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Chinese Consumers' Purchase Intention of Eco–Labeled Fish –Based on a Survey to Consumers in Beijing

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Since environmental certification system on fish products is widely adopted by countries and international organizations, this paper makes an empirical analysis on Chinese consumers' purchase intention of Eco–Labeled fish. A comprehensive model integrating utility theory and TPB is constructed, and ordered logit model is estimated with data collected from a survey consisting of 386 samples. Results show that Chinese consumers have an overall high intention of purchasing Eco–Labeled fish. Both economic factors and psychological factors significantly affect consumers' intention, which implies the comprehensive model has a better explanatory power. Negative affection of price, combined with positive affection of budget is confirmed, indicating that Eco–Labeled fish is normal good with a downward sloping demand curve. Among psychological factors, perceived behavioral control is verified to have the greatest impact on consumers' intention. Several implications with respect to public policy are thus pointed out.

Key words: consumer behavior, eco–labeled fish, purchase intention, TPB, utility

INTRODUCTION

The sustainable development of fishery industry has been a major concern in recent years since fishery resources drastically deteriorates from overfishing and environmental pollution. China's fishery resources stepped into degenerating stage since the 1970s, and the problems of predatory fishing and water pollution continue to exist (Wang *et al*., 2006; Xu & Li, 2008).

In order to regulate fishery production, many countries and international organizations have taken several kinds of measures, one of which is to certificate fisheries and label fish products up to environmental standard[1]. By encouraging consumers to buy such Eco–Labeled fish, suppliers will thus be inclined to choose the way of sustainable fishing. Some countries even make the certification an indispensible condition of fish imports[2].

China is both a big consumer and a big exporter of fish products. Establishing the certification institution of eco–labeling on fish products not only is a valid measure to promote the sustainable development of domestic fishery and to ensure the steady and continuous growth of fish export, but also fits in with the general trend of global fishery regulation. So will Chinese consumers be agreeable to buy the Eco–Labeled fish? Consumers' purchase intention must be well estimated before such Eco–Labeled fish products are brought into markets.

Study of consumer purchase intention has long been a research focus, since it directly explains consumers' choice of consumption. In economics, consumers' decision is a process of utility–maximizing with the constraint of budget, so price and budget are key factors that determines consumers' demand (Baker, 1999; Cicia *et al*., 2002; Cranfield & Magnusson, 2003). In social psychology, some subjective and perceptive factors like attitude, perceived risk and perceived value all play important parts in consumers' purchase intention (Cook *et al*., 2002; Tarkiainen & Sundqvist, 2005). Interdisciplinary studies of consumer behavior is turning into a popular research direction. For instance, Mazzocchi *et al*.(2008) integrated a framework including both economic factors and perceptive factors to analyze consumers' purchase of chicken in the avian flu age.

Previous research with respect to consumers' purchase behavior of labeled food is mainly concentrated in the field of food safety. Empirical researches always take green food, organic food and other relevant certificated food as research objective (Harris *et al*., 2000; Zeng *et al*., 2007; de Magistris & Gracia, 2008). Analysis of Eco–Labeled fish, however, is not exactly the same with that of food safety certification. Although environmental protection and food safety are both public goods, environmental and resource protection is relatively more faraway from consumers' daily life. The impact of resource protection on consumers' life is underlying and not as conspicuous as that of food safety. So consumers' purchase intention of Eco–Labeled fish may be different from that of food safety certification.

The purpose of this paper is to explore whether and to what extent Chinese consumers are willing to buy Eco–Labeled fish products. The remainder of the paper is organized as follows. In next section we lay out a basic framework of consumers' purchase intention. Section 3 introduces the questionnaire design and specifies the econometrical methodology. Section 4 describes the data

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and sample characteristics. Section 5 discusses the estimation results and section 6 provides a brief conclusion.

CONCEPTUAL FRAMEWORK

We are trying to build a comprehensive model including the theory both in economics and social psychology. According to utility theory, consumers' Marshallian demand function of Eco–Labeled fish can be written as, $X = X(p, M, S)$ in which p denotes price, M denotes budget, and S denotes consumer preference which contains consumer characteristics. Since Eco–Labeled fish is not yet on shelf, the price here is a perceptive one compared with that of ordinary fish products. We assume that consumers' total food budget will not change with the arrival of Eco–Labeled fish, thus M denotes the existing food budget, not the perceptive budget. The preference S here not only contains consumers' preference on fish products, but also contains consumers' preference on environmental protection.

