Study on the Influencing Factors of the Improved Expectation Model for Delivery Platform Users in the Post-Epidemic Era

Li Han, Krirk University, Email: 4300113@qq.com and Han-Hsing-Yu, Krirk University, Email: 3510034220@qq.com

Abstract: A food delivery platform is a combined online and offline business model that has emerged in recent years. To determine whether the influencing factors of consumer satisfaction with foreign sales changed after COVID-19,401 questionnaires were collected via empirical research. Using quantitative statistics and modeling analysis, financial literacy is added to the expectation confirmation model to build a structural equation model. External structural variables of financial literacy were constructed and the confirmatory factor analysis and path analysis were applied to test their impact on consumer expectation confirmation, satisfaction, and continuous use. The results showed that: (1) financial literacy has significant positive effects on continuous use and financial literacy on expectation recognition. User expectation confirmation of use by the external sales platform positively affects user satisfaction. User satisfaction with the use of the external sales platform significantly positively affects users' willingness to continue to use it. (2) Financial literacy has a significant negative impact on perceptual risk. The negative perceptual risk of users using external sales platforms significantly affects the user's willingness to continuous use.

Keywords: epidemic situation; expectation model; financial literacy; structural equation modelling

1. Introduction

In recent years, with the development of China's mobile network technology, the maturity of consumer electronics products, the continuous improvement of residents' income level, the acceleration of life pace and the change of consumption habits, the use of online home deliveries (‘takeouts’) has become essential. In addition, with the change in food concepts, the pursuit of online takeout users' food quality has improved year by year, which has promoted a further increase in the consumption amount and become a focus of attention in the online consumption market. In particular, with the COVID-19 outbreak in 2020, customers' consumption demand for online takeouts is basically the same as in-room food, mainly as a result of health, nutrition, health, speed and other aspects. The online takeout business is actually an extension of food and food service through online ordering and logistics distribution.

Current studies on the consumers of takeout platforms focus on satisfaction and continuous use, and little attention is paid to the impact of financial literacy and perceived risk on consumers' continuous use. This study is based on existing research results at home and abroad, in turn based on an expectation confirmation model (ECM), combined with the influence of financial literacy, perception behaviour using information systems, the online delivery platform of users' willingness to use theory model, and through extensive data investigation to study domestic users concerning their willingness to use online delivery platforms.

2. Literature Review

2.1. Theoretical Basis

The user adoption theory mainly includes the technical acceptance model (TAM), the theory of planning behaviour (TPB), technical acceptance, and the use of the unified theory of acceptance and use of technology (UTAUT), as well as the innovative diffusion theory and others. These theories can not only explain the adoption behaviour of users but, also, be applied by the majority of scholars to explain the willingness of the continuous use of information system.

