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Lu Liu
Sichuan Agricultural University, China, luliu-79@qq.com

Liangqiang Li
Sichuan Agricultural University, China, lilq@sicau.edu.cn

Miyan Liao
Sichuan Agricultural University, China, 2843194712@qq.com

Yunzhong Cao
Sichuan Agricultural University, China, caoyz@sicau.edu.cn

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Exploring the Influential Factors of Consumers' Willingness to Purchase Fresh Agricultural Products Online: A Meta-Analysis

(Full Paper)

Lu Liu, Sichuan Agricultural University, China, luliu-79@qq.com
Liangqiang Li*, Sichuan Agricultural University, China, lilq@sicau.edu.cn
Miyan Liao, Sichuan Agricultural University, China, 2843194712@qq.com
Yunzhong Cao, Sichuan Agricultural University, China, caoyz@sicau.edu.cn

ABSTRACT

What are the key influential factors of consumers' willingness to purchase fresh agricultural products online? A large number of existing studies indicate that even the same factor has significant inconsistency or even opposite conclusion. Based on this contradiction, this study uses meta-analysis and uniform effect values to analyze the existing researches, and find a more unified conclusion. The results show the degree of self-health concern, the quality, safety and price, online shopping evaluation, the consumers' perceived usefulness, perceived ease of use, and perceived risk in online shopping for fresh agricultural products all have a significant impact on consumers' online shopping willingness.

Keywords: Online shopping willingness, fresh agricultural products, meta-analysis.

*Corresponding author

INTRODUCTION

Fresh agricultural products also named fresh vegetables, fresh fruits, fresh aquatic products, livestock, poultry, meat, egg and milk, which differed from other consumer products in that its perishables put forward timeliness requirements; safety requirements; and consumers' tastes of variety diversity. Due to its obvious experience-based product for consumption, traditional agricultural product trade volume online relatively small (He, Han, & Li, 2014). Online sales volume of fresh agricultural products increased dramatically along with the emergence of E-commerce (Alibaba's Agricultural E-Commerce White Paper (2016), 2018 Fresh Food Consumption Report by Jingdong). At the same time, China's precision poverty alleviation projects and rural revitalization plans facilitate more and more fresh agricultural products selling online.

Exploring the factors that affect consumers' willingness to purchase online for fresh agricultural products becomes necessary. Lots of existing research studied the influencing factors of consumers' online purchase intention of fresh agricultural products. Qi and Lin (2018) employ the construal level theory to reveal the influence of social distance on purchase intention through consumer behavior experiment. He, Han, and Li (2014) carried out empirical analysis to explore the model of influencing factors of Chinese consumers' purchase intention of fresh agricultural products based on models of consumer behavior. However, the relationship between various factors and online shopping intentions has been inconsistent in different studies, and there are also differences in the strength and weakness of the influence.

Zou (2011) propose that the convenience of purchase and family dining habits have no significant impact on consumers' willingness, Liu (2017) believes that consumers' eat, cooking frequency, Internet convenience have a significant positive impact on consumers' willingness of purchase of fresh agricultural products. Lin (2017) believes that attributes of fresh agricultural products, quality of logistics service, website service quality positively affect consumers' willingness to purchase. Liu (2017) believes expected freshness of products, expected quality and safety of products, quality of service of e-commerce websites, and consumers' perceptions of online shopping risks has not significantly affected consumers' online shopping willingness of fresh agricultural products. Zhang *et al.* (2015) state that there is a negative relationship between perceived risk and purchase intention. Liu (2017) believes that consumers' perceptions of online shopping risks has no significant impact on consumers' online shopping for fresh agricultural products. Yi and Yi (2015) propose perceived ease of use positively affect consumers' willingness to purchase, but its impact is not significant. Bai (2017) propose that perceived ease of use significantly affects the willingness of online shopping for fresh fruits.

Meta-analysis is a valid method for quantitative statistical analysis to solve inconsistencies. Specifically, it comprehensively analyzes various studies on the same subject, to achieve general conclusions from individual conclusions, even the relationship between research variables has strong or weak differences in different studies, or even direction differences. Furthermore, it can reveal the reasons for the inconsistency of many research conclusions (Bai, 2017). This study uses meta-analysis method to review

researches on the existing online shopping intentions of fresh agricultural products; and then use meta-analysis to unify the effect values to solve the different emphasis, the same factors have different influences on online shopping intentions, even inconsistencies in direction. Through meta-analysis, scattered researches can be connected to scientifically summarize existing researches, reveal the universal factors affecting consumers' online shopping for fresh agricultural products, and further provide theoretical support for agricultural sales activities of e-commerce platform.

RESEARCH METHODS, THEORIES AND HYPOTHESES

Meta-analysis, also known as integrated analysis, is a scientific quantitative comprehensive analysis method that systematically evaluates and quantifies multiple research results with the same purpose and independent of each other. This method has been widely used in psychology and clinical medicine (He, Yang, & Chen, 2009), and now it's now widely applied to the field of social sciences. With the combined research data from different studies, the sample size increased, which helps to avoids bias, and get more universal influential factors.