A variety of theories on consumer behavior have been put forward in psychology and sociology, in which Theory of Planned Behavior (TPB) originated by Ajzen (1991) is a most successful tool to understand how consumers' buying decisions are formed. The TPB framework defines human action as a combination of three dimensions, behavioral beliefs, normative beliefs, and control beliefs. Behavioral beliefs produce either a positive or a negative attitude towards behavior; normative beliefs refer to subjective norms or perceived social forces; and control beliefs lead to perceived behavioral control. All these produce intentions to behave (Ajzen, 2002), a pre–determinant of behavior.

To a certain extent, both utility in economics and intention in psychology reflect consumers' subjective will of behavior performance. The essence of the two concepts are homogeneous, so that there is possibility of integrating the two theories. A comprehensive framework based on both utility theory and TPB can be described as Figure 1.

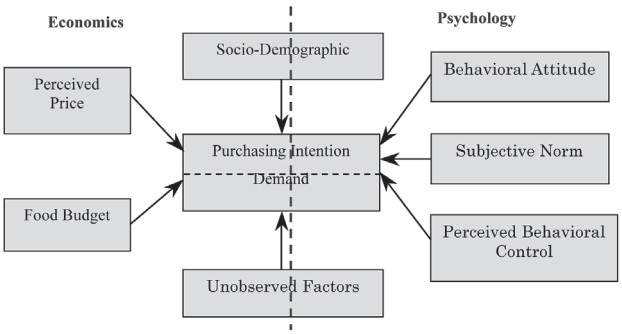

Fig. 1. A Framework to Analyze Consumers' Purchase Intention of Eco–Labeled Fish.

The left side in Figure 1 represents economic factors that influence consumers' demand of Eco–Labeled fish. Compared with ordinary fish products, a consumer will pay a premium which equals to his willingness to pay for the Eco–Label, a symbol of higher level of both environmental standard and food safety. So if one perceives a higher premium than his WTP, he will not buy or buy less Eco–Labeled fish. Hence, related hypothesis is that:

H1. Higher perceived price leads to lower purchase intention of Eco–Labeled fish products.

We postulate that Eco–Labeled fish is not Giffen good or inferior good. Because of the positive income effects, it is hypothesized that:

H2. Food budget positively influences purchase intention of Eco–Labeled fish products.

The right side in Figure 1 is the TPB framework. Attitude toward the behavior is defined as the individual's positive or negative feelings about purchasing Eco–Labeled fish. Subjective norm is defined as an individual's perception of whether people important to the individual think he should buy Eco–Labeled fish. And Perceived behavioral control is defined as one's perception of the difficulty of buying Eco–Labeled fish. As Ajzen (1991) claimed,

"As a general rule, the more favorable the attitude and subjective norm with respect to a behavior, and the greater the perceived behavioral control, the stronger should be an individual's intention to perform the behavior under consideration. The relative importance of attitude, subjective norm, and perceived behavioral control in the prediction of intention is expected to vary across behaviors and situations."

Suppose the behavior of buying Eco–Labeled fish is consistent with the general behavioral determination and applies to the general rule. Thus, it is empirically hypothesized that:

H3. Positive attitudes towards buying Eco–Labeled fish positively influences intention to buy them.

H4: Favorable subjective norms positively influences consumers' intention to buy Eco–Labeled fish.

H5: Stronger perceived behavioral control positively influences consumers' intention to buy Eco–Labeled fish.

METHODOLOGY

Measures of Variables

As mentioned above, all economic and psychological factors except food budget in Figure1 are consumers' perceptive judgments. In regard to food budget, some close–ended questions with several options are

[1] One associated certification is MSC's fishery certification and seafood eco–labeling system to support sustainable fishing. For more details, see http://www.msc.org/.

