Factors Influencing Urban Residents' Tea Consumption Habits: An Empirical Study of Hangzhou City

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Abstract Based on the survey data concerning residents in Hangzhou City, we analyze the main factors influencing consumers' spending decisions, using Probit model. The results show that gender, age, and personal income have a significant positive effect on whether to drink tea; the degree of understanding of the tea, and the number of acquaintances drinking water also have a significant positive effect on whether to drink tea; but individual career, unit characteristics, and educational level have no significant positive effect on whether to drink tea. This research conclusion can provide microscopic evidence for the tea industry's healthy development and formulation of marketing strategies; at the same time, provide a reference for marketing of the other hobby products.

Key words Personal characteristics, Bandwagon effect, Probit model, Tea consumption, Urban residents

In recent years, China's tea industry develops rapidly, and the industrial scale has been expanding. Now China has been the world's largest tea producer and consumer. In 2010, the domestic consumption amounted to 1.115 million tons. Domestic scholars have conducted some researches on issues concerning tea consumption[1-5], but there are still no normative quantitative researches based on large sample, and there are few empirical researches on factors influencing tea consumption, which is extremely inconsistent with the current situation of flourishing tea industry at present[6-7].

Based on the large-sample survey data concerning residents in Hangzhou City, we analyze the main factors influencing consumers' spending decisions, using micro-measurement method, in order to provide microscopic evidence for the tea industry's healthy development and formulation of marketing strategies and provide a reference for marketing of the other hobby products.

1 Theoretical basis and data sources

1.1 Theoretical basis Consumers' spending decision-making behavior is affected by many factors. The research on this issue has always been the hot issue of economics and marketing research. As yet, there have been rich research results, and these research results provide theoretical reference and guidance for the study in this article.

The behavioral model proposed by the American social psychologist Kurt Lewin, provides an important analysis tool for the analysis of consumer behavior. The theory believes that human behavior is mainly influenced and restricted by personal internal factors and external environmental factors[8]. We borrow this idea in the analysis, selecting the representative indicators of the internal factors and external environmental factors for analysis, selecting demographic characteristics variable as the indicator to measure the internal factors affecting consumer behavior.

To measure external environmental factors, we mainly choose the indicator of people's tea drinking habits. Tea consumption is the hobby consumption, vulnerable to the impact of the surrounding people. This phenomenon can be summarized as the bandwagon effect of consumption. The bandwagon effect is a well documented form of groupthink in behavioral science and has many applications. The general rule is that conduct or beliefs spread among people, as fads and trends clearly do, with "the probability of any individual adopting it increasing with the proportion who have already done so". Specifically, it means that after the consumers receive information on others' product evaluation, purchase intention or purchase behavior, they will change their consumption behavior, and try to be consistent with others[9], in order to obtain wide social identity and group integration. We select the number of acquaintances drinking tea to measure this effect.

1.2 Data sources and descriptive analysis The data used in this study are from the National Tea Industry Technology System Industry Economic Research Institute's database on consumption research and survey in Hangzhou City.

The survey and sampling regions are concentrated in Shangcheng District, Xiacheng District, West Lake District, Jianggan District and Gongshu District in Hangzhou City. We take the proportion of population in different districts as weight to configure sample size. There are 320 questionnaires in Shangcheng District (16%), 380 questionnaires in Xiacheng District (19%), 600 questionnaires in West Lake District (30%), 420 questionnaires in Jianggan District (21%), and 280 questionnaires in Gongshu District (14%). Coupled with

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200 valid pre-survey questionnaires, there are a total of 2200 questionnaires. After screening and treatment, 2059 questionnaires are ultimately retained.

From the sample structure, men and women account for 57.47% and 42.53% of total samples, respectively. Age covers the people with age ranging from 16 to 89 years. Educational level includes various levels, from junior high school or lower education to postgraduate. Distribution of occupation type and nature of the unit, and other specific sample distribution characteristics can be seen in Table 1.

Table 1 shows that there is prominent gender difference in tea consumption. The share of people drinking tea in the female samples is 49.77%, while the share of people drinking tea in the male samples is 64.98%. If taking 10 years as age classification standard, with increase in the age, the proportion of people drinking tea constantly increases on the whole, from 38.46% (the proportion of people aged below 20 years who drink tea) to 75%.