The theory of reasoned action (TRA) consider human behavior is determined by behavior intention that is influenced by attitude and subjective norms, which affect behavior intention and ultimately determine whether an individual takes action. Behavior intention refers to the tendency of the individual to prepare for a particular behavior; the behavioral attitude refers to the individual's evaluation of the good or bad of a certain thing; the subjective norms refer to the opinions of individuals who believe that most people and actions that are important to them are important to their actions. According to TRA, we can conclude that consumers' own feelings and evaluations, the evaluations of others around them have a direct impact on the willingness to act. Huang *et al.* (2010) explored the driving factor system of enterprise employees' knowledge sharing behavior based on TRA. TRA assumes that people are either completely rational or completely irrational. Actually, this isn't existent almost, and for individuals to completely control their behaviors without external factors is impossible. Azjen added perceived behavior and proposed theory of planned behavior (TPB). Perceived behavior refers to an individual's assessment of how easy it is to complete a behavior, which will affect purchase intention (Huang, 2017).

Based on the above both theories, Technology acceptance model (TAM) introduces perceived usefulness and perceived ease of use into theory, which was originally explain the acceptance determinants of computer. Perceived usefulness reflects the extent that someone thinking a system is used to improve performance, while perceived ease of use reflects the extent to which one considers it easy to use a particular system.

Based on the above theories and related research, this paper uses the following variables as the influencing factors of online shopping willingness.

Consumers' Personal Characteristics

Consumers' personal characteristics includes online shopping experience, the degree of self-health concern and perception of fresh agricultural products. Specifically, former includes the net age of consumers and the convenience of online shopping; the degree of self-health concern includes the form of consumers often eat and the degree of willingness to cook for themselves; perception of fresh agricultural products is knowledge and experience in the selection of fresh agricultural products.

Characteristics of Fresh Products

Characteristics of fresh products mainly includes products quality, safety and price (i.e. discount). Specifically, product quality and safety include freshness and safety certification; products price include consumer expectations for price and price discounts.

Characteristics of the Online Shopping Platform

This refers to quality of information, packaging and logistics service quality, and online shopping evaluation displayed by the platform. Specifically, the information quality includes the richness of information, the information's professionality and quality; packaging and the quality of logistics services mainly refer to the special nature of fresh agricultural products, which requires more elaborate packaging and faster delivery; online shopping evaluation includes consumer evaluation, trust and platform reputation.

Consumers Perception of Online Purchase

Consumer perception of online purchase for fresh agricultural products mainly refer to perceived ease of use, perceived usefulness, and perceived risks. Specifically, former includes perceived costs and innovation of individual; the second one includes perceived benefits and functional value; perceived risk includes perceived uncertainty.

Consumers who consider online shopping as a positive, appropriate, trend-oriented shopping method are more inclined to accept online shopping for fresh agricultural products, while consumers who oppose online shopping and think online shopping is a passive shopping method tend to refuse to adopt online purchase methods (Zou, 2011). Hence, we propose hypothesis H1.

H1. Consumers' online shopping experience has a positive impact on online shopping willingness.

Considering the situation of consumers eating out and the frequency of cooking themselves, people pay more attention to their own health, then prefer to cook by themselves and buy fresh products online (Liu, 2017). Hence proposing hypothesis H2.

H2. Consumers' own concern for health has a positive impact on online shopping willingness.

The more consumer master information of agricultural products, the more they tend to purchase online (Wang & Dai, 2017). Hence, we propose hypothesis H3.

H3. Consumers' own perception of fresh agricultural products has a positive impact on online shopping willingness.

The freshness of fresh agricultural products and safety certification mark reduce consumers' perception of risk and uncertainty in online shopping. If the quality and safety of agricultural products are high, consumers are willing to purchase fresh agricultural products online. Hence proposing hypothesis H4.

H4. The quality and safety of fresh agricultural products have a positive impact on online shopping intention.

Price (i.e. discount) affect the online shopping demand for commodities. The price of product will directly affect consumers' demand and purchase intention. The higher the price discount of fresh agricultural products, the higher the consumer's willingness to purchase (He, Han, & Li, 2014). Hence proposing hypothesis H5.

H5. The price (i.e. discount) of fresh products has a positive impact on shopping willingness.

Most fresh agricultural products belong to non-standardized products. Lack of information and information asymmetry will hinder consumer purchase fresh agricultural goods online. E-commerce sites provide professional, high quality and rich information that will help consumers making decisions. Consumers' perception of the richness of information provided by the website may be an important factor in consumers' willingness to purchase (He, Han, & Li, 2014). Hence proposing hypothesis H6.

H6. Quality of information displayed by online platform has a positive impact on willingness of online shopping.

Packaging and logistics services is import to fresh agricultural products. Good packaging will ensure fresh agricultural products be properly protected, reducing damage, loss and possible quality degradation during transport. At the same time, timely and rapid logistics services are also an important guarantee to meet the needs of consumers and ensure the quality of agricultural products. Most fresh products are difficult to preserve and transport. Consumers often require sellers to deliver goods as quickly as possible (He, Han, & Li, 2014). Hence, we propose hypothesis H7.

H7. The quality level of packaging and logistics services provided by the online shopping platform has a positive impact on the online shopping willingness.

Online consumer review reveals consumers' evaluation on the reputation of the platform and seller, has a certain impact on the potential consumer's purchase behavior (Huang, 2017). Consumers tend to shopping online when saw positive reviews. Hence, we propose hypothesis H8.