[2] For example, Canada, Australia and European Union respectively specified plans to prevent, deter, and eliminate illegal, unreported, and unregulated (IUU) fishing initiated by FAO in 2001.

used respectively to observe consumers' average monthly net income and expenditure on food and fish products. As for other factors, we use 7–point Likert scaling procedure to obtain a consumer's subjective evaluation. Every factor is measured by several items with semantic differences. For example, in order to obtain a consumer's perceived price, five statements, one of which is "*The price of Eco–Labeled fish will be much higher than that of ordinary fish*." are separately estimated by a respondent that to what extent he agree or do not agree the statement.

Following the TACT (Target, Action, Context, and Time) principle raised by Ajzen (2002), the behavior is defined at first as "Purchasing Eco–Labeled fish at least one time in the forthcoming month." with the presupposition that Eco–Labeled fish will be available since next month. Behavioral intention is thus separately measured by asking consumers to react to some statements based on this definition.

Unlike the direct measurement of behavioral intention, every item of attitude, subjective norm and perceived behavioral control reflects a belief which is weighted by the relative importance of the belief. For example, one normative belief is "*My family will be approval of my purchasing Eco–Labeled fish next month*." and the corresponding weight is "*My family's approval of my purchasing behavior is always important to me*." Then both of the two statements are recorded on a 7–point *approval–disapproval* scale.

Specifically in this research, behavioral attitude is divided into two dimensions, attitude towards eating fish and attitude towards environmental and resource protection. Thus we can compare which behavioral belief is more important on the determination of consumers' purchase intention of Eco–Labeled fish.

In the final questionnaire, all the items assessing different factors are separated and presented in a non-systematic order.

Econometrical Specification

SEM (Structural Equation Model) and DCM (Discrete Choice Model) are two major methods used extensively to analyze consumers' behavior. When multicollinearity or endogeneity from reciprocal causation problem is relatively serious in the model, SEM prevails because of the convenience to add or delete testable relationships between latent variables (de Magistris & Gracia, 2008). However, marginal effects on consumers' purchase intention to any extent is exactly the same from the assumption of linearity in SEM, which doesn't always conform to the actual condition. Considering the changing marginal effects among different intentions, DCM is adopted in this paper.

Let the utility that consumer i obtains from choosing the behavior intention be specified as

$$U_i = x_i\beta + \varepsilon_i \tag{1}$$

Where, x_i is the observed vector including consumer i's economic, psychological and demographic factors, β is the corresponding parameter vector. the unobserved factor ε_i is considered random and follows the distribution $F(\varepsilon_i)$ (and the associated probability density function $f(\varepsilon_i)$). As mentioned above, purchase intention is measured by a 7–point descriptors: *extremely quite slightly neither slightly quite and extremely*. Thus, consider the ordered choice model.

Define eight threshold parameters, $k = \{k_0, k_1, \mathrm{L}\, k_7\}$, where the elements in k follow a strict order ($k_j < k_{j+1}$, $\forall j = 1,2\mathrm{L}\ 7$), $k_0 = -\infty$ and $k_7 = \infty$ Hence, when $k_{j-1} < U_i < k_j$, consumer i will choose the intention j. For the observed J, the probability of $J = j$ is then

$$\begin{aligned} P(J = j \mid x,\ \beta, k) &= \int_{k_{j-1}}^{k_j} f(U_i \mid x_i\beta)\, dU_i \\ &= F(k_j - x_i\beta) - F(k_{j-1} - x_i\beta) \end{aligned} \tag{2}$$

The marginal effect of x on intention j is then

$$\frac{\partial P(J = j \mid x,\ \beta, k)}{\partial x} = -\beta[f(k_j - x_i\beta) - f(k_{j-1} - x_i\beta)] \tag{3}$$

The equation above implies that the marginal effect, even of a same factor, changes with the levels of purchase intention. Further, the marginal effect has a same sign with the coefficient β at a higher level of intention, and they display an opposite sign at a lower level of intention.

We adopt the means of MLE (maximum likelihood estimation) to estimate the parameter, the log–likelihood is

$$\ln L(\beta, k \mid x, J) = \sum_{j=1}^{7}\sum_{i=1}^{N} \ln[F(k_j - x_i\beta) - F(k_{j-1} - x_i\beta)] \tag{4}$$

Specify $F(\varepsilon_i) = \exp(-e^{-\varepsilon_i})$, thus the model defined above is standard ordered logit model.

