reliability of basic design	Stability and convenience
		Frequency of success recommend	Sort order, display ads, history information
		Number of dispute dissolution	Investigating service, rules and evaluation system
	Logistics	Timely delivery	Investigating time of delivery, choice of transportation facilities
		Perfection of information system	Return of goods, perfection of express item tracking system
		Frequency of compensation payout	Frequency of compensation on inevitable force and accident
		Frequency of good reputation of service	Quality assurance, service attitude, situation of goods examine
	Govt	Number of laws and regulations	Investigating perfection of laws and regulations and penalties
		Number of online police	Formation of evaluation system and degree of supervision and administration
Number of base and platform		Investigating investigation of government and strategic coordination	
Provider	Cost performance of offered goods	Investigating quality of goods and primary pricing	
	Frequency of timely delivery	Investigating stock and personal quality	

gether and presented these factors by using imitate ration disposal. Table 3 shows the target system of factors.

**Construction of Influence Model for Online Reputation Formation Influenced by E-commerce Participator**

According to aforesaid analysis, the paper constructs influence model for online reputation formation influenced by E-commerce participator, as shown in Fig. (1).

**THE RESEARCH OF DEMONSTRATION**

**Hypothesis**

According to the model that E-commerce participator influence the formation of online reputation., the main part of e-commerce, which influences the formation of online reputation, includes 6 factors: seller, buyer, website, logistics, government and provider. Therefore, this paper offers the following hypothesis:

H1: The seller will influence the formation of the online reputation observably.

H2: The buyer will influence the formation of the online reputation observably.

H3: The website will influence the formation of the online reputation observably.

H4: The Logistics will influence the formation of the online reputation observably

H5: The government will influence the formation of the online reputation observably.

H6: The supplier will influence the formation of the online reputation observably.

On the side of seller, the times of clinching deals, offering the commodity's cost performance, the frequency of efficient communication, the seller's accumulation of credit standing value, the good comments of services and the fre-

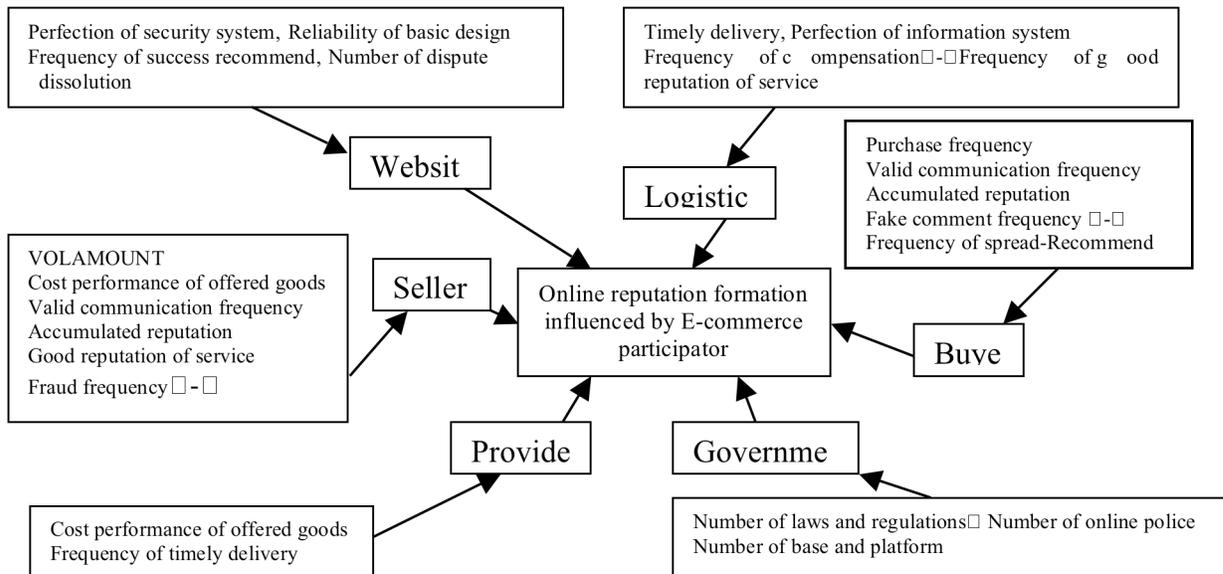


Fig. (1). The model of online reputation formation influenced by E-commerce participator.

quency of cheating can be as the efficient measure index which can influence the formation of the online reputation.

H11: the more times of clinching deals that one achieves, the more positively it influences the formation of the online reputation.

H12: the higher of a commodity's cost performance that one offers, the more positively it influences the formation of the online reputation.

