Bangkok Buyer Decision on Pla Tubtim (*Oreochromis* sp.)

Ruangrai Tokrisna and Wanlee Charoenwittanadech
Department of Agricultural and Resource Economics, Faculty of Economics, Kasetsart University, Bangkok, Thailand

Abstract

Pla Tubtim (*Oreochromis* sp.) was a new fish species for aquaculture in Thailand. It was an improved breeding from tilapia and expected to be a common fish dish for the Thais while being an important source of income earning for fish farmers in this country. Logit model was applied to look for market development strategy for this new species. This model consisted of four parts: experience, perception, preference and choice of the buyers. Buyer decision was significantly affected by preference, information on culture, dish variety, buying convenience, and education of the buyers. Buyers with preference on Pla Tubtim were usually buyers who used to buy this new species for home consumption. Knowing that Pla Tubtim was cultured, buyers were more willing to buy this fish. Dish variety and convenient buying were also important factors of buying decision. This fish was preferable among higher educated buyers. Recommended market development strategies for Pla Tubtim were the promotion of this species in various market outlets convenient for the buyers. Information on this new species in production and in consumption was important. Information on being cultured and cooking variety could promote the sales. Once the consumers had learnt about this new fish and tried it, they were more willing to buy. Market strategies should be availability of information on this new species and convenient access in buying. Target buyers were more likely higher educated consumers.
.

Keywords: Pla Tubtim; Bangkok buyer decision, experience, perception, preference and choice

1. INTRODUCTION

Pla Tubtim (*Orechromis sp*.) was a crossbred fish developed from Jitrlada red tilapia and Florida red tilapia. With high growth rate and tolerance, it was expected to be quickly adopted by fish farmers in Thailand. In term of marketing, being colorful (red) and fleshy Pla Tubtim was expected to be preferred to Nile tilapia in the existing market. It was expected to be a common fish dish for the Thais while being an important source of income earning for fish farmers. This study attempted to identify factors affecting Bangkok buyer decision on Pla Tubtim. Results of the study could be useful for strategies in market development for Pla Tubtim.

2. THE METHODOLOGY

Pattern of buyer decision behaviour was developed from evoke set theory.[1] Four layers of buyer behaviour were considered starting from experience, then perception and preference which finally led to buying decision.

Frequency of buying Pla Tubtim at least once a month was selected as a proxy for experience in Pla Tubtim. [2] Factors affecting this experience were mainly socio-economic factors. They were income, sex, age, education, marital status, travel time spent on buying, and information received. These factors identified the buyers who had experience in buying Pla Tubtim.

Once the buyer had experience in buying Pla Tubtim, he would have perception on the fish he bought. Perception was divided in to perception on taste, nutrition, colour, and size. If buyer considered one of these characters as an important factor in buying Pla Tubtim, that perception on that character would be one, zero otherwise. Each of these characters were determined by socio economic factors above and the experience in buying Pla Tubtim plus buyer's knowing that Pla Tubtim was cultured fish. Attitude toward cultured fish was

[1] Example of relevant empirical studies included Kokoski (1986), Cheng and Capps (1988), Engle and Kouka (1995), and Neuman et al (1995).
[2] Experience = 1 if he bought the fish at least once a month, = 0 otherwise.

expected to be different from captured one. It was expected that the perception was different among buyers who knew that Pla Tubtim was cultured fish and those who did not. The value of explanatory variable "knowing it was cultured" was one for buyer who knew and zero for those who did not know.

After the buyer had experienced Pla Tubtim and perceived it's certain characters, he would adopt his preference in Pla Tubtim. Proxy for preference was if Pla Tubtim was one of the top five fish he bought. Preference was then determined by socio-economic factors, experience, perception on taste, on nutrition, on colour, and on size.

Finally buying decision on Pla Tubtim depended on socio-economic factors, experience, perception, and preference. Additional factors in this layer included convenience in cooking and dish variety which could be promotional factors for buyer's preference in Pla Tubtim. If the buyer bought Pla Tubtim, buying decision was one and zero otherwise.

158 samples were interviewed for this study. These respondents were customers of fresh food department in Bangkok Supermarkets where Pla Tubtim was available. Since all of the dependent variables in the equations were binary, being one or zero, logit model was employed for the estimation of these structural equations. Results of estimation were given in Table 1 – 7. They were estimated as system of equations.