DATA COLLECTION AND DESCRIPTION

Sample Description

Data used in this paper were drawn from a survey administered in Nov. 2009 among consumers in Beijing. A sample of 386 consumers was drawn randomly from people approaching or departing from large, median and small–sized supermarkets distributed in seven administrative areas in Beijing. Before the formal investigation, a trial survey consisting of 40 consumers was conducted in advance to elicit consumers' salient beliefs and adjust the questionnaire.

Special attention was paid to making the hypothetical scenario relevant and credible over the formal investigation. Prior to answering the questions with respect to Eco–Labeled fish, respondents were provided with a brief description of Eco–Labeling certification system and its effect on fishery resources conservation and environmental protection. Following the description, consumers were asked their intention and beliefs of purchasing the Eco–Labeled fish products.

The questionnaire also captured personal data including age, gender, income, job, and educational levels, as well as the data about the present consumption of

ordinary fish products. A description of the demographic characteristics of the sample is given in Table 1.

From Table 1 we can see that the female consumers make up more than 60% of total respondents, which might be explained by the fact that women usually play a more important role in family food shopping; and especially for our study, women may know more about the details of fish consumption within a family. Besides, about 65% of the respondents are frequent food–shoppers in the family. More than three quarters of the respondents are married. The average of the respondents is 39.4–year–old, and more than 90% of the respondents are between 21 and 60. Family of three members makes up more than half in the sample.

In order to have a general understanding of consumers consumption of fish, the respondents were first asked about their present spending on ordinary fish products.

As illustrated in Figure 2, Beijing households vary very much in their consumption of fish from zero to 30 kilograms per month. On average, a household purchases 6.8 kilos per month, which implies every consumer takes about 74 grams per day, giving an average family size of 3.07 members. More than 40% households have a consumption between 2.5 and 10 kilos per month. However, there are 18 respondents saying that their family never eat fish products. For this part of consumers, we further asked the reason of their non–consumption. Purposely, we want to distinguish two kinds of reasons, the first kind includes allergy, religion, discomfort, etc., and the second kind includes cooking difficulty, accessibility, etc. We give up asking questions about Eco–Labeled fish only for the first kind of respondents (10 in 18), thus the final sample used in econometric analysis below consists of 376 consumers.

Table 1. Descriptive Statistics of the Sample

Var.	Des.	Num.	Per.	Var.	Des.	Num.	Per.
Gender	male	153	39.84	Food–Shopper	yes	247	64.83
	female	231	60.16		no	134	35.17
Marital Status	married	288	75.20	Family Size	1	16	4.17
	unmarried	95	24.80		2	81	21.09
Age	≤ 20	10	2.60		3	193	50.26
	21~30	132	34.38		4	59	15.36
	31~40	83	21.61		5	28	7.29
	41~50	73	19.01		6	5	1.30
	51~60	62	16.15		7	2	0.52
	61~70	18	4.69	Monthly Family Income (yuan)	≤ 2000	28	7.31
	⩾71	6	1.56		2001~4000	100	26.11
Education	J.H. and below	41	10.68		4001~6000	108	28.20
	S.H.	110	28.65		6001~8000	51	13.32
	College	202	52.60		80001~10000	46	12.01
		31	8.07		⩾ 10000	50	13.05

Sources: Authors' survey.
Notes: ①Due to some missing information, for some variables, the sum of different categories is not equal to 386.
②J. H. means junior high school (9–year education), S. H. means senior high school (12–year education).

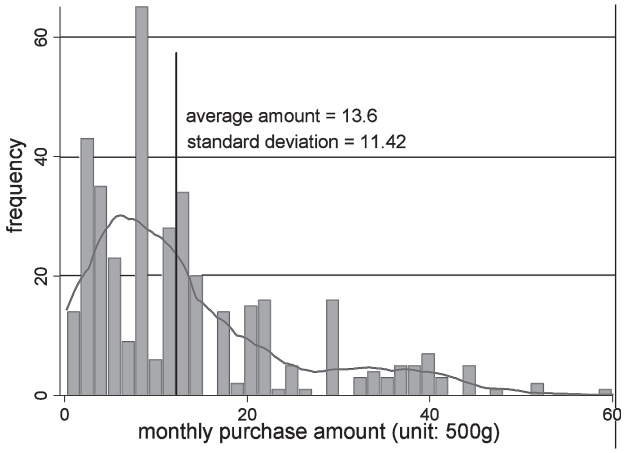

Fig. 2. Histogram for households' monthly purchase amount of fish products.