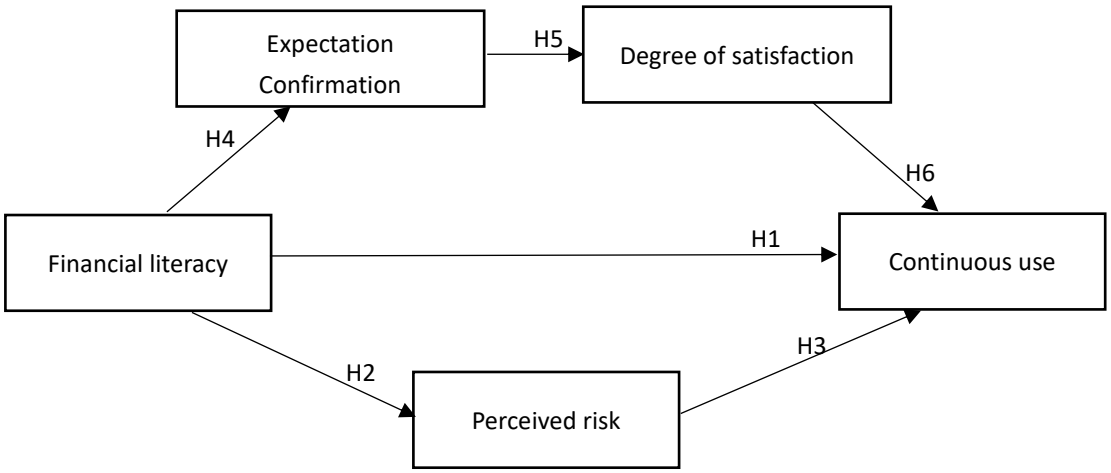
In 1980, Oliver proposed the expectancy disconfirmation theory (EDT), in which users have certain expectations for products or services before purchasing them and after actually using them. The difference between user perceived performance and expectation is expectation disconfirmation. The theory of expected confirmation (ECT) is developed based on the theory of expected disconfirmation, which provides an important basis for the study of continuous user use. Bhattacherjee (2001) for the first time defined the concept of the continuous use of information systems and constructed an information system expectation confirmation model (ECM-IT), which is based on ECT. In Bhattacherjee's (2001) ECM-IT, the user's ongoing willingness to use it is the core dependent variable. Satisfaction and perceived usefulness positively affect user willingness to use, and perceived usefulness and expectation confirmation have a positive effect on satisfaction. Based on these theories and models, scholars have conducted a large number of discussions on the influencing factors of online consumers' repeated purchase behaviour intentions, involving areas such as takeaway mobile terminals, search engine mobile terminals, online medical and health platforms and knowledge sharing platforms.

Cox (1967) suggested that consumers' perceptual risk is influenced by financial or psychosocial psychology, while other scholars advocate measuring perceptual risk in multiple dimensions, Roselius (1971), for example, notes that factors such as time, self-esteem, danger and money may cause changes to consumer purchasing behaviour. Jacoby and Kaplan (1972) divided perceptual risk into five types: financial, physical, performance, psychological and social risk, and proved that the five factors divided explained the degree of perceptual risk of 74%. Bettman (1973) divided the perceptual risk into inherent risks and manageable risks, namely the risks inherent in the consumer choosing the product itself and the extent to which consumers can detect or predict the risk of the product when they choose a certain product. Park *et al*. (2019) empirically tested the negative correlation between perceived risk, trust and consumers' intention to use mobile payment. Lusardi and Mitchell (2008) divided financial knowledge into advanced financial knowledge and basic financial knowledge: advanced financial knowledge includes risk remuneration relationship, the difference between stocks and bonds, the concept of asset pricing and the operation of mutual funds; basic financial knowledge includes simple economic concepts such as the difference of substantive value and name value of compound interest, and the basic concepts of inflation and risk dispersion. Huston (2010) believed that financial literacy is the ability to avoid making wrong financial decisions.

To sum up, previous studies have paid little attention to the impact of financial literacy and perceived risk on satisfaction when added to the expectation model. After reviewing the literature, it is found that financial literacy has a certain impact on risk preference and consumption, and perceived usefulness in the expectation confirmation model may no longer be applicable to the context of this study, so

perceived risk is used to replace perceived usefulness. Financial literacy is also added to this model to extend the expectation confirmation model. Therefore, the theoretical model of this paper is shown in Figure 1.

Figure 1: *Theoretical model*



2.2. Research Hypotheses

Huston (2010) believed that financial literacy can significantly promote the improvement of personal finance, learning, life satisfaction and sustainable use. Wangenheim and Bayon (2004) found that consumer trust in online retailers is significantly and positively influenced by online knowledge. The following hypothesis are made based on this:

H1: Financial literacy has a significant positive impact on continuous use.

Slovic (2010) pointed out that when individuals have rich and correct financial knowledge or have collected comprehensive and accurate financial product information, the ability to grasp the products is relatively strong, and the level of risk perception is also relatively low. Sachse, Jungermann and Belting (2012) found that lower financial literacy levels would lead to higher levels of risk perception. The following hypothesis is made based on this:

H2: Financial literacy has a significant negative impact on perceptual risk.