In terms of educational level, the share of people drinking tea in the samples with different levels of education basically hovers at 57%, never showing large differences. From the nature of unit of people surveyed and researched, the share of people drinking tea in the staff of government bodies and institutions is relatively large, followed by the share of people drinking tea in the employees of the state-owned enterprises and private enterprises. The share of people drinking tea in the employees of the foreign-funded enterprises is the smallest. In the light of the occupation, the proportion of students drinking tea is the lowest; the proportion of self-employed households and the general staff drinking tea is less than 60%; the proportion of other people drinking tea is more than 60%.

Table 1 Basic characteristics of the survey and research sample

Item	Property	Survey sample structure		Sample structure of people drinking tea		
		Number of samples	Structural distribution %	Number of samples	Structural distribution %	Proportion of people drinking tea//%
Gender	Female	871	42.53	431	36.22	49.77
	Male	1 177	57.47	759	63.78	64.98
Age	Below 20	105	5.12	40	3.36	38.46
	21 –30	906	44.2	440	36.97	48.89
	31 –40	434	21.17	279	23.45	64.58
	41 –50	285	13.9	192	16.13	67.84
	51 –60	165	8.05	126	10.59	77.3
	61 –70	71	3.46	53	4.45	74.65
	Above 71	53	2.59	39	3.28	75
Educational level	Junior high school or lower education	348	17.22	216	18.46	62.43
	Senior high school or technical secondary school	526	26.03	311	26.58	59.81
	Junior college	423	20.93	240	20.51	57.01
	Regular college	607	30.03	336	28.72	55.72
	Higher education than regular college	117	5.79	67	5.73	57.26
Nature of units	Government bodies	59	3.05	45	4.03	76.27
	Institutions	220	11.36	141	12.62	64.98
	Foreign-funded enterprises	66	3.41	31	2.78	46.97
	State-owned enterprises	101	5.21	62	5.55	61.39
	Private enterprises	771	39.8	459	41.09	59.84
	Others	720	37.17	379	33.93	53.01
Occupation	Civil servants	58	2.99	44	3.95	75.86
	Staff members of institutions	80	4.13	50	4.49	64.1
	Top managers of enterprises	130	6.7	86	7.72	66.15
	The general staff	723	37.31	406	36.45	56.62
	Teachers	68	3.51	43	3.86	63.24
	Doctors	29	1.5	19	1.71	65.52
	Researchers	12	0.62	8	0.72	66.67
	Engineers or designers	112	5.78	69	6.19	62.16
	Self-employed households	167	8.62	94	8.44	56.29
	Farmers	42	2.17	27	2.42	64.29
	Students	204	10.53	75	6.73	37.31
	Others	313	16.15	193	17.32	61.86
Personal annual income	0 –20 000 yuan	380	19.73	210	18.49	55.26
	>20 000 –40 000 yuan	484	25.13	276	24.3	57.02
	>40 000 –60 000 yuan	363	18.85	219	19.28	60.33
	>60 000 –80 000 yuan	158	8.2	106	9.33	67.09

(Table 1)

Item	Property	Survey sample structure		Sample structure of people drinking tea		
		Number of samples	Structural distribution %	Number of samples	Structural distribution %	Proportion of people drinking tea // %
	>80 000 – 100 000 yuan	188	9.76	129	11.36	68.62
	>100 000 yuan	353	18.33	196	17.25	55.52
Number of acquaintances drinking tea	Almost all people do not like	32	1.57	2	0.17	6.25
	Few people like	228	11.2	46	3.9	20.18
	Part of people like	964	47.37	480	40.71	49.79
	Many people like	811	39.85	651	55.22	80.27
Items of knowledge known about tea	0	682	33.37	201	16.95	29.47
	1	633	30.97	396	33.39	62.56
	2	395	19.32	301	25.38	76.20
	3	177	8.66	144	12.14	81.36
	4	100	4.89	93	7.84	93.00
	5	57	2.79	51	4.3	89.47

From the personal income, with improvement in the level of income, the proportion of people with different incomes drinking tea shows overall upward trend, from 55% of people with income below 20 000 yuan to 68% of people with income from 80 000 to 100 000 yuan.

The statistical analysis also shows that the more the persons known by someone surveyed drinking tea, the greater the likelihood for this consumer to drink tea. Among the people whose friends seldom drink tea, the proportion of people drinking tea is only 6.25%, while among the people whose friends mostly like drinking tea, the proportion of objects surveyed drinking tea is as high as 80%. In addition, the awareness level of knowledge of tea also has a great impact on whether the respondents drink tea. With increase in the degree of understanding of the tea, it is more likely to get the habit of drinking tea. The share of people drinking tea in the sample group knowing at least one item of knowledge about tea accounts for more than 62%; the share of people drinking tea in the sample group knowing four to five items of knowledge about tea accounts for more than 90%.