H8. Evaluation of products has a positive impact on consumer online shopping willingness.

If the desired product is easy to find on the fresh e-commerce platform, the online shopping process is easy to master. And if it is simple of return, then will promote consumers online shopping behavior (Liu, 2017). Hence proposing hypothesis H9.

H9. Perceived ease of use about online shopping has a positive impact on online shopping willingness;

If e-commerce platform enables to aid consumers make better choices and online payment is convenient, these will also have an impact on consumers' online shopping willingness (Liu, 2017). Hence, we propose hypothesis H10.

H10. Consumers' own perception of the usefulness of online shopping for fresh agricultural products has a positive impact on online shopping willingness.

Online purchases may cause economic losses. Consumers may receive damaged packages, and may need to be returned, which will affect willingness (Liu, 2017). Hence, we propose hypothesis H11.

H11. Consumers' own risk perception of online purchase for fresh agricultural products has a negative impact on online shopping willingness.

According to all hypotheses above, we proposed the framework of factors affecting the willingness to purchase fresh agricultural products as shown in Figure 1.

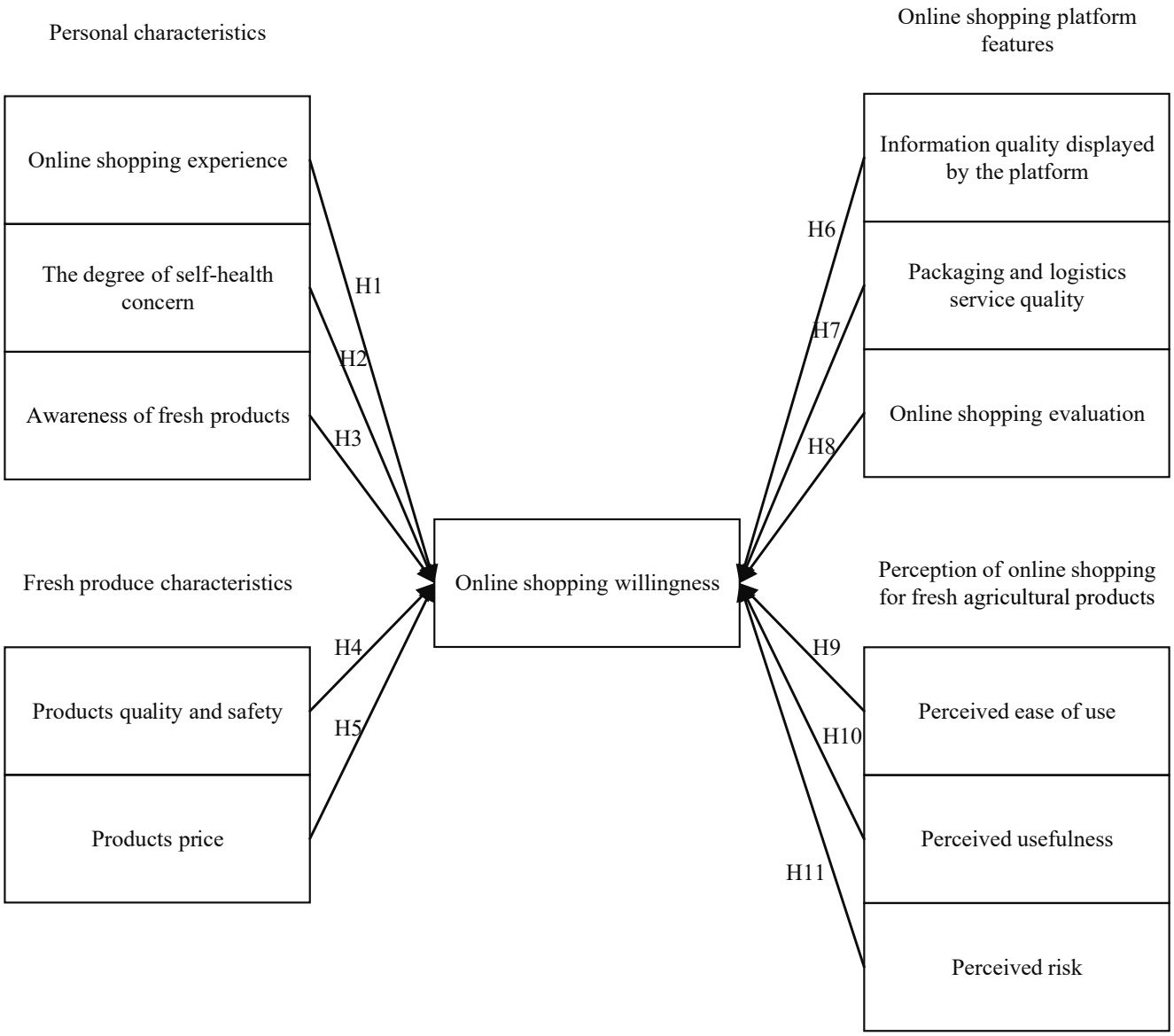

Figure 1: The Framework of Factors Affecting the Willingness to Purchase Fresh Agricultural Products.