The perceptual risk and willingness to buy in online shopping, that is, when the perceptual risk is higher, the willingness to buy will be relatively low. Garretson and Clow (1999) point out that consumers in the process of buying products, will perceive a variety of different risks, and when these perceptual risks are too high, it will hinder consumers 'willingness to buy, so the perceptual risk will directly affect the consumer's willingness to buy in the decision-making process. Erevelles, Roy and Yip (2001) pointed out that when the perceptual risk is higher, then consumers will be anxious about the result of the purchase and will reduce their willingness to buy. Consequently, it is inevitable for consumers in the purchase decision-making process that when the perceived risk is higher, then it is more likely that the willingness to purchase will be reduced. The following hypothesis reflects this:

H3: The negative perceptual risk of users using external sales platforms significantly affects the user's willingness to continuously use it.

Consumers' financial literacy plays an important role in the process of consumption. An improvement in financial literacy can effectively reduce the generation of risk. From the two major aspects, on the one hand, the professional quality of professional knowledge construction, on the other hand, the non-professional quality, are continuously accumulated and cultivated in long-term practice. Consumers with high financial literacy have higher expectations during their shopping experience. This is the basis of the following hypothesis:

H4: Financial literacy has a significant positive impact on expectation recognition.

Many studies have confirmed the impact of expectation confirmation on perceived value. Swan and Combs (1967) believed that product utility includes operational and expressive utility, and that consumers are satisfied when the utility of a certain product or service is greater than or equal to consumer expectations. Jones and Sasser (1995) argued that businesses should, in order to maintain customer satisfaction with goods or services, provide good perceived value. This leads to the following hypothesis:

H5: User expectation confirmation of the use of the external sales platform positively affects user satisfaction.

Parasuraman, Lee and Lin (2005) confirmed that user satisfaction had a significant positive effect on user re-behaviour intention. Kim, Mirusmonov and Lee (2010) studied consumer repurchases based on the continuous willingness to use the model, and showed that satisfaction affects the continuous willingness to use it. From this, the following hypothesis is posited:

H6: User satisfaction with the use of the external sales platform significantly and positively affects the users' willingness to continue to use it.

3. Methodology

3.1. Data source description

In this study, a total of 491 Chinese questionnaires were randomly distributed in China from September to November 2020. After removing invalid questionnaires, 401 valid questionnaires were obtained with an effective response rate of 81.7%. Among the 401 valid samples recovered in this study, 61 were males, accounting for 14.4%, and 340 were females, accounting for 85.6%. 38.4% of the sample spent 3-6 hours online on average every day. The frequency of using takeout food APP five times or less per month was 80.6%. The average consumption amount of 0~50 yuan per time using takeout food APP 86.5%. The descriptive statistics of basic information are shown in Table1.

Table 1: *Descriptive statistics of the basic information*

Feature name	Classify	Quantity	Proportion
Gender	Male	61	15.21%
	Female	340	84.79%
Average internet time per day	Less than 1 hour	28	6.99%
	1-3 hours	106	26.43%
	3-6 hours	154	38.4%
	6-10 hours	86	21.45%
	More than 10 hours	27	6.73%
How often do you use takeout food apps per month	Less than 5 times (inclusive)	323	80.55%
	5-10 times	60	14.96%
	10 to 20 times	6	1.5%
	More than 21 times	12	3%
The average amount of money spent each time using takeout food apps	Below ￥50	347	86.53%
	￥51-100	49	12.22%
	￥101-200	5	1.25%
	Above ￥201	0	0

3.2. Measurement of the Variables

First, drawing on relevant literature at home and abroad, a questionnaire was designed including variables such as measuring financial literacy, perceptual risk, expectation confirmation, satisfaction and continuous use. It used the standards and frameworks of the self-designed metrics scale. The first draft of the questionnaire was modified by various experts and professors who were consulted for their help. Third, questionnaire survey training and pre-survey were carried out for the respondents. Finally, the questionnaire was converted into its final form. In this paper, the independent variable is the continuous use of takeout APP, and the dependent variables are financial literacy, perceptual risk, expectation confirmation, and satisfaction. According to the measurement scale developed by scholars at home and abroad, this paper adopts the current mainstream paradigm Likert quintile scale method. Specifically, it is necessary to design the answers to each measurement item from negative to positive tendency to "1" representative completely disagree; "2" representative slightly disagree; "3" represents neither agree nor disagree; "4" representative somewhat agree; and "5" representative fully agree.