2 Empirical analysis

2.1 Model setting The discrete choice model can conduct empirical statistical analysis of the individual and family behavior, so it is widely used in empirical research on consumer behavior. And Logit model and Probit model are the most widely used model[10].

Logit model is the most widely used model, but it has some limitations. It can not signify the random changes and handle the correlation between unobservable factors in different periods. Probit model can solve three problems[11]. Therefore, according to the characteristics of survey data, this article selects Probit model as the basic model, and the basic form is as follows:

$$prob(Y=1|x)=prob(Y^*>0|x)=prob\{[\mu>-(\alpha+\beta x)]|x\}=1-\Phi[-(\alpha+\beta x)]=\Phi[(\alpha+\beta x)]$$

where Y^* is the unobserved latent variable; Y is the actual observed dependent variable; X is the observed vector of consumers' characteristics, including gender, age, income, educational level, unit and occupation, items of knowledge known about tea, and number of acquaintances drinking tea; μ is the random disturbance term, following the standard normal distribution; Φ is the standard normal cumulative distribution function; β is the parameter of each explanatory variable, which signifies the impact of decision makers' various characteristics on the decision-making. The specific meaning and interpretation are shown in Table 1.

We survey whether the respondents in the questionnaire drink tea (drinking tea = 1; never drinking tea = 0):

$$Y=\begin{cases}Y^*>0 & \text{drinking tea}\\ Y^*\leqslant 0 & \text{never drinking tea}\end{cases}$$

As to the selection of explanatory variables, this study places emphasis on examining the impact of personal characteristics and family characteristics variables on the tea consumption, the price variable not included.

Table 2 Signification of important variables and value assignment characteristics

Variable	Signification	Explanation
Gender	Male = 1, Female = 0	
Age	Continuous variable (years)	
Personal income	Continuous variable (104 yuan)	
Household income	Continuous variable (104 yuan)	
Items of knowledge known about tea	Continuous variable (Number of items)	
Number of acquaintances drinking tea	1 = Almost all people do not like; 2 = Few people like; 3 = Part of people like; 4 = Many people like	

(Table 2)

Variable	Signification	Explanation
Nature of units	Government bodies, institutions, foreign-funded enterprises, state-owned enterprises, private enterprises, others	The nature of each type of unit is regarded as a qualitative variable when using it (yes = 1; no = 0).
Occupation	Civil servants, staff members of institutions, top managers of enterprises, the general staff, teachers, doctors, researchers, engineers or designers, self-employed households, farmers, students, others	The nature of each type of occupation is regarded as a qualitative variable when using it (yes = 1; no = 0).
Educational level	Junior high school or lower education, senior high school, junior college, regular college, postgraduate or higher education	The nature of each type of educational level is regarded as a qualitative variable when using it (yes = 1; no = 0).

2.2 Results and analysis Given that there is high-degree correlation between personal income and household income, between the nature of units and occupation, we classify and combine them, respectively. As for the regression results of combining the nature of units, personal income, household income, educational level, with personal characteristics variables, respectively, they can be seen in Table 3. As for the regression results of combining the type of occupation, personal income, household income, educational level, with personal characteristics variables, they can be seen in Table 4. In order to examine the impact of each variable on whether to drink tea, the marginal effect of each explanatory variable is mainly reported in the results report.

Table 3, 4 show that when the other conditions remain unchanged, gender and age have a significant impact on whether to drink tea. Specifically, the probability of the male drinking tea is 12% higher than that of the female drinking tea. In the statistical description, the proportion of the male drinking tea is 15.22% higher than the proportion of the female drinking tea. The two results are very close.

Statistical analysis show that age is also positively correlated with whether to drink tea. With increase in the age, the proportion of the sample people with different ages drinking tea is ceaselessly increased. The proportion of people aged 30 to 50 years drinking tea is more than 60%; the proportion of people aged more than 50 years drinking tea is up to 75%.

The income level is an important factor determining the consumers' spending decisions, and the results show that for tea consumption, personal income has a more significant impact on consumption than household income. The degree of understanding of the tea and the number of acquaintances drinking water also have a significant impact on whether a person to drink tea. This indicates that whether consumers choose to drink tea is highly related to their awareness of the tea function; tea consumption has bandwagon effect, demonstration effect and group integration function.