THE DATA SOURCE

Words: "fresh products, fresh agricultural products" and "purchase, purchase intention, online shopping, online shopping willingness" were used to search related articles in the fields of title, keyword, abstract or subject words from CNKI, CQVIP, WANFAN DATA, Google Scholar Search, EBSCO, Elsevier Science Direct, PROQUEST, Web of Science. 132 relevant articles were collected.

All these articles were screened according to three standards for further investigation. (1) It must be an empirical study, and one of above paths at least is included. (2) Sample size needs to be reported. (3) It is necessary to provide either a correlation coefficient,

or a significant t value of the path, or a standard regression coefficient, or the chi-square values. The detailed screen process is shown in Figure 2:

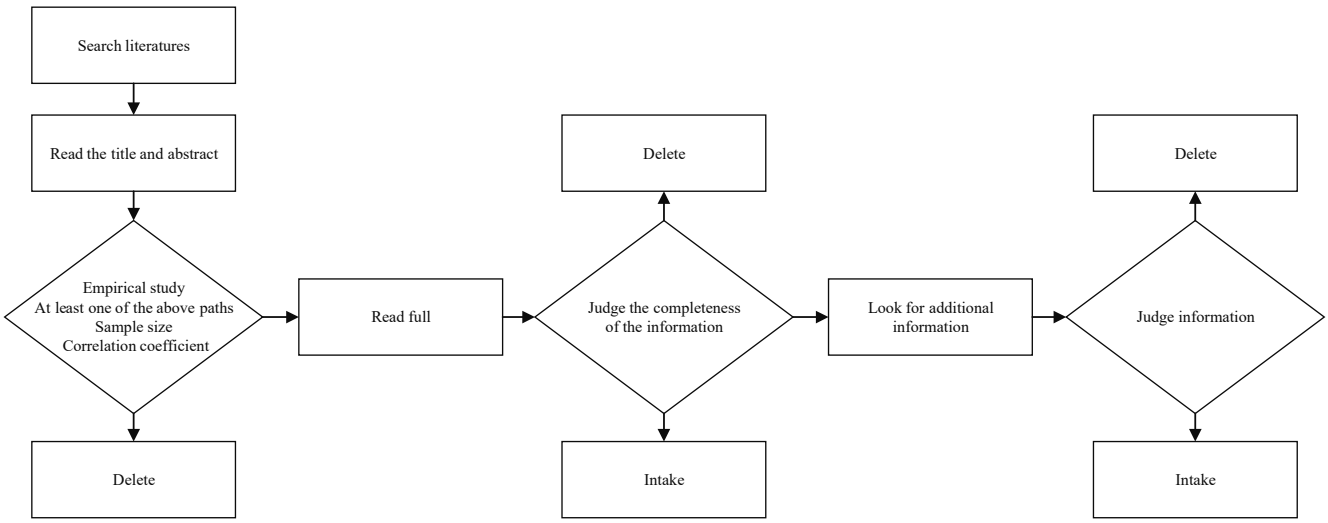

Figure 2: Screen Process.

After the screen process, 86 empirical researches were collected, of which only 37 articles were full all the three standards and finally selected for Meta-analysis. 21 articles were in Chinese while 16 articles were in English. 14 of Chinese articles were dissertations and 7 were journal articles. The empirical part of all the articles meet the statistical criteria for inclusion in the meta-analysis.

Among all the Chinese studies selected above, two studies published in 2011 and 2013, two studies published in 2014, the remaining 17 studies were published during 2015-2017. Among data surveys, 11 were reported for people with online shopping experience, 4 were for educated people, and the rest pointed out to include white-collar workers or randomly sampled samples. The minimum sample size was 155, the maximum sample size is 631, the remaining sample size is 5 in the 200-300 interval, 9 in the 301-400 interval, and 2 in the 401-500 interval. About questionnaire survey method, 7 studies use online and offline combination methods, 6 studies only use online questionnaire survey methods, 5 studies adopt field survey methods. 16 articles using a Likert scale of 5 points, the others using 7 points. Only 16 English articles were included for analysis due to more are research pay attention on organic agricultural products and green agricultural products. There are few empirical studies about online shopping intentions, so online are not emphasized, and inclusion criteria are based on purchase intention.

Article type, author, publication time, data survey objects, sample size, data source, and scale feature of each included literature are list in Table 1:

Table 1: Basic Information of Research Literature.

No.	Type	Author	Data survey object	Sample size	Data sources	Scale feature
1	Dissertation	Lin	Consumers with online shopping experience.	357	Offline and online	Likert Level 5 Scale
2	Journal	Zhang *et al.* (2015)	A group with a certain level of literacy and participation in work.	631	Offline and online	Likert Level 5 Scale
3	Journal	Zou (2011)	Younger groups with a higher level of education and a certain understanding of online shopping.	288	Offline and online	Likert Level 5 Scale
4	Journal	He *et al.*	-	413	Offline and online	Likert Level 7 Scale
5	Dissertation	Liu	20- 40 years old online shopper.	294	Questionnaire	Likert Level 7 Scale
6	Dissertation	Bai (2017)	Consumers who have experience in online shopping.	318	Questionnaire	Likert Level 5 Scale