H13: the higher frequency of efficient communication that one gets, the more positively it influences the formation of the online reputation.

H14: the more accumulation of credit standing value that sellers have, the more positively it influences the formation of the online reputation.

H15: the higher value of good comments for services that one gets, the more positively it influences the formation of the online reputation.

H16: the higher frequency of cheating that one gets, the more negatively it influences the formation of the online reputation.

On the side of buyer, purchase times, the frequency of efficient communication, the accumulation of credit standing value, the frequency of mendacious comments and the times of transmitting recommendation can be as the efficient measure index which can influence the formation of the online reputation. Therefore, hypothesis can be shown as following:

H21: the more times to buy, the more positively it influences the formation of the online reputation.

H22: the higher frequency of efficient communication that one does, the more positively it influences the formation of the online reputation.

H23: the higher of the credit standing value that buyer has accumulated, the more positively it influences the formation of the online reputation.

H24: the higher frequency of mendacious comment that one gets, the more negatively it influences the formation of the online reputation.

H25: the more times for transmitting recommendation, the more positively it influences the formation of the online reputation.

On the side of website platform, the degree of the security system perfection, the reliability of basic design, the frequency of succeed recommendation and the number of solving disputes successfully can be as the efficient measure index which influence the formation of the online reputation. Therefore, the hypothesis as following:

H31: the more perfectly complete the security system, the more positively it influences the formation of the online reputation.

H32: the higher of the degree of reliability for basic design that one gets, the more positively it influences the formation of the online reputation.

H33: the higher frequency of success for recommending, the more positively it influences the formation of the online reputation.

H34: the more number of successfully solving disputes that one gets, the more positively it influences the formation of the online reputation.

On the side of the Logistics, the frequency of the in time delivering, the perfection degree of information system and the frequency of good reputation for services can be as the efficient measure index which influences the formation of online reputation. Therefore, the hypothesis as following:

H41: to deliver goods more in time, which is more positively influence the formation of the online reputation.

H42: the higher degree of the information system perfectness that one completes, the more positively it influences the formation of the online reputation.

H43: the higher frequency of compensate that one pays, the more negatively it influences the formation of the online reputation.

H44: the higher frequency of good comments for services that one gets, the more positively it influences the formation of the online reputation.

On the side of government, the number of laws and regulations, the Internet police and base platform can be as the efficient measure index which influences the formation of the online reputation. Therefore, here the hypothesis as following:

H51: the more laws and regulations are made, the more positively it influences the formation of the online reputation.

H52: the more Internet police work, the more positively it influences the formation of the online reputation.

H53: the more base-platform be built, the more positively it influences the formation of the online reputation.

On the side of supplier, the performance price ratio of goods provided and timely delivery can be as the efficient measure index which influences the formation of the online reputation. Therefore, here the hypothesis as following:

H61: the higher performance price ratio of goods provide, the more positively it influences the formation of the online reputation.

H62: the higher rate of timely delivery provide, the more positively it influences the formation of the online reputation.

**Sample and Data Collection**

The data used in the study are collected in the form of a questionnaire survey. The study has a universal effect as the survey questionnaire is not limited to people. Survey methodology focused on web-based survey, with the questionnaire issued by the relevant platform, group chat software in the form of surveys and sending e-mail in general research, combined with paper questionnaires and telephone inter-

views to collect first-hand information. According to the statistics analysis, the formal survey of 366 questionnaires are collected. By screening out incomplete questionnaires and invalid questionnaires, finally get 297 effective evaluation questionnaires. Due to the effective recovery rate of 81.15%, the abundance of the sample size can be ensured.

**Analysis Methods and Results**

First, use Cronbach's  $\alpha$  to make reliability testing. We can see the Cronbach's  $\alpha$  coefficients of the each factor in the Table 4.