The results show that the occupation and unit characteristics have no significant effect on whether a person drinks tea; the state-owned enterprises and private enterprises in the nature of units are significant at level of 10% only in the column of educational level; in the item of occupation, only the students have 10 % or 5% significance level on whether to drink tea, and it is negative effect. The results suggest that whether to drink tea is not closely related to social status and class relations, and excessively reflecting the tea consumption level in marketing and development is perhaps worthy of discussion and reflection.

But from the influence degree, in general, working in the government bodies, institutions and private enterprises has a positive impact on whether to drink tea, while working in the foreign-funded enterprises has a negative impact on whether to drink tea. From the specific occupation, the probability of civil servants, doctors, engineers and designers drinking tea is great; the probability of students and people with no source of income drinking tea is obviously small. It is generally believed that people with high level of education pay more attention to health investment, and the probability of drinking tea is greater, but empirical analysis has concluded that educational level has an inconspicuous impact on whether to drink tea. There is no significant difference in the tea consumption between people with different levels of education, and sometimes the probability of people with high level of education drinking tea is smaller, which is also consistent with the previous descriptive statistical analysis.

Table 3 Probit regression results of nature of units, personal income, household income, educational level and personal characteristics variables

Personal characteristics variables	Nature of units	Personal income	Household income	Educational level
Gender (*xb*)	0.129***	0.133***	0.129***	0.129***
	(0.026 3)	(0.026 2)	(0.026 3)	(0.026 3)
Age (*nl*)	0.00467***	0.003 76***	0.00259**	0.003 32***
	(0.001 03)	(0.001 02)	(0.001 09)	(0.001 10)
Personal income (*grsr*)		0.005 89**	0.008 18***	
		(0.002 73)	(0.002 89)	
Household income (*jtsr*)	0.001 53			0.002 35*
	(0.001 09)			(0.001 24)
Items of knowledge known about tea (*cyzs*)	0.144***	0.156***	0.162***	0.150***
	(0.012 0)	(0.012 0)	(0.012 2)	(0.012 2)

(Table 3)

Personal characteristics variables	Nature of units	Personal income	Household income	Educational level
Number of acquaintances drinking tea (*srhcs*)	0.237***	0.248***	0.250***	0.237***
	(0.020 7)	(0.020 7)	(0.020 7)	(0.020 8)
Government bodies (*ifzfjg*)	0.080 6	0.020 7	0.0573	0.115
	(0.082 9)	(0.085 7)	(0.083 7)	(0.079 0)
Institutions (*ifsydw*)	0.054 0	0.004 11	0.025 7	0.079 8*
	(0.042 7)	(0.044 3)	(0.044 4)	(0.042 4)
Foreign-funded enterprises (*ifwq*)	−0.021 0	−0.091 7	−0.068 1	0.007 83
	(0.081 6)	(0.076 8)	(0.076 9)	(0.080 2)
State-owned enterprises (*ifgq*)	−0.0181	−0.0852	−0.0662	0.00552
	(0.067 0)	(0.064 0)	(0.064 2)	(0.066 2)
Private enterprises (*ifsq*)	0.036 2	0.013 8	0.026 8	0.052 9*
	(0.028 9)	(0.029 9)	(0.030 2)	(0.029 3)
Junior high school or lower education (*ifczyx*)			0.021 2	0.0832
			(0.123)	(0.118)
Senior high school (*ifgzzz*)			−0.033 5	0.006 71
			(0.123)	(0.123)
Junior college (*ifdz*)			−0.090 2	−0.054 0
			(0.126)	(0.127)
Regular college (*ifdxbk*)			−0.099 1	−0.052 7
			(0.123)	(0.125)
Pseudo R^2	0.231 8	0.245 3	0.249 1	0.236 9
The number of observations	1 707	1 789	1 789	1 707

Note: What in brackets is the standard error of corresponding coefficient; confidence level is *** p<0.01, ** p<0.05, * p<0.1.