7	Journal	Yi and Yi (2015)	WeChat use group and fresh e-commerce purchase group.	189	Offline and online	Likert Level 5 Scale
8	Journal	Wang and Dai (2017)	-	289	—	Likert Level 5 Scale
9	Dissertation	Xiao	Chengdu consumers.	313	Field research	Likert Level 5 Scale
10	Dissertation	Xie (2016)	-	212	Field research	Likert Level 5 Scale
11	Journal	Wu	-	396	Questionnaire	Likert Level 5 Scale
12	Journal	Zhu *et al.*	Consumers with online shopping experience.	329	Questionnaire	Likert Level 7 Scale
13	Dissertation	Yang	Young and middle-aged groups with a higher level of education and a deeper understanding of online shopping.	582	Field distribution	Likert Level 5 Scale
14	Dissertation	Huang (2017)	Consumers who have experience in online shopping for fresh products.	155	Field distribution	Likert Level 5 Scale
15	Dissertation	Yang	Urban white collar.	370	Questionnaire	Likert Level 5 Scale
16	Dissertation	Han	College students and professional white-collar workers between the ages of 20 to 40.	387	Questionnaire	Likert Level 5 Scale
17	Dissertation	Zhu	Consumer groups with different levels.	288	Field distribution	-
18	Dissertation	Dan	Adults with independent spending power and able to express subjective feelings and behavior intention.	488	Offline and online	Likert Level 5 Scale
19	Dissertation	Ge	Consumers who have experienced the failure of online shopping for fresh products.	186	Offline and online	Likert Level 5 Scale
20	Dissertation	Xiao	Consumers who have experienced online shopping for fresh products on the Taobao.	374	Questionnaire	Likert Level 7 Scale
21	Dissertation	Li	Fresh Platform High income white collar and college students who are about to step into society.	370	Questionnaire	Likert Level 5 Scale
22	Journal	Sabbe *et al.*	Participants during the Agriculture and Food Expo in Ghent, Belgium.	290	Questionnaire	Likert Level 7 Scale
23	Journal	Sabbe *et al.*	Groups during the Agriculture and Food Expo in Ghent, Belgium.	281	Questionnaire	Likert Level 7 Scale
24	Journal	Verbeke and Viaene	Fresh meat consumers.	303	Questionnaire	-
25	Journal	Boccaletti and Nardella	-	336	Questionnaire	-
26	Journal	Verbeke *et al.*	Belgian meat consumer families.	291	Questionnaire	-
27	Journal	Acebron *et al.*	Determining the family buying group.	180	Questionnaire	Likert Level 5 Scale
28	Journal	Fu *et al.*	Married woman.	377	Interview	Likert Level 7 Scale
29	Journal	Rezai *et al.* (2012)	People who consume in the supermarket.	1355	Questionnaire	Likert Level 7 Scale
30	Journal	Salleh *et al.* (2010)	Personnel at Teknologi Mara University, Northern Malaysia.	265	-	-
31	Journal	Guido *et al.* (2010)	Normal consumers.	207	Questionnaire	Likert Level 7

32	Journal	Gracia and Magistris	Family main food buyer.	200	Interview	Likert Level 5 Scale
33	Journal	Ahmad (2010)	Three regional supermarket consumers.	177	Questionnaire	Likert Level 5 Scale
34	Journal	Xu *et al.* (2012)	14 supermarket consumers.	386	Questionnaire	Likert Level 7 Scale
35	Journal	Magnusson *et al.* (2001)	Randomly sampled respondents between the ages of 18 and 65.	1154	Questionnaire	Likert Level 5 Scale
36	Journal	Tarkiainen and Sundqvist	Supermarket consumers.	200	Questionnaire	Likert Level 5 Scale
37	Journal	Teng and Wang (2015)	Customers of large supermarkets and three health food stores.	693	Questionnaire	-

DESCRIPTIVE ANALYSIS

Each document reports a different way of relevance, so it requires a unified transformation. If the correlation matrix or correlation coefficient is reported, the effect value is the correlation coefficient value; standard regression coefficient can be regarded as effect value for literatures using regression method; if the literature gives the significant t value of the path, effect value can base on following formula to calculate.

$$r = \sqrt{\frac{t^2}{t^2 + df}} \tag{1}$$

t is the significance t value of path, and df is degree of freedom that is obtained by using structural equation model's data points number subtracting free parameters number (Wu et al., 2017). Each path's descriptive statistics are shown in Table 2:

Table 2: Descriptive Statistics.

Path	Number of paths	Min correlation coefficient	Max	Significant	Not significant	Significant rate	Min sample	Max	Total	Average
Online shopping experience → online shopping willingness	4	0.113	0.441	4	0	1	155	294	1026	257
Degree of self-health concern →online shopping willingness	15	0.005	0.854	13	2	0.867	281	396	4696	313
Perception of fresh products →online shopping willingness	7	-0.215	0.675	4	3	0.571	180	396	2175	311
Products quality and safety →online shopping willingness	25	0.002	0.854	21	4	0.84	212	413	7738	310
Products price (i.e. discount) →online shopping willingness	8	0.081	0.731	5	3	0.625	155	413	2351	294
Information quality →online shopping willingness	9	0.053	0.357	5	4	0.556	186	413	2739	304
Packaging and logistics quality →online shopping willingness	9	0.004	0.498	3	6	0.333	155	413	2731	303
Online shopping evaluation →online shopping willingness	16	0.077	0.819	13	3	0.813	155	396	4143	259
Perceived ease of use →online shopping willingness	14	0.056	0.739	12	2	0.857	186	582	4968	355
Perceived usefulness →online shopping willingness	16	0.145	0.816	14	2	0.875	189	631	5926	370
Perceived risk →online shopping willingness	13	-0.057	-0.531	9	4	0.692	180	631	4715	363