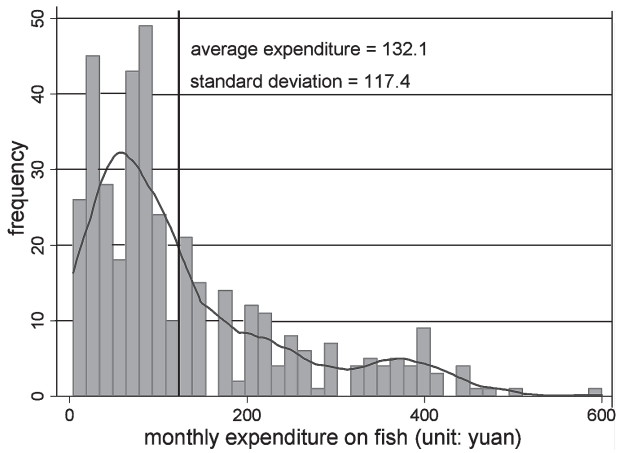

Fig. 3. Histogram for households' monthly expenditure on fish products.

The monthly expenditure has a very similar distribution with purchase amount. As depicted in Figure 3, the average expenditure on fish products is 132 yuan per month. However, the fish expenditure is more differentiated, albeit not that conspicuous, than purchase amount, giving the variation coefficient of expenditure is 0.89 compared with 0.84 of purchase amount, which implies the price of fish intensifies, or at least doesn't reduce the variation. And a possible inference deduced is that the consumers who purchase more fish also purchase the more expensive fish.

Pre–Test of Data

Reliability and validity tests are conducted before extracting perceived variables from items. In Table 2, results show that, all the α values, measuring the scale reliability, exceed the general accepted standard of 0.70, which indicates all variables are internal consistent. Confirmatory factor analysis is performed to calculate the AVE (Average Variance Extracted) and CV (Composite Reliability) values, which measures the convergent validity. It can be observed that all the CV values also exceed the recommended level of 0.70, and the AVE values exceed or approximate the recommended level of 0.50. It provides the evidence that all items for the same construct are well related.

Two items measuring consumers' purchase intention of Eco–Labeled fish are selected from the reliability test. As shown in Figure 4, the two items have a very similar distribution, and both generally demonstrate a high level of consumers' intention. Nearly half of consumers report an intention above the middle level (neither), while only about a quarter of consumers' responses are under the middle level.

The final variables entering the econometric model are calculated on the basis of the items selected in Table 2. For variables directly measured including purchase intention and perceived price, we use the rounded average score of the items. For variables measured by beliefs and associated weight, we use the rounded and

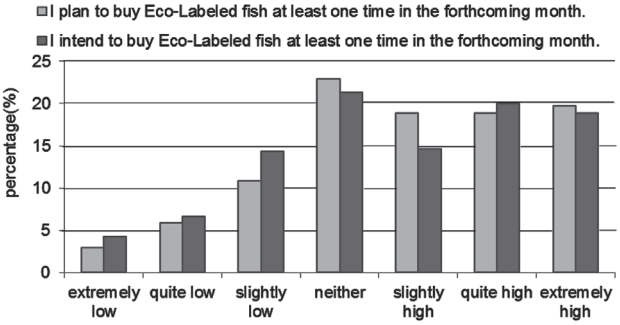

Fig. 4. Distribution of Consumers' Purchase Intention of Eco-Labeled Fish.

Table 2. Reliabilities and Validities of the Scales

Variables	No. of items	Cronbach's α	AVE	CV
Purchase Intention (*BI*)	2	0.874	0.69	0.817
Perceived Price	2	0.866	0.622	0.767
Attitude towards Fish (*Af*)	4	0.778	0.493	0.76
Attitude towards Environment (*Ae*)	4	0.885	0.661	0.885
Subjective Norm (*SN*)	10	0.805	0.454	0.816
Perceived Behavioral Control (*PBC*)	7	0.820	0.478	0.823

Note: Table 2 gives the final results, before which some items are dropped through the initial test.