In the formal questionnaire formed after the revised scale, the revised financial literacy scale includes 2 variables and 10 items, the perceptual risk scale includes 5 variables and 15 items, the expected confirmation scale includes 3 items, the satisfaction scale includes 5 items, the continuous use scale includes 5 items, and the final questionnaire totalled 38 items (38 observation indicators). The reference basis for each variable scale is shown in Table 2:

Table 2: *Design of the Study Measure Scale*

Measurement variables	No.	Measure the item	Source
Financial Literacy (F1)	FL.A	1. I understand the difference in single interest and compound interest; 2. I understand the impact of exchange rates and interest rates on foreign currency deposits; 3. I understand the impact of inflation on pensions;	Lusardi (2008)
	FL.B	1. I understand the difference between stocks, bonds, and mutual funds; 2. I know my current different social insurance status, and can explain its content; 3. I understand the amount of pension for my current social insurance status; 4. I know about different types of insurance, such as life insurance, property insurance, annuity insurance, social insurance; 5. I know what the substitution rate gets; 6. I understand the impact of the obtained substitution rate on retirement pension; 7. I understand what is disposable and illustrate its content.	
Perceived risk (F2)	PR.A	1. financial risk of stealing a bank card password if paid online via a takeaway food APP; 2.If you pay online through the takeaway food APP, the food may not be delivered without a refund; 3.you may buy cost-effective food on the takeaway food APP line, damaging the property.	Murry and Schlacter (1990)
	PR.B	1.If there is a loses through takeaway food APP, it will have psychological pressure; 2.The food buys through the takeaway food APP is not suitable or problematic, and communicating with the store will make yourself upset; 3.The food purchased on site is not suitable or has problems and makes irritable when communicating with the store.	
	PR.C	1. The takeaway food APP purchased food, possible quality or lack of service; 2. The takeaway food APP bought food, may not be up to what I expected;	

Measurement variables	No.	Item	Source
		3.When experiences the actual store and may be inconsistent with the appearance, function, or service introduced by the takeaway food APP.	
	PR.D	1. uses takeaway food APP and people I respect may think it is just unwise; 2. The use of takeaway food APP may not be recognized by relatives and friends; 3.The use of the takeaway food APP may affect my image among the people around me.	
	PR.E	1.The use of takeaway food APP may waste a lot of time and energy; 2. If the food purchased in the takeaway food APP is not appropriate, the online communication and return time is long; 3. After the takeaway food APP is ordered, the arrival time takes a long wait.	
Expectation Confirmation (F3)	EC1	1.My experience with using the takeaway food APP was better than originally expected;	Bhattacherjee (2001)
	EC2	2.The takeout food APP provides better services and functions than I had originally expected;	
	EC3	3.Overall, I think the takeaway food APP is used in line with my original expectations.	
Degree of satisfaction (F4)	Sf3	1. The takeaway food APP won't lose the food I buy;	Bhattacherjee (2001)
	Sf4	2. The takeaway food APP will accurately deliver the food I bought to my hands completely;	
	Sf5	3. The takeaway food APP will keep the food packaging intact;	
	Sf6	4. The takeaway food APP, the receipt of food procedures are very standard;	
	Sf7	5.The takeaway food APP, won't break the food I buy.	
Continuous use (F5)	CU1	1. I intend to continue using the takeaway food APP in the future;	Bhattacherjee (2001)
	CU2	2. I will always try to use the takeaway food APP;	
	CU3	3. whenever I have the chance, I will use the takeaway food APP;	
	CU4	4. I highly recommend that others use the takeaway food APP;	
	CU5	5. I intend to increase the use of marketed food APP in the future.	