As show in Table 2, products quality and safety in most of researches have impact on online shopping willingness, a total of 25 paths, 21 of which are significant probably 84%. Overall 16 paths of online shopping evaluation, and 13 are significant, and the

significant rate is reached 81.3%. There are 16 paths of perceived usefulness, 14 of which are significant, with a significant rate of 87.5%. There are 15 paths of the degree of self-health concern, and 13 of them are significant, with a significant rate of 86.7%. The impact of perceived ease of use has 14 paths, with a significant number of 12 and the significant rate is 85.7%. There are 13 paths of perceived risk to online shopping willingness, with a significant number of 9, a significant rate 69.2%. All paths of online shopping experience are significant; in the seven studies on the perception of fresh agricultural products, significant rate is almost equal to insignificant rate; in the nine studies of information quality displayed by the platform, insignificant rate is almost equal to significant rate. About price (i.e. discount) and perceived risk, significant rate is higher than 60%; however, significant rate of packaging and logistics quality is only 33.3% on online shopping willingness.

RELIABILITY ANALYSIS

Reliability analysis refers to consistency and stability of measurement results. It is an effective analysis method to measure comprehensive evaluation system whether has certain stability and reliability. Usually the Cronbach's Alpha coefficient is analyzed in the empirical study (Lin, 2017). Reliability measurement of each variable is shown in Table 3:

Table 3: Reliability Analysis.

Variable	Average reliability	Minimum value	Maximum value	Variance	Number of studies
Online shopping experience	0.795	0.712	0.882	0.005	6
Degree of self-health concern	0.880	0.828	0.931	0.005	2
Perception of fresh products	0.788	0.749	0.815	0.001	3
Products quality and safety	0.818	0.703	0.896	0.007	7
Products price (i.e. discount)	0.778	0.701	0.865	0.007	3
Information quality	0.779	0.656	0.865	0.005	7
Packaging and logistics Service quality	0.801	0.718	0.874	0.006	4
Online shopping evaluation	0.822	0.724	0.948	0.004	13
Perceived ease of use	0.823	0.636	0.918	0.006	12
Perceived usefulness	0.806	0.738	0.868	0.002	13
Perceived risk	0.769	0.56	0.866	0.013	7
Purchase intention	0.848	0.697	0.97	0.005	17

From table 3, reliability values about the experience of online shopping, degree of self-concern, perception of fresh products, products quality and safety, products price, information quality of platform display, packaging and logistics quality, online shopping evaluation, perceived ease of use, perceived usefulness, perceived risk, and purchase intention were 0.795, 0.880, 0.788, 0.818, 0.778, 0.779, 0.801, 0.822, 0.823, 0.806, 0.769, and 0.848, all of these are higher than 0.7. The minimum is 0.769 and the maximum is 0.880. According to the reliability coefficient comparison, it can be judged that the reliability of these variables is good and reliable, and has been widely used in the research of online shopping willingness.

CORRELATION ANALYSIS

Correlation analysis mainly contains five sections. It contains simple mean, adjusted mean, Fisher r to z conversion mean, FSN and 95% confidence interval upper and lower limits.

Specifically, simple mean is the average of effect values; the adjusted mean is the weighted average by the sample size, and the formula is:

$$r_{+} = \frac{\sum N_i r_i}{\sum N_i} \tag{2}$$

r_i refers to the value of the i th correlation coefficient, and i refers to corresponding sample size.

Usually converts statistical test values such as r values, t values, F values or chi-square values into correlation coefficient r values. When using each correlation coefficient as the effect value statistic, Fisher's conversion (Fisher's z) is required. Correlation coefficient is converted, and the transformed correlation coefficient r_z is analyzed as an effect value. The discussion below is based on r_z (Xu, Guan, & Lin, 2018).

The Fisher r to z conversion takes three steps:

(1) Converted the r value to Fisher's z value, thereby converting the distribution of correlation coefficients into a progressive positive distribution (Su *et al.*, 2017).

$$z = 0.5 * ln(\frac{1+r}{1-r}) \tag{3}$$

(2) According to sample size to determine weighted values for z (Su *et al.*, 2017):

$$z_+ = \frac{\sum N_i z_i}{\sum N_i} \tag{4}$$

(3) The conversion yields accurate and reliable effect values:

$$r_z = \frac{e^{2z_+} - 1}{e^{2z_+} + 1} \tag{5}$$

Kreamer and Andrews pointed out that when authors publish articles, they tend to report better results and some apparently established research hypotheses, if results were not supported significantly, it will be avoided by the authors and not reported in their articles (Deng, Zhang, & Zhang, 2012). This will cause deviations between published research results and other unpublished or unfinished research results, called publication bias (Deng, Zhang, & Zhang, 2012). Fail-Safe coefficient N was used to assess publication bias, and reported how many unpublished studies of invalid results needed to reduce the cumulative effect of the study to a non-significant level (Rosenthal, 1978), other studies in meta-analysis may completely change the results of the analysis. Results of meta-analysis are more stable and less likely to be overturned when the value is higher. If it is negative, the results are unstable. The publication bias is large (Zhang & Hu, 2013). Formula is as follows.

$$N_{fs.05} = (\frac{\sum z}{1.645})^2 - N \tag{6}$$

Correlation analysis of each paths, as shown in Table 4:

Table 4: Correlation Analysis.