3. RESULTS OF THE STUDY

From Table 1, experience in buying Pla Tubtim could significantly explained by marital status of the buyer, travel time spent on buying, and general information the buyers received about Pla Tubtim. Married buyers were more likely had experience in buying Pla Tubtim. Buyers who had to spent more travel time in buying would be less likely had the experience in Pla Tubtim. Easier access to buying induced more probability of experience in Pla Tubtim. Nevertheless the buyers who had information about Pla Tubtim less likely had experience in buying Pla Tubtim. Probability of having the experience, i.e. buying at least once a month was highest for married buyers. Chance of experience was 0.7394 for married buyer. If buyer had to spend more time on traveling to buy the chance of experience would be only 0.4955. Buyers with information about Pla Tubtim less likely bought Pla Tubtim at least once a month. The chance of having experience was 0.2836 for buyers who had information about Pla Tubtim, which might reflect that buyers with information less differentiated Pla Tubtim from other fish in the markets. (Table 1 and Figure 1.)

Table 1 Estimation on **Experience** Equation

Explanatory variables	Coefficient	Standard error	Z-statistics	Probability
Sex	0.0203	0.4368	0,0466	0.9629
Age	0.0011	0.0225	0.0491	0.9609
Marital status	1.0427	0.5104	2.0423	0.0410**
Education	-0.0786	0.0796	-0.9867	0.3238
Travel time spent on buying	-0.0180	0.0081	-2.2165	0.0267**
Income	-6.30E - 06	6.86E - 06	-0.9181	0.3586
Negative information	-0.0309	0.8550	-0.0361	0.9712
General information	-0.9265	0.4427	-2.0926	0.0364**
Constant	0.7591	1.6834	0.4510	0.6520
Log likelihood	-76.368			
Likelihood ratio statistics	26.052			
Probability	0.001***			
% of right prediction	77.85			

Note: ** = significant at 95% level of confidence.
*** = significant at 99% level of confidence.

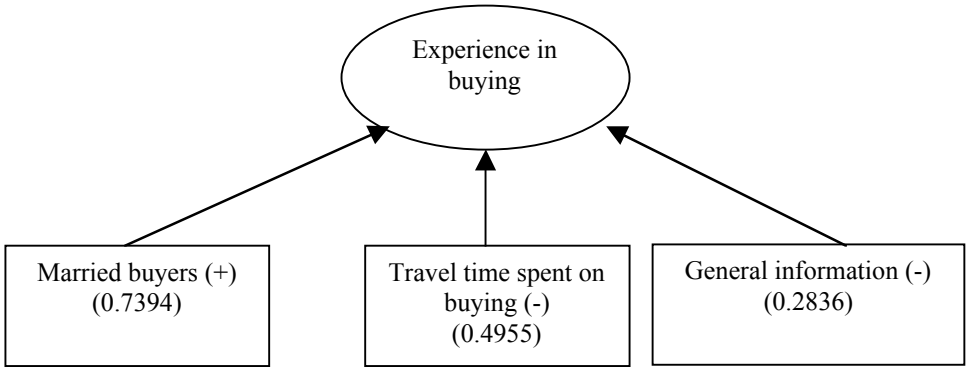

Figure 1 Factors affecting experience on buying Pla Tubtim
Note: (****) = Probability of having experience

For perception in taste, buyers were asked whether he considered taste an important factor in buying Pla Tubtim. If he considered taste important the perception in taste would be one, zero otherwise. .Marital status of buyers, the negative information he had on Pla Tubtim , and general information were significant factors determining perception on taste (Table 2). The chance that a married buyer would consider taste as important was 0.2358. The chance that buyer with general information would consider taste as important was 0.1947 while it was only 0.1195 for buyer with negative information. The probabilities of considering taste as important factor in buying Pla Tubtim were not high but still were important among married buyers and buyers who had information on Pla Tubtim. (Figure 2)