Table 4 Probit regression results of type of occupation, personal income, household income, educational level and personal characteristics variables

Personal characteristics variables	Type of occupation	Personal income	Household income	Educational level
Gender (*xb*)	0.116***	0.120***	0.123***	0.115***
	(0.026 6)	(0.026 5)	(0.026 4)	(0.026 5)
Age (*nl*)	0.002 27*	0.00196*	0.002 90***	0.003 29***
	(0.001 18)	(0.001 14)	(0.001 09)	(0.001 13)
Personal income (*grsr*)		0.006 93**	0.004 39	
		(0.003 13)	(0.002 93)	
Household income (*jtsr*)	0.002 23*			0.001 59
	(0.001 24)			(0.001 13)
Items of knowledge known about tea (*cyzs*)	0.153***	0.164***	0.159***	0.147***
	(0.012 3)	(0.012 3)	(0.012 1)	(0.012 1)
Number of acquaintances drinking tea (*srhcs*)	0.241***	0.252***	0.251***	0.239***
	(0.020 8)	(0.020 8)	(0.020 7)	(0.020 7)
Civil servants (*ifgwy*)	0.123	0.034 9	−0.002 44	0.089 5
	(0.085 8)	(0.090 0)	(0.091 5)	(0.089 8)
Staff members of institutions (*ifsyry*)	−0.056 3	−0.052 7	−0.070 4	−0.075 7
	(0.078 3)	(0.075 5)	(0.075 5)	(0.078 3)
Top managers of enterprises (*ifqyzgc*)	0.038 2	0.001 53	−0.021 0	0.002 24
	(0.059 5)	(0.061 4)	(0.061 5)	(0.060 0)
Teachers, doctors, researchers (*ifjsysky*)	0.036 3	0.020 5	−0.021 4	−0.00858
	(0.063 4)	(0.063 1)	(0.062 8)	(0.063 3)
The general staff (*ifptzy*)	−0.010 6	−0.021 9	−0.033 5	−0.024 2
	(0.038 0)	(0.037 1)	(0.036 9)	(0.037 8)
Engineers or designers (*ifgcsj*)	0.088 6	0.065 5	0.034 7	0.052 2
	(0.060 2)	(0.060 0)	(0.060 6)	(0.061 2)
Self-employed households (*ifgth*)	−0.028 8	−0.032 5	−0.014 8	−0.016 6
	(0.053 8)	(0.055 1)	(0.054 2)	(0.053 3)
Farmers (*ifnm*)	0.102	0.0640	0.0924	0.136
	(0.091 5)	(0.096 2)	(0.091 8)	(0.084 9)
Students (*ifxs*)	−0.111*	−0.0820	−0.121*	−0.139**
	(0.059 7)	(0.068 4)	(0.067 0)	(0.058 5)
Junior high school or lower education (*ifczyx*)	0.086 3	0.022 7		

(Table 4)

Personal characteristics variables	Type of occupation	Personal income	Household income	Educational level
	(0.118)	(0.123)		
Senior high school (*ifgzzz*)	0.020 3	−0.027 5		
	(0.123)	(0.123)		
Junior college (*ifdz*)	−0.038 9	−0.085 1		
	(0.126)	(0.126)		
Regular college (*ifdxbk*)	−0.039 9	−0.098 2		
	(0.124)	(0.124)		
Pseudo R^2	0.240 2	0.249 6	0.246 2	0.236 1
The number of observations	1 707	1 789	1 789	1 707

Note: What in brackets is the standard error of corresponding coefficient; confidence level is * * * $p<0.01$, * * $p<0.05$, * $p<0.1$.

3 Conclusions and recommendations

Gender, age, and personal income have a significant positive effect on whether to drink tea, and the impact of household income is not so significant as that of personal income. Degree of understanding of the tea, and the number of acquaintances drinking water also have a significant positive effect on whether a person drinks tea, indicating that increasing the popularity and publicity of the knowledge of tea, so that more people understand the benefits of drinking tea and learn more about tea, is the most effective means to expand the basis of tea consumption. This conclusion also provides microscopic evidence for carrying out tea marketing, relationship marketing, and exploiting the group consumer market. Individual career, unit characteristics, and educational level have no significant effect on whether to drink tea, indicating that tea drinking is not closely related to social status and class relations. It also reflects the spirit of the tea ceremony with characteristics of equality and harmony. Excessively reflecting the tea consumption level in marketing and development is perhaps worthy of discussion and reflection.

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in pastoral areas, bringing great difficulties to the herdsman's hospitalization. The government should increase investment in the basic health care facilities, and train the grass-roots health care staff regularly, to improve the professional quality of practitioners. Meanwhile, according to the herdsman's actual bearing capacity, it is necessary to promote the fund-raising level of cooperative health care, so as to benefit the herdsman and attract more herdsmen to join the cooperative medical care.

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