Table 3. Definition and Descriptive statistics of Variables

Var.	Description	Mean	Std. Dev.
BI	purchase intention of Eco–Labeled fish, 7 points.	4.319	1.352
Af	attitude towards fish, 7 points.	5.051	8.480
Ae	attitude towards environmental protection, 7 points.	4.877	11.101
SN	subjective norm, 7 points.	3.801	8.485
PBC	perceived behavioral control, 7 points.	2.509	6.972
price	perceived price premium, 7 points.	3.864	1.829
*budget*2	dummy; =1 if middle–level of food budget, 0 otherwise.	0.364	0.482
*budget*3	dummy; =1 if higher–level of food budget, 0 otherwise.	0.311	0.464
age	respondent's age.	39.407	13.376
gender	dummy; =1 if male, =0 if female.	0.402	0.491
educ	years of schooling.	13.503	3.286

Note: We use the lower–level of budget (under 1000 yuan per month) as base group.

Table 4. Correlation Matrix of Independent Variables

	Af	*Ae*	*SN*	*PBC*	*price*	*budget*	VIF
Af	0.493						1.31
Ae	0.3518***	0.661					1.32
SN	0.4138***	0.4197***	0.454				1.41
PBC	0.1775***	0.2219***	0.2291***	0.478			1.21
price	–0.0533	–0.0787	–0.0633	0.2451***	0.622		1.12
budget	0.1703***	0.0834	0.1959***	–0.0191	–0.0844	——	1.07
educ	–0.0898*	0.0887*	–0.0047	0.1118**	–0.1182**	0.0681	1.07

Notes: ①The diagonal of the matrix gives the AVE values. ②*, **, and *** respectively denote the statistical significance level of 10%, 5%, and 1%. ③The right–most column gives the variance inflation factor in a linear regression.

weighted average score. At last, all variables in Table 2 keep the 7–point format with a lower value signifying a lower extent and a higher value signifying a higher extent. Means and standard deviations for all model components are provided in Table 3.

Finally, discriminant validity is achieved by the comparison between AVE value and correlation coefficient. As shown in Table 4, the AVE value of every variable is greater than the correlation coefficient between the variable and any other ones, which indicates that items for different constructs are relatively less related.

However, the significant correlation might also implies a possible problem of multicollinearity. Obviously in Table 3, the major correlations lie in the psychological factors, especially between subjective norm and attitude. But the VIF (Variance Inflation Factor) values calculated based on linear regression are all much lower than 10, a general recognized standard above which it is believed there is serious multicollinearity. Although the dada is probably sufficient for research purposes, we conduct several estimations with different independent variables in case of bias from multicollinearity.

RESULTS AND DISCUSSION

Estimation Results

Table 5 provides the parameter estimates and standard errors for five model formulations of interest. Model 1 is the one incorporating all independent variables in Table 3. Considering the strong correlation between subjective norm and other psychological factors, model 2 and model 3 omitting behavioral attitude and perceived behavioral control respectively are conducted. Further, model 4 and model 5 covering only economic and psychological factors respectively are estimated in order to verify whether the comprehensive model has a better explanation of consumers' behavior.

The measures of goodness of fit indicate all the five models fit the data fairly well. The log–likelihood, which measures the overall significance of function, was significant at $P<0.01$, suggesting a strong relationship exists between the probability of consumers' purchasing Eco–Labeled fish and the suggested independent variables.

Both economic and psychological factors are confirmed to have significant impact on consumers' purchase intention, with relatively greater adjusted pseudo R–squares in model 1, model 2 and model 3 than that in model 4 and model 5, indicating a stronger explanatory power of the integrated framework in Figure 1. However, demographic factors expect respondent' age do not show any significant influences on consumers' intention.

Compared among the coefficient estimates in model 1, model 2 and model 3, we believe that it is the strong correlation between attitude and subjective norm and age that result in the non–significance of subjective norm and age in model 1. Based on model 1 and model 2, Table 6 further provides the marginal effects of variables on different levels of purchase intention.