Table 2 Estimation on **Perception**: **Taste of Pla Tubtim** Equation

Explanatory variables	Coefficient	Standard error	Z-statistics	Probability
Sex	0.2450	0.4804	0.5101	0.6100
Age	0.0486	0.0299	1.6228	0.1046
Marital status	-1.1758	0.06242	-1.8838	0.0596*
Education	0.0346	0.0920	0.3759	0.7070
Travel time spent on buying	-0.0101	0.0063	-1.5881	0.1123
Income	1.88E - 06	4.12E - 06	0.4557	0.6486
Negative information	-1.9968	0.9402	-2.1238	0.0337**
General information	-1.4225	0.6711	-2.1211	0.0339**
Being cultured fish	-0.8336	0.6533	-1.2759	0.2020
Experience	0.6011	0.6388	0.9410	0.3467
Constant	1.3966	2.1882	0.6383	0.5233
Log likelihood	-62.5112			
Likelihood ratio statistics	15.9159			
Probability	0.1021			
% of right prediction	85.35			

Note: * = significant at 90% level of confidence.
** = significant at 95% level of confidence

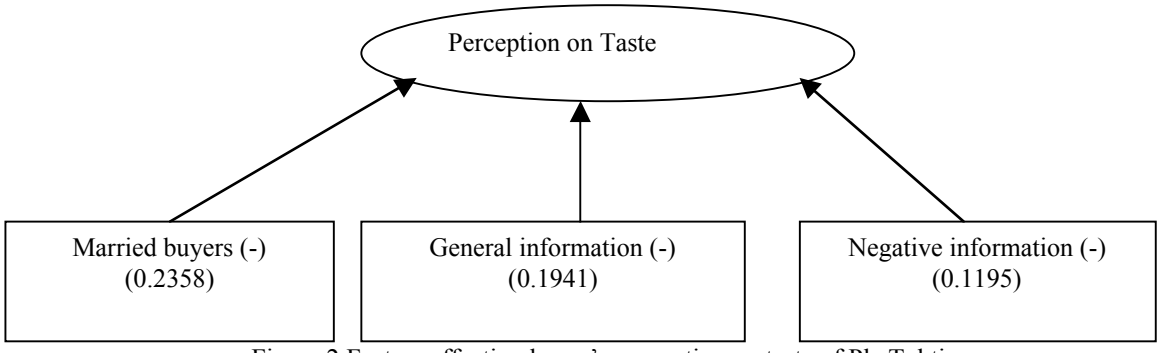

Figure 2 Factors affecting buyer's perception on taste of Pla Tubtim
Note: (****) = Probability of perception on taste

For perception on nutrition, age and education of buyer and knowing that Pla Tubtim was cultured were significant in explaining perception on nutrition. Buyer who knew that it was cultured fish would have a probability of 0.7394 having perception on nutrition. Buyer with higher education had 0.5387 probability of perception on nutrition while elder buyer would have a probability of 0.5141 having perception on nutrition. Promotion on nutrition from Pla Tubtim should be targeted to those who knew that it was cultured fish, higher educated buyer, and elder buyer. (Table 3 and Figure 3)

Table 3 Estimation on **Perception**: **Nutrition** Equation

Explanatory variables	Coefficient	Standard error	Z-statistics	Probability
Sex	0.3973	0.9671	1.0824	0.2791
Age	0.0562	0.0228	2.4692	0.0135**
Marital status	-0.1970	0.4613	-0.4271	0.6693
Education	0.1550	0.0768	2.0196	0.0434**
Travel time spent on buying	-0.0030	0.0050	-0.5869	0.5573
Income	1.54E - 06	1.98E - 06	0.7748	0.4385
Negative information	0.4177	0.8984	0.4650	0.6420
General information	0.1499	0.4652	0.322	0.7473
Being cultured fish	0.8421	0.4786	1.7597	0.0785*
Experience	-0.4008	0.4406	-0.9095	0.3631
Constant	-4.6555	1.7674	-2.6342	0.0084***
Log likelihood	-99.6661			
Likelihood ratio statistics	18.4602			
Probability	0.0477**			
% of right prediction	66.46			

Note: * = significant at 90% level of confidence.
** = significant at 95% level of confidence
*** = significant at 99% level of confidence