Source: This study collation

4. Findings

4.1. Measurement Model Test

To ensure the reliability and validity of the study conclusions, the reliability and validity of the measurement model were tested beforehand to ensure that the structural model has practical significance. Reliability tests are generally standard by clonal Bach coefficient (Cronbach α) and combinatorial reliability. Cronbach α is an important reference indicator to test the intrinsic consistency of scales or constructs. When the value is 0.70 or higher, it indicates high reliability; 0.35 <0.70, it is OK; α<0.35 is low reliability. Combinatorial reliability is the judgment criterion for the intrinsic quality of the model. If the combined reliability of the potential variable is greater than 0.6, then the good internal consistency of the potential variable indicates the intrinsic quality of the measurement model. From Table 3, the Cronbach α coefficient of the latent variables in the measured models is more than 0.7, and the combined reliability is more than 0.6, indicating that the overall reliability of the measured model is good and there is high internal consistency of the measured data.

Table 3: *Reliability test*

Latent variable	Number of questions	Cronbach α	Average variance value (AVE)	Combination reliability
Financial literacy	10	0.936	0.571	0.929
Risk of perception	15	0.828	0.554	0.948
Expect confirmation	3	0.903	0.589	0.811
degree of satisfaction	5	0.918	0.706	0.923
Continue to use	5	0.824	0.571	0.869

Table 4: *KMO and Bartlett test*

KMO	Approximate chi-square	Degrees of freedom	Significance
0.868	9393.791	703	0.000

In terms of the validity test, the value of KMO seen from Table 4 is 0.868, somewhere between 0.7 and 0.9, indicating that the scale in this questionnaire is suitable for factor analysis. The Bartlett test results indicate a chi square value of 9392.791, which is a large value, proving that the corresponding P value (0.000) <0.001, so the analysis may be considered reliable.

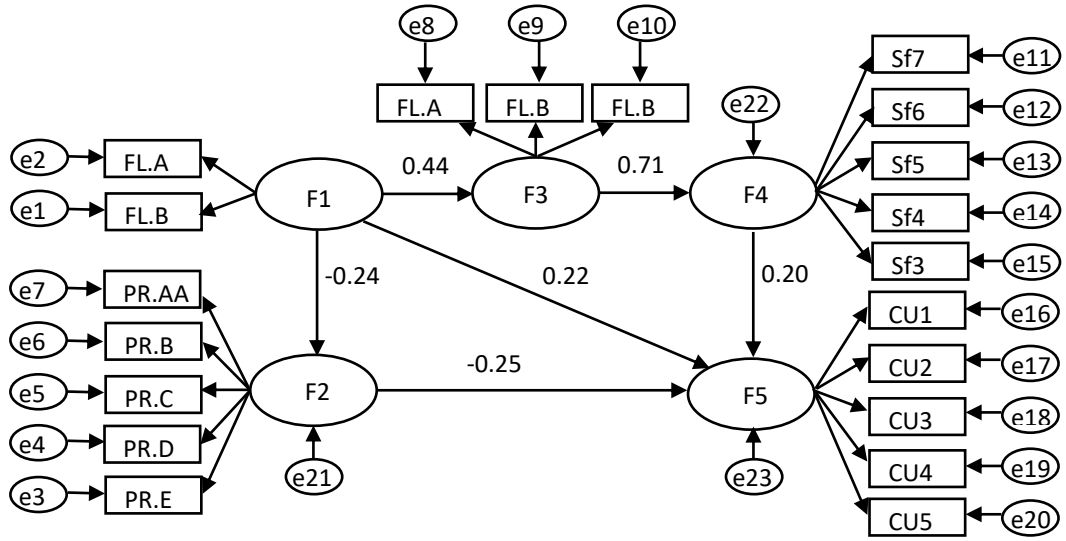
4.2. Structural Equation Model

The structural equation model (SEM) has certain requirements for the number of samples. There are a total of 38 items in the report questionnaire, the number of effective samples reached 401 and the sample size should be 10 times the scale items to meet the sample size requirements.