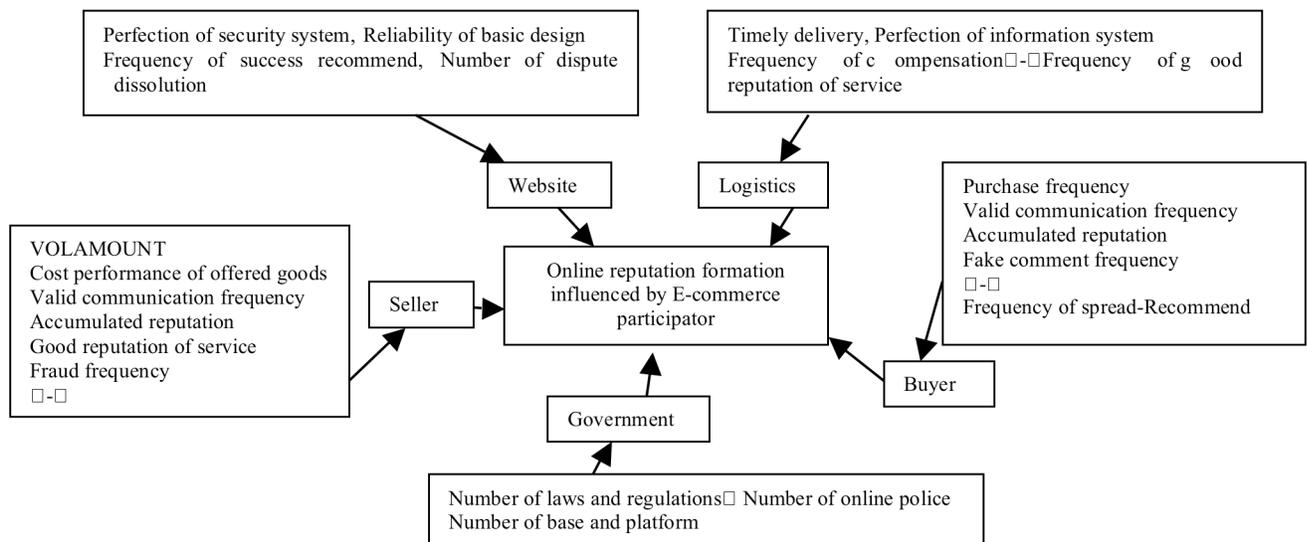
**Table 4. Cronbach's  $\alpha$  coefficient.**

Factor	Measuring Index Number	Cronbach's $\alpha$ coefficient
Seller	6	0.820
Buyer	5	0.833
Website	4	0.795
Logistics	4	0.804
Govt	3	0.796
Providers	2	0.594

The result shows that the Cronbach's  $\alpha$  coefficient of various factors are higher than 0.7 in addition to providers, which past the reliability testing. Since the reliability of providers is lower, the item of providers is excluded in order to ensure credibility. We can see the revised model shown in Fig. (2).

On the basis of the revised model, according to the scoring case, two factors of provider are excluded. Exploratory factor analysis is used to test the effectiveness. We can see KMO and Bartlett's testing by SPSS in Table 5.

The value of KMO is 0.633, which is in the scope of factor analysis suitable. However, the interval of index joint degrees is [0.496, 0.756]. Though most of the original



**Fig. (2).** The revised model.

**Table 5. KMO and bartlett's test.**

Kaiser Meyer Olkin Measure of Sampling Adequacy		.633
Bartlett's Test of Sphericity	Approx. Chi Square	626.736
	Df	104
	Sig.	.000

indicators can be explained by common factors and also can be used to do factor analysis, but not satisfactory. As a result, the measurement index of factors should be cut. The intercommunity of the main factor variable which is less than 0.6 should be rejected, so does the factor which the little difference of factor loading. At last, the factor of Favorable comment, the frequency of effective communication, the frequency of recommendation, the number of base Platform are rejected. Data are used to do Bartlett Sphericity test again, which result shows that the test value is 2.044E3 and the significance probability is 0.000, as well as the test null hypothesis is rejected. The consequence explains that there is possibility of sharing factor between each element. Meanwhile, KMO is 0.866 that means suitable to do factor analysis. We can see the test result of KMO and Bartlett's which revised again in Table 6.

In the first place, we make the maximum orthogonal rotation for variance. Assuming the number of factors extracted is 5, while the cumulative variance contribution rate is 75.637%. Buyer explains the formation of e-commerce online reputation's variation which the rate is 18.397% as first factor; seller explains the formation of e-commerce online reputation's variation which the rate is 18.294% as second factor; government explains the formation of e-commerce online reputation's variation which the rate is 14.364% as third factor; logistics explains the formation of e-commerce online reputation's variation which the rate is 13.245% as fourth factor; website explains the formation of e-commerce online reputation's variation which the rate is 11.337% as fifth factor. Each factor is in descending order according to the impact of e-commerce online reputation formation. It is obviously that the biggest factor is buyer while the smallest impact is website.