It is evident in Table 6 that the intention levels of slightly low and between slightly high and quite high are close to the two inflection points at which the intention distribution is the steepest and marginal effects of the determinants are the greatest. It implies every change of any determinant, by individuals or policy–makers, will mainly influences the hesitating consumers, wittingly or unwittingly. For example, a positive 1% change in attitude towards environment is predicted to have a negative 0.45% affection on slightly low intention and a positive 0.44% affection on slightly high intention, compared with an negative affection of only 0.06% and an positive affection of only 0.05% on extremely low and extremely high intention respectively.

Economic Factors

The influences of economic factors are remarkably robust among different models, all presenting a negative effect of perceived price premium and a positive effect of food budget, and thus hypothesis 1 and 2 are verified.

Allowing for the effects of both price and budget, it is easy to conclude that Eco–Labeled fish is normal good with a downward sloping demand curve. However, many researches about organic food find a significant positive relation between price and consumers' purchase behavior, or at least a less price elastic demand curve is proved (Harris *et al*., 2000; Cicia *et al*., 2002; Griffith & Nesheim, 2008). It is believed that price is perceived as a proxy of quality or food safety, and thus a higher price

Table 5. Parameter Estimates of Ordered Logit Regression

Var.	Model1	Model2	Model3	Model4	Model5
Af	0.0516*** (0.0133)		0.0554*** (0.0135)		0.0574*** (0.0133)
Ae	0.0372*** (0.0101)		0.0418*** (0.0101)		0.0419*** (0.0101)
SN	–0.0000 (0.0133)	0.0350*** (0.0121)	0.0120 (0.0131)		0.0012 (0.0132)
PBC	0.0847*** (0.0160)	0.0949*** (0.0157)			0.0638*** (0.0149)
price	–0.2602*** (0.0567)	–0.2893*** (0.0566)	–0.1614*** (0.0531)	–0.1858*** (0.0526)	
*budget*2	0.8132*** (0.2288)	0.8805*** (0.2271)	0.8646*** (0.2278)	0.9432*** (0.2258)	
*budget*3	0.9013*** (0.2451)	0.9795*** (0.2436)	0.9293*** (0.2436)	1.0540*** (0.2401)	
age	0.0107 (0.0076)	0.0155** (0.0075)	0.0062 (0.0076)	0.0133* (0.1959)	0.0110 (0.0074)
gender	–0.2020 (0.2013)	–0.1071 (0.2002)	–0.1721 (0.2016)	0.0881 (0.1959)	–0.1566 (0.1995)
educ	–0.0282 (0.0315)	–0.0165 (0.0310)	–0.0026 (0.0311)	0.0209 (0.0306)	0.0008 (0.0309)
Log–likelihood	–565.46	–583.88	–579.96	–613.20	–584.69
Pseudo R–Square	0.1094	0.0804	0.0866	0.0342	0.0791
P (>Chi2)	0.0000	0.0000	0.0000	0.0000	0.0000

Note: *, **, and *** respectively denote the statistical significance level of 10%, 5%, and 1%.

Table 6. Marginal Effects on Purchase Intention

Var.	Extremely low	Quite low	Slightly low	Neither	Slightly high	Quite high	Extremely high
Af	–0.0008	–0.0017	**–0.0063**	–0.0041	**0.0061**	0.0060	0.0007
Ae	–0.0006	–0.0012	**–0.0045**	–0.0030	**0.0044**	0.0043	0.0005
SN	–0.0007	–0.0013	**–0.0042**	–0.0025	0.0038	**0.0044**	0.0006
PBC	–0.0014	–0.0027	**–0.0103**	–0.0067	**0.0100**	0.0099	0.0012
price	0.0042	0.0083	**0.0317**	0.0206	**–0.0308**	–0.0304	–0.0036
*budget*2	–0.0120	–0.0241	**–0.0936**	–0.0709	0.0856	**0.1021**	0.0129
*budget*3	–0.0126	0.0254	**–0.1006**	–0.0827	0.0890	**0.1172**	0.0152
age	–0.0003	–0.0006	**–0.0019**	–0.0011	0.0017	**0.0019**	0.0003
gender	0.0032	0.0065	**0.0246**	0.0160	**–0.0239**	–0.0236	–0.0028
educ	0.0005	0.0009	**0.0034**	0.0022	**–0.0033**	**–0.0033**	–0.0004

Notes: ①Marginal effects are calculated on the basis of model 1, except that subjective norm and age are based on model 2. ②The significance level of marginal effects is identical to that of the associated coefficients. ③Since all psychological variables are of the same scale (7 point), the marginal effect can be directly regarded as an indicator of the relative importance of these determinant variables. ④Numbers in bold are the two greatest of a same variable to different level of purchase intention.

premium induces a stronger purchase intention, which implies the stronger positive income effect prevails the relatively lower negative substitution effect, making organic food a Giffen good.