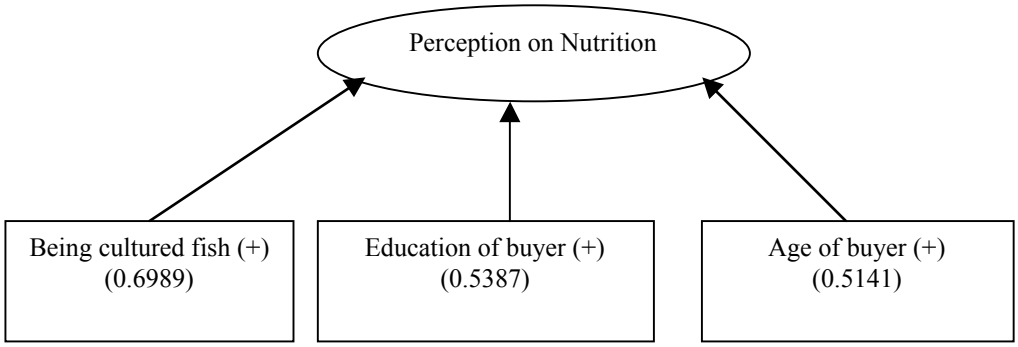

Figure 3 Factors affecting buyer's perception on nutrition from Pla Tubtim
Note: (****) = Probability of perception on nutrition

For perception on colour, which was considered one of the promotional item for Pla Tubtim, significant factors determining perception on colour were marital status of buyers and travel time spent on buying Pla Tubtim. The probability of married buyer having perception on colour was 0.6985. For those who spent more travel time in buying, chance of considering colour as important was 0.4947. (Table 3 and Figure 3)

Table 4 Estimation on **Perception**: **Colour** Equation

Explanatory variables	Coefficient	Standard error	Z-statistics	Probability
Sex	-0.3477	0.4168	-0.8342	0.4042
Age	-0.0135	0.0225	-0.5994	0.5489
Marital status	0.8403	0.5121	1.6409	0.1008*
Education	-0.8865	0.0802	-1.1048	0.2692
Travel time spent on buying	-0.0214	0.0080	-2.6766	0.0074***
Income	-2.22E - 06	3.05E - 06	-0.7302	0.4653
Negative information	0.6056	0.8717	0.6947	0.4872
General information	-0.2074	0.5511	-0.3764	0.7066
Being cultured fish	-0.4102	0.5571	-0.7363	0.4616
Experience	-0.7537	0.4965	-1.5180	0.1290
Constant	1.8373	1.8333	1.0022	0.3163
Log likelihood	-81.2199			
Likelihood ratio statistics	18.4786			
Probability	0.0474**			
% of right prediction	78.48			

Note: * = significant at 90% level of confidence.
** = significant at 95% level of confidence
*** = significant at 99% level of confidence

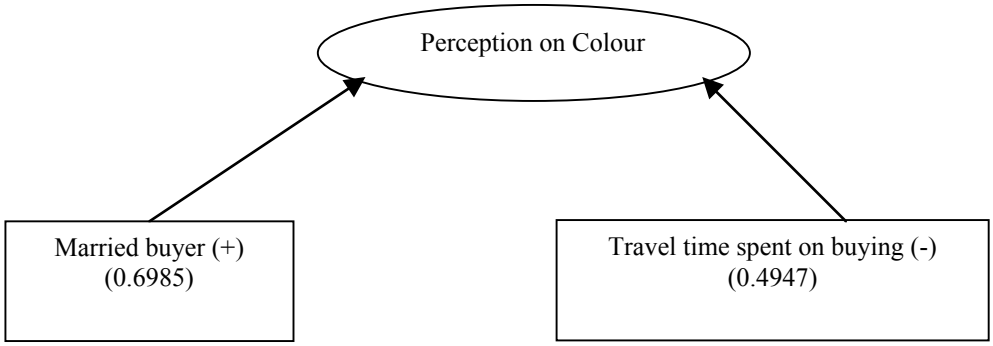

Figure 4 Factors affecting buyer's perception on colour from Pla Tubtim
Note: (****) = Probability of perception on colour

Perception on size of Pla Tubtim was considered from buyer's recognition on size in buying it. Buyer perceived on it's being dish size. Age and education of buyer and his experience in Pla Tubtim were significant in determining perception on fish size. Probability that elder buyer would consider size was 0.5140. Higher educated buyer less perceived on size. Probability that higher educated buyer would have perception in fish size was 0.4666. Buyer who had experienced Pla Tubtim gave less important to fish size. The probability that experienced buyer would have perception on fish size was 0.3087. Once the buyer had bought Pla Tubtim at least once a month, he would careless about fish size. (Table 5 and Figure 5)