Path	Adjust mean	Simple mean	Fisher r to z	S.D.	95% confidence interval		FSN
					Lower limit	Upper limit	
Online shopping experience →Online shopping willingness	0.196	0.225	0.200	0.135	-0.014	0.414	-3.675
Degree of self-health concern →Online shopping willingness	0.320	0.335	0.385	0.310	0.213	0.557	0.168
Perception of fresh products →Online shopping willingness	0.123	0.125	0.141	0.104	0.046	0.237	-6.617
Products quality and safety →Online shopping willingness	0.416	0.422	0.476	0.311	0.348	0.604	39.455
Products price →Online shopping willingness	0.271	0.264	0.294	0.201	0.125	0.462	-5.965
Information quality →Online shopping willingness	0.167	0.164	0.170	0.108	0.087	0.253	-8.152
Packaging and logistics service quality →online shopping willingness	0.177	0.184	0.185	0.170	0.054	0.315	-7.864
Online shopping evaluation →Online shopping willingness	0.364	0.363	0.311	0.210	0.199	0.423	-0.142
Perceived ease of use →Online shopping willingness	0.448	0.428	0.474	0.227	0.343	0.605	3.587
Perceived usefulness	0.424	0.407	0.446	0.201	0.339	0.554	4.335

→Online shopping willingness							
Perceived risk →Online shopping willingness	-0.197	-0.189	-0.203	0.134	-0.284	-0.122	-10.586

Effect size makes the sample of each study has same measure unit. Meta-analysis combines the collected effect values into a single effect value, reflecting the combined effects of multiple independent studies with a combined effect value. It represents a standardized measurement that indicates the strength and direction of the relationship between variables. This study uses the measurement of Cohen to interpret the average effect value from the weighted mean, classifying the effect values of the eleven groups into high, medium, and low and discussing them (Han, 2017). According to Cohen, when the effect value is close to 0.1, indicating the effect is small; when the effect value is around 0.3, the effect value is centered; if it reaches 0.5, indicating the effect is larger. In table 4, the results show that the three groups have medium effect values: degree of self-health concern → online shopping willingness, products price → online shopping willingness, online shopping evaluation → online shopping willingness. The effect value of the three groups of relations is high: products quality and safety → Online shopping willingness, perceived ease of use → online shopping willingness and perceived usefulness → online shopping willingness.

The correlation coefficient r_Z between products quality and safety and online shopping is 0.476. Effect value is the largest in this study. According to this, it can be judged that this group of variables is the strongest group, indicating that products quality and safety is a high positive correlation with online shopping intentions. This finding is consistent with the research results of Zhao and Gao (2016) based on the reference effect that the agricultural products quality and safety awareness will affect consumers' online shopping willingness, the higher the quality and safety level is, the more obvious the impact is on shopping willingness.

The correlation coefficient r_Z between perceived ease of use and online shopping willingness is 0.474, which is a higher effect value. This conclusion verifies the applicability of the technology acceptance model. At the same time, it also verifies the hypothesis in the theory of planned behavior, that is, consumers' evaluation of the difficulty of online shopping and the difficulty of obtaining information during online shopping will affect consumers' willingness to purchase. The correlation coefficient r_Z between perceived usefulness and online shopping willingness is 0.446, indicating that consumers' perceived usefulness is highly correlated with online shopping intentions, which is consistent with Liu (2017), that is, consumer perceived usefulness has a significant positive impact on consumers' willingness to purchase, and also with Yi and Yi (2015), that is, the perceived usefulness is directly proportional to the consumer's willingness to purchase fresh agricultural products online, which theoretically confirms the hypothesis of the technology acceptance model.

The correlation coefficient r_Z between degree of self-health concern and online shopping intention is 0.385, indicating that there is a moderate positive correlation between the degree of concern about health and the willingness to purchase online. The degree of concern here specifically refers to the eating habits of consumers and the frequency of cooking themselves; the correlation coefficient r_Z between online shopping evaluation and online shopping willingness is 0.311, which indicates that there is a moderate positive correlation between online shopping evaluation and online shopping willingness. This is related to the analysis of Zou (2011), that is, consumer online shopping perception and evaluation factors have a significant positive impact on the willingness of online shopping fresh agricultural products, and also validate the hypothesis in rational behavior theory, that is, the evaluation of the behavior of online shopping for fresh agricultural products by people around the consumer has a certain impact on consumers' willingness to purchase. If other people have higher evaluation of online shopping fresh agricultural products, then consumers' willingness to purchase will increase, and vice versa will reduce the enthusiasm of consumers to purchase fresh agricultural products online.