**Table 6. The revised KMO and Bartlett's test.**

Kaiser Meyer Olkin Measure of Sampling Adequacy		.866
Bartlett's Test of Sphericity	Approx. Chi Square	2.044E3
	Df	106
	Sig.	.000

**Table 7. Load factor table.**

Factor	Factor Of E-Commerce Participator In Online Reputation Formation	Component					
		1	2	3	4	5	6
Buyer	Cumulative reputation	.875					
	The frequency of purchases	.836					
	The frequency of dishonest comment	.788					
	The frequency of recommendation	.768					
Seller	Cumulative reputation		.844				
	The frequency of fraudulence		.775				
	Transactions		.765				
	The performance price ratio of goods		.693				
	The frequency of effective communication		.645				
Govt	The number of laws and regulations			.796			
	The number of Internet police			.733			
Logistics	The frequency of favorable comment				.833		
	Timely delivery				.753		
	Information systems sophistication				.732		
	The frequency of compensation Payout				.622		
Website	Improvement of the safety system					.832	
	The number of successfully resolved disputes					.733	
	The credibility of basic design					.726	

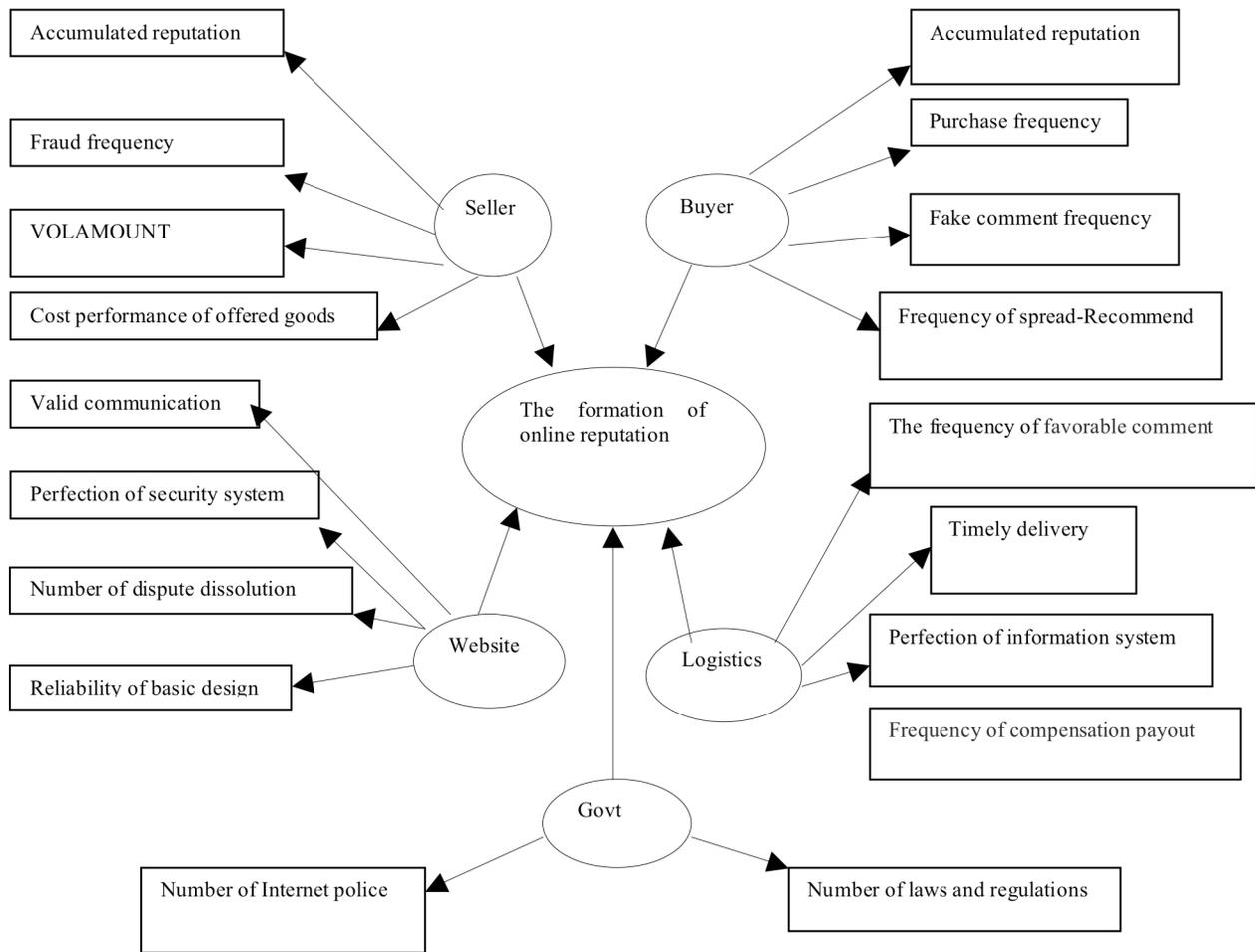


Fig. (3). Structural equation model.