Table 5 Estimation on **Perception**: **Size** Equation

Explanatory variables	Coefficient	Standard error	Z-statistics	Probability
Sex	0,1341	0.3883	0.3453	0.7299
Age	0.0559	0.0229	2.4383	0.0148**
Marital status	0.2516	0.4635	0.5430	0.5872
Education	-0.1337	0.0815	-1.6409	0.1008*
Travel time spent on buying	-0.0079	0.0055	-1.4370	0.1507
Income	5.60E - 07	1.63E - 05	0.3463	0.7291
Negative information	0.9480	0.9289	1.0205	0.3075
General information	-0.2605	0.4876	-0.5342	0.5932
Being cultured fish	0.4942	0.4975	0.9934	0.3205
Experience	-0.8602	0.4831	-1.7042	0.0883*
Constant	-0.1310	1.8162	-0.0721	0.9425
Log likelihood	-92.2840			
Likelihood ratio statistics	32.4187			
Probability	0.0003***			
% of right prediction	71.52			

Note: * = significant at 90% level of confidence.
** = significant at 95% level of confidence
*** = significant at 99% level of confidence

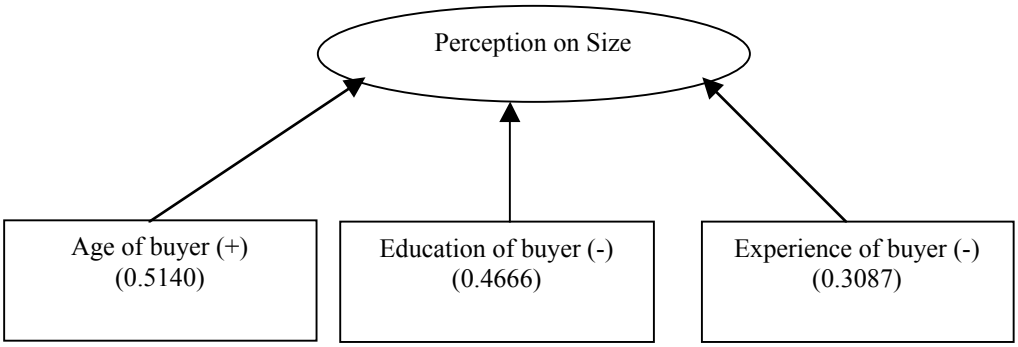

Figure 5 Factors affecting buyer's perception on size from Pla Tubtim
Note: (****) = Probability of perception on size

Preference in Pla Tubtim was defined, as being one of the top five fish which buyers would consider buying. Significant factors determining preference were experience in Pla Tubtim and the negative information on Pla Tubtim. The probability of preference would be greater if buyer had experienced in Pla Tubtim while receiving negative information had lower probability of preference. Buyer who had experienced Pla Tubtim would have a high probability of 0.9329 in selecting Pla Tubtim in the top five fish he would buy. Buyer with negative information had a probability of 0.1493 to prefer Pla Tubtim. (Table 6 and Figure 6)

Table 6 Estimation on **Preference** Equation

Explanatory variables	Coefficient	Standard error	Z-statistics	Probability
Sex	-0.2817	0.4456	-0.6323	0.5272
Age	0.0006	0.0269	0.0242	0.9807
Marital status	0.4295	0.5422	0.7922	0.4282
Education	0.0658	0.0970	0.6777	0.4980
Travel time spent on buying	0.0084	0.0059	1.4290	0.1530
Income	1.06E - 06	1.55E - 06	0.6822	0.4951
Negative information	-1.7400	1.0580	-1.6446	0.1001*
General information	-0.5808	0.5579	-1.0410	0.2979
Being cultured fish	0.6050	0.5629	1.0748	0.2825
Experience	2.6325	0.5516	4.7729	0.0000***
Taste of PlaTubtim	-0.1067	0.3260	-0.3273	0.7434
Nutrition	-0.1644	0.4427	-0.3714	0.7104
Colour	0.2646	0.5157	0.5130	0.6079
Size	-0.7149	0.4919	-1.4534	0.1461
Convenient cooking	-0.1124	0.4238	-0.2653	0.7908
Dish variety	-0.1402	0.4354	-0.3220	0.7475
Constant	-1.9554	2.2099	-0.8848	0.3762
Log likelihood	-78.1048			
Likelihood ratio statistics	54.5498			
Probability	4.22E – 06**			
% of right prediction	77.85			