The correlation coefficient r_Z between products price and online shopping willingness is 0.294, explain that there is a moderate positive correlation between price (i.e. discount) and intention. This point is consistent with the research results of Wang and Dai (2017),they analysis of the influencing factors of online shopping intention of green fresh produce based on Logit model, that is, price (i.e. discount) has a significant negative impact on the willingness, and it also confirms the analysis of the willingness and influencing factors of online shopping for fresh agricultural products from the perspective of consumers from Xie (2016), the lower the price of fresh agricultural products, the stronger the consumers' willingness to purchase fresh agricultural products online.

The confidence interval of the online shopping experience variable on the online shopping will is on both sides, so it is not passed by test; the FSN value of the degree of health concern, products quality and safety, perceived ease of use and perceived usefulness is greater than zero, and the online shopping evaluation is close to zero, indicating that these variables have a greater impact on online shopping willingness. The rest of the variables did not pass the FSN test, indicating that there is a large publication bias, and

the descriptive statistics table of the combined path, found that there are only 13 literatures on the perceived risk, and the impact of perceived risk on online shopping will be significant, probably because the FSN is not passed because of too few inclusion studies, so the impact of perceived risk on online shopping will be considered significant. According to analysis, the factors affecting the online shopping intention of consumers' fresh agricultural products are obtained, as shown in Table 5:

Table 5: Factors Affecting the Willingness to Purchase Fresh Agricultural Products.

Hypothesis	Path	Support
H1	Online shopping experience → online shopping willingness	Not Support
H2	Degree of self-health concern → online shopping willingness	Support
H3	Perception of fresh products → online shopping willingness	Not Support
H4	Products quality and safety → online shopping willingness	Support
H5	Products price → online shopping willingness	Support
H6	Information quality→ online shopping willingness	Not Support
H7	Packaging and logistics service quality → online shopping willingness	Not Support
H8	Online shopping evaluation → online shopping willingness	Support
H9	Perceived ease of use → online shopping willingness	Support
H10	Perceived usefulness → online shopping willingness	Support
H11	Perceived risk → online shopping willingness	Support

RESULTS AND DISCUSSION

This paper uses the meta-analysis method to explore factors affecting consumers' willingness to purchase fresh agricultural products online. Specifically, health concern, product quality and safety, product price, online shopping evaluation, perceived ease of use, perceived usefulness, and perceived risk impact are verified. Among them, product quality and safety significantly affect consumers' willingness to purchase fresh produce online.

There are several findings were found according to the above research.

Firstly, consumers' willingness to adopt new technologies and new methods is still greatly influenced by their own feelings, that is, perceived usefulness and perceived ease of use are still useful to measure consumer behavior, so when designing a fresh agricultural products online shopping platform, you should pay attention to whether it can bring real benefits to consumers and whether it is easy to use.

Secondly, online shopping evaluation has a significant effect on consumers' online shopping intentions, that is, other consumers' experience and evaluation of online shopping fresh agricultural products will significantly affect consumers' personal online shopping willingness, that is, when consumers make behavioral decisions, the evaluation of other consumers will significantly affect their willingness. Therefore, online shopping malls of fresh agricultural products should pay attention to the display of evaluation information when they are selling, and strive to obtain positive evaluations to positively influence the consumers' willingness to purchase.

Thirdly, quality, safety and price (i.e. discount) in the characteristics of fresh agricultural products will significantly affect consumers' online shopping intentions. The quality and safety of fresh agricultural products sold online must be guaranteed. Only in this way will there be willingness to purchase, and consumers who take online shopping will think that e-commerce does not have a physical storefront, and psychologically think that the price of online shopping for fresh agricultural products should be more favorable than offline purchase, this is also one of the expectations of consumer online shopping. if the online fresh-selling agricultural products and the offline purchase price are the same as or even higher than the offline purchase, it will negatively affect the consumer's willingness to purchase, that is, the consumer has a price discount expectation on the fresh-selling agricultural products purchased online, the higher price (i.e. discount) is, the stronger online shopping willingness is.

Finally, the consumer's own concern to health significantly positively affects the willingness to purchase fresh agricultural products. Pursuit about healthy lifestyle, physical health and higher quality of life will affect consumers' healthier, green and low-purity fresh agricultural products are purchased. When displaying product information, merchants should seize the needs of this part of consumers and ensure that the product information required by this segment of the customer group is displayed.

CONCLUSION

In this paper, the current researches on the willingness of consumers to purchase fresh agricultural products online is quantitatively reviewed by meta-analysis. Specifically, the theory of reasoned action, the theory of planned behavior and the technology acceptance model are used to develop hypotheses. By collecting relevant literatures and screening according to criteria, the effect

value analysis is carried out for the included studies, and finally the comprehensive results are analyzed and summarized according to the existing standards.

The degree of self-health in the personal characteristics of consumers, the quality and safety and price (i.e. discount) in the characteristics of fresh agricultural products, online shopping evaluation in the characteristics of online shopping platform, and consumers' perceived usefulness, perceived ease of use, and perceived risk have a significant impact on online shopping.

However, there are some limitations also. Most included studies were in Chinese, few English studies involved, the research conclusion may be limited. In future, more English research can incorporate to make the conclusion more universal. Only 37 articles were included because of the rigorous screening of the research content. These constraints reduced the number of relevant studies that can be included. In the future, a variety of methods can be used to convert effect values to increase the number of studies that can be included and lead to more scientific conclusions.

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