But nonetheless, a negative affection of perceive price premium is significantly validated on the purchase intention of Eco–Labeled fish. A higher price premium of Eco–Labeled fish is supposed to be an indicator mainly of a stricter environmental standard, albeit to a certain extent also reflecting a higher standard of food safety. So it can be inferred that consumers' willingness to pay for more environmental food is less than that for safer food, illustrating that environmental concerns are not as important as food safety concerns of Chinese consumers. Therefore, the major proportion of certification cost of Eco–Labeled fish should be undertaken by the government in order to ensure the sufficient demand of consumers.

Psychological Factors

All pre–dominant variables in TPB framework including attitude, subjective norm and perceive behavioral control are confirmed to have significant positive affections, albeit not independently, on consumers' purchase intention of Eco–Labeled fish, giving support to hypothesis 3, 4 and 5.

It is always proved in empirical studies that favorable behavioral attitude and subjective norm positively influence consumers' purchase intention, and our analysis is in line with the earlier findings. The strong positive correlation between attitude and subjective norm is also confirmed in earlier studies. Since attitude and subjective norm respectively represent individuals' personal and social believes, what provokes researchers' interest is which one of them will prevail in consumers' decision among different behaviors, different groups and different situations. Decisions in groups of individualism are mainly dominated by personal attitude, while in groups of collectivism are mainly dominated by social normative believes (Lee & Green, 1991; Park, 2002). In Table 6, it is easy to find that attitude is relatively more important than subjective norm in consumers' purchase intention of Eco–Labeled fish. Further, attitude toward environment is less important than that towards consuming fish, which implies consumers' past consumption preference is an remarkable factor that should not be neglected.

Perceived behavioral control can not only influence behavioral intention, but also directly influence the performance of behavior (Ajzen, 1991, 2002), thus perceived behavioral control is always verified to be another important determinant of consumer behavior (Cook *et al*., 2002; Mazzocchi *et al*., 2008). Interpretation of marginal effects even revealed that perceived control is the most substantial determinant of consumers' purchase intention of Eco–Labeled fish. Some earlier studies regarded perceived price as an component of perceived control (Tarkiainen & Sundqvist, 2005), while perceived control in this paper mainly consists of availability and feasibility of the behavior. If combined with perceived price, perceived control might have an even stronger affection on intention. In fact, control capability can be considered as a bounded constraint of behavior performance. When the behavior is being performed, the actual control ability, with no doubt, will directly influence the behavioral consequences.

CONCLUSIONS

In this study we aimed at exploring and explaining Chinese consumers' purchase intention of Eco–Labeled fish. A comprehensive framework integrating utility theory and TPB was constructed, which is verified to have a better explanatory power of consumers' intention. The data used in this study is from a survey in Beijing, consisting of 386 valid questionnaires.

According to the data description, Chinese consumers show an overall high intention of purchasing Eco–Labeled fish, with half consumers reporting an intention above the middle level and only a quarter under the middle level.

Ordered logit model was further estimated in order to grasp the major determinants of consumers' intention. Results show that both economic and psychological factors play important parts in consumers' intention of purchasing Eco–Labeled fish. Hesitating consumers whose purchase intention approximate the middle level are the most greatly affected by independent variables, implying this group of consumers should be mainly targeted in policymaking .

Negative affection of price, combined with positive affection of budget indicates that Eco–Labeled fish is normal good with a downward sloping demand curve. Compared with food safety certification, government should share more certification cost of Eco–Labeled fish.

Among psychological factors, behavioral attitude, especially towards consuming fish, showed a greater affection than subjective norm on Chinese consumers' intention of purchasing Eco–Labeled fish. Perceived behavioral control was verified to have the greatest impact on consumers' intention, implying policies of improving availability and feasibility of behavior performance, such as increasing the variety and expanding sales area, should be attached enough importance.

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