Note: * = significant at 90% level of confidence.
** = significant at 95% level of confidence
*** = significant at 99% level of confidence

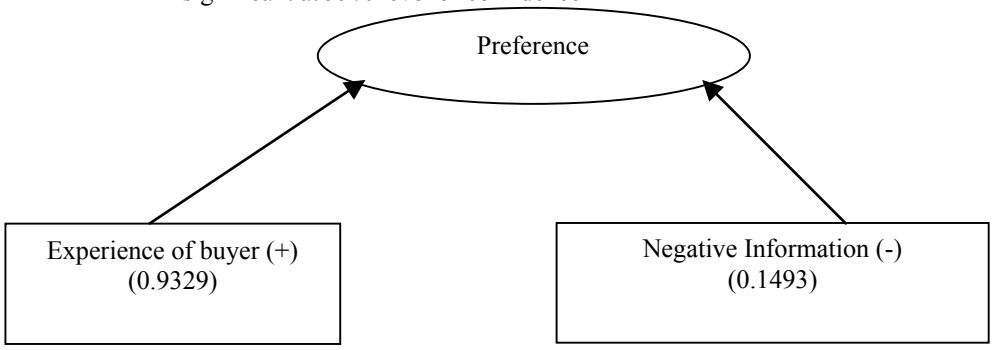

Figure 6 Factors affecting buyer's preference for Pla Tubtim
Note: (****) = Probability of preference

In buying decision equation socio-economic factors, experience, perception (taste, nutrition, color, and size), and preference were included as explanatory variables. Two more variables i.e. convenient cooking and dish variety were also included in this equation since there had been sale promotion on these two factors. Factors affecting buying Pla Tubtim significantly were preference of buyer, buyer knowing that it was cultured, dish variety, travel time spent on buying, and education of the buyers. Buyer who preferred Pla Tubtim, i.e. included Pla Tubtim in the top five list of fish he would buy, had a probability of 0.9643 to buy Pla Tubtim. Buyer who knew that it was cultured fish had a probability of 0.8636 in buying Pla Tubtim. Dish variety was another important factor. Probability to buy Pla Tubtim was 0.7999 for its dish variety. Buyer who spent more travel time in buying Pla Tubtim would have a probability of 0.4939 to buy Pla Tubtim. Higher educated buyer had a probability of 0.4440 to buy Pla Tubtim.(Table 7 and Figure 7)

Table 7 Estimation on **Decision** Equation

Explanatory variables	Coefficient	Standard error	Z-statistics	Probability
Sex	-0.0494	0.6423	-0.0769	0.9387
Age	0.0162	0.0346	0.4690	0.6391
Marital status	-0.0769	0.7358	-0.1082	0.9138
Education	-0.2248	0.1287	-1.7468	0.0807*
Time spent on buying	-0.0243	0.0099	-2.4464	0.0144**
Income	-2.60E - 06	5.44E - 06	-0.4767	0.6335
Negative information	-0.2468	1.3135	-0.1879	0.8509
General information	-0.4785	0.8703	-0.5498	0.5825
Being cultured fish	1.8452	0.9064	2.0358	0.0418**
Experience	0.4071	0.7914	0.5140	0.6080
Taste of PlaTubtim	-0.1774	0.2907	-0.6104	0.5416
Nutrition	-0.2626	0.6629	-0.3962	0.8919
Colour	-0.8621	0.8074	-1.0677	0.2856
Size	-0.1120	0.6822	-0.1642	0.8696
Convenient cooking	-0.1874	0.5910	-0.3170	0.7512
Dish variety	1.3856	0.6671	2.0772	0.0378**
Preference	3.2953	0.7770	4.2409	0.0000***
Constant	1.4709	2.8069	0.5240	0.6003
Log likelihood	-42.6288			
Likelihood ratio statistics	132.8646			
Probability	0.0000***			
% of right prediction	87.97			

Note: * = significant at 90% level of confidence.
** = significant at 95% level of confidence
*** = significant at 99% level of confidence