AMOS software was used to map the SEM, as shown in Figure 2 below. The overall model involves

the aforementioned five latent variables: the latent variable F1 is financial literacy, as determined by FL.A and FL.B determined; latent variable F2 is perceptual risk, determined by PR.A-PR.E determination; latent variable F3 is expected confirmation, determined by EC1-EC3; latent variable F4 is satisfaction, determined by SF3-SF7, and latent variable F5 is continuous use and determined by CU1-CU5.There were 20 observed variables with 24 residual items.

Figure 2: *SEM Diagram*



After constructing the SEM, the degree of fit of the model was computed. The degree of fit represents evaluation indicators for multiple dimensions. This paper uses the evaluation indicators generally recognized by the academic community for this analysis. The name, standard value range of each evaluation index and the actual index measurement results after importing the questionnaire data of this model are shown in Table 5 below.

Table 5: *Model Fitting Results*

Index name	Significance level	Measurement	Accept?
The ratio of chi-square and degrees of freedom（CMIN/DF）	<3	1.823	accept
Approximate error mean square （RMESA）	<0.08	0.045	accept
Parsimony-based goodness-of-fit index（PGFI）	>0.5	0.727	accept
The goodness index was fitted （GFI）	Between 0.7-1, the greater the value, the better the fit effect	0.931	accept
Model comparison fitness （CFI）	Between 0.7-1, the greater the value, the better the fit effect	0.966	accept
Non-norm fitting exponents （NFI）	Between 0.7-1, the greater the value, the better the fit effect	0.928	accept
Incremental fitness index （IFI）	Between 0.7-1, the greater the value, the better the fit effect	0.966	accept

According to the data of the model shown above, in the indicators of the initial model, all the indicators meet the standard, and the value of PGFI, CFI, NFI, IFI is above 0.9, and the fitting effect is good.

4.2.4. Hypothesis Testing

After confirming that the model suitability is good, the initial hypothesis needs to be verified by path analysis. Pathway analysis can fit the multiple linear regression according to the pre-plotted variable path map, which can directly reflect the direct and indirect links between the variables. Corresponding conclusions were drawn by judging whether the positive and negative initial assumptions of the linear regression coefficient and the significance test. The significance test results for path analysis and its coefficients are shown in Table 6.

Table 6: *Model Diagram of the structural equations*

	Estimate	S.E.	C.R.	P	Result
$F_3 \leftarrow F_1$	0.439	0.08	5.452	***	Accepted
$F_2 \leftarrow F_1$	-0.242	0.044	-5.497	***	Accepted
$F_4 \leftarrow F_3$	0.709	0.053	13.332	***	Accepted
$F_5 \leftarrow F_4$	0.197	0.034	5.842	***	Accepted
$F_5 \leftarrow F_1$	0.224	0.056	4.008	***	Accepted
$F_5 \leftarrow F_2$	-0.245	0.081	-3.018	0.003	Accepted

The path coefficients for financial literacy and perception risk, expectation confirmation and continuous use were -0.24, 0.44 and 0.22, respectively. The results were significant, indicating that financial literacy has a reverse impact on perception risk, while positive impact expectation confirmation and continuous use, that is, hypotheses 1,2, and 4 are accepted.

The path coefficient between perceptual risk and continuous use was -0.25 and the results were significant, indicating the inverse relationship between perceptual risk and continuous use, namely that people with high perceptual risk had poor continuous use. Consequently, hypothesis 3 was accepted.

The path coefficient between expectation confirmation and satisfaction was 0.71, and the validation results were significant, indicating that the positive relationship between expectation confirmation and satisfaction; consequently, hypothesis 5 is accepted.

The path coefficient between satisfaction and continuous use was 0.2, and the results were also significant, varying equally between satisfaction and continuous use, indicating that hypothesis 6 could be accepted.

The results of the hypothesis relationship of financial literacy in the expectation confirmation model show that the continuous use willingness mechanism relationship involved in the expectation confirmation model has been verified, that is, the continuous use of financial literacy, the recognition of expectation, and the positive impact of expectation recognition on user satisfaction. The negative impact of financial literacy on perceptual risk and perceptual risk on continuous use is significant.

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