Table 8. Model fitting index results.

Fitting index	$\chi^2/df$	RMSEA	GFI	AGFI	NFI	IFI	CFI
Result	1.826	0.053	0.920	0.642	0.922	0.898	0.899

Table 7 shows the rotated load factor matrix. We can see that each load factor is higher than 0.6, so we can draw the conclusion that the design of questionnaire is reasonable. As a result, every factor can be retained and has a strong explanatory power which also past validity test.

**Model Fitting and Results**

Via AMO software, valid data has been used for further Testing hypotheses. We can see the structural equation model in Fig. (3).

The results of model fitting index are shown in Table 8.

Table shows that  $\chi^2/df$  is 1.826 which is less than 3 in line with expectations, RMSEA is less than 0.08 which is also in line with expectations, GFI, NFI and CFI are both higher than 0.9. The data indicates that the model goodness-of-fit is favorable so that the model proved to be significant. In terms of hypothesis verification, judgment can be made by using structural equation model path estimation and the test-

ing result. The result of the hypothesis testing shows in the Table 9.

**CONCLUSION AND OUTLOOK**

This paper normalizes the process of the formation of the e-commerce online reputation and analyzes the impact of e-commerce participator on online reputation formation. Also, the influencing factors extracted to build the index system and the initial research model of the impact of e-commerce participator on online reputation formation has been built. The paper uses empirical research methods to make the model amended three times. Ultimately, this paper draws the influence model which has 5-dimensional and 13-quantitative indicators.

The related results of this study have implications for each subject of e-commerce. Primarily, the formation of on-line reputation is mainly influenced by five e-commerce subjects which include seller, buyer, logistics, government and websites. From the perspective of impact, the greatest degree

Table 9. Hypothesis testing results.

Structural Equation Model Path	Standardized Coefficient	t	P	Hypothesis	Verdict
Online reputation←Seller	0.178	4.176	***	H1	True
Online reputation←Buyer	0.305	4.793	***	H2	True
Online reputation←Website	0.230	3.091	***	H3	True
Online reputation←Logistics	0.711	7.741	***	H4	True
Online reputation←Govt	0.149	3.026	0.002	H5	True
Seller←Cumulative reputation	0.264	4.242	***	H14	True
Seller←Frequency of fraudulence	-0.111	-2.207	***	H16	True
Selle←VOLAMOUNT	0.031	0.566	0.572	H11	False
Selle←The performance price ratio of goods	0.608	6.930	***	H12	True
Selle←Valid communication frequency	0.078	1.351	0.187	H13	False
Buyer←Accumulated reputation	0.744	9.376	***	H23	True
Buyer←Purchase frequency	0.089	1.822	0.068	H21	False
Buyer←Fake comment frequency	-0.530	6.114	***	H24	True
Buyer←Frequency of spread-Recommend	0.845	9.806	***	H25	True
Website←Perfection of security system	0.533	5.965	***	H31	True
Website←Number of dispute dissolution	0.096	1.659	0.097	H34	False
Website←Reliability of basic design	0.349	4.463	***	H32	True
Logistics←Frequency of good reputation of service	0.097	1.368	***	H44	True
Logistics←Timely delivery	0.329	4.471	***	H41	True
Logistics←Perfection of information system	0.244	3.259	***	H42	True
Logistics←Frequency of compensation payout	-0.103	-1.925	-0.054	H43	False
Govt←Number of laws and regulations	0.288	4.639	***	H51	True
Govt←Number of Internet police	0.111	2.368	***	H52	True

Note: \*\*\*shows significance level is 0.001

of influence on the formation of online reputation is buyer’s behavior and decision-making while the minimum degree of influence is website. For another, in the mainly factors affecting the formation of online reputation from the buyer include cumulative reputation, fake comment frequency and frequency of spread-recommend; in the mainly factors affecting the formation of online reputation from the seller include cumulative reputation, fraud frequency and the performance price ratio of goods; in the mainly factors affecting the formation of online reputation from the logistics include timely delivery and perfection of information system; in the mainly factors affecting the formation of online reputation from the government include the number of Internet police and the number of laws and regulations; in the mainly factors affecting the formation of online reputation from the website include perfection of security system and reliability of basic design. Furthermore, the relationship exists among the factors which finally confirmed. From the point of future trends, how to lead these intrinsic factors that effects and relations between the five-dimensional into the model of the impact of

online reputation formation in order to improve the research of the impact of e-commerce participator on online reputation formation. This will be the future research directions.

**CONFLICT OF INTEREST**

The authors confirm that this article content has no conflict of interest.

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