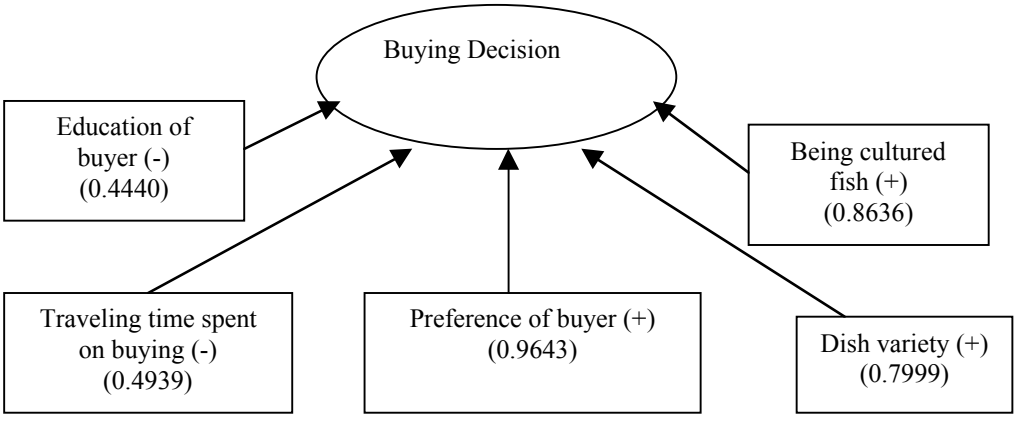

Figure 7 Factors affecting buying decision on Pla Tubtim
Note: (****) = Probability of buying decision

4. RECOMMENDATION

To increase sale of Pla Tubtim it would be best to create preference on this fish among buyers. Probability of buying was as high as 0.9643 for buyer who preferred Pla Tubtim. Buyer would have preference in buying Pla Tubtim if he had experienced it. For experienced buyer, probability of having preference in Pla Tubtim was a high as 0.9329. Married buyer had the highest probability in experiencing Pla Tubtim (0.7349). Marketing promotion should target on married buyers, promotion on Pla Tubtim as home cooking family meal. To increase experience in Pla Tubtim availability concerned since more time spent on buying would result in a low probability of experience. Buyer would less likely buy it regularly if he had difficulty spending more travel time to buy. Buyer who received general information on Pla Tubtim had a low probability of experience in Pla Tubtim. Once buyer had the information the probability of buying it at least once a month would be 0.2836.

Such behaviour might be explained by relatively high selling price which made Pla Tubtim less attractive than other fish..

Other factors significantly determined the probability of buying Pla Tubtim were buyer's knowing that it was cultured and it's dish variety. Promotion on culture of this species and recipe on cooking could increase the sale. The probability of buying once known that it was cultured fish was 0.8636. Dish variety of Pla Tubtim led to a chance of buying of 0.7999. Less time spent on buying or being convenient to find in nearby supermarkets would increase the sale. The probability of buying for those who have to spend more time to buy was 0.4939. High income group could afford more expensive fancy fish thus being less interested in buying Pla Tubtim. The probability of buying for high education group was 0.4440.

Perception on Pla Tubtim could not significantly explain variation in preference and buying decision. In term of taste, married buyer likely considered taste as important factor in buying Pla Tubtim, so did buyer who had information on Pla Tubtim. Buyer who knew that Pla Tubtim was cultured concerned more on nutrition. Higher education buyer and elder buyer concerned more on nutrition. Married buyer considered colour as important in buying, so did more time spent on buying. Elder buyer concerned about fish size, being properly dish size. While higher educated buyer and experienced buyer also concerned but at a lower probability. This information could be useful for advertising and market promotion on Pla Tubtim.

Reference:

Cheng, H. and C. Oral, Jr. Demand Analysis of Fresh and Frozen Fish and Shell fish in the United States, in *Journal of American Agricultural Economics Association,.*70(3), 533 – 542. 1988.

Engle, C.R. and P.Kouka. Potential Consumer Acceptance of Canned Bighead Carp: A Structure Model Analysis. In *Marine Resource Economics.* 10, 101 – 116. 1995

Payyas, A.N., C.M. Gempesaw, J.B. Bacon and A. Manalo. Consumer Choice in Fresh Fish: Factors Affecting Purchase decision. In *Marine Resource Economics,* 10, 117 – 142. 1995.

Kokoski, M.F. An Empirical Analysis of Intertemporal and Demographic Vacations in Consumer Preference. In *American Journal of Economics*, 66(40, 894 – 497. 1986.