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Modelling Purchasing Demand of Urban People for Ornamental Plants Using Logistic Regression Analysis: Sample of Malatya City

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Abstract: Quality and quantity of urban green space in a city can directly affect public living comfort in the same city. Today, several cities in Turkey face a dense structuring process. People do not give the same importance to green areas as their living places they shelter. However, some local governments develop strategies to protect and use existent green areas spend great amount of efforts and money to gain new green areas through landscape architecture practices. Most important element of green areas is ornamental plants. In the scope of the study, a questionnaire survey was completed using face to face technique. Data was evaluated using single variable logistic regression analysis and variables candidate to enter multivariable model were determined. Equivalence to be used in the determination of probability for urban people to purchase ornamental plants was determined with the help of Logit Model formed as the result of multivariable regression analysis. It was found according to model that gender of people buying ornamental plants, having pet and balcony in the houses and the number of family members were the effective variables. At the end of the study new approaches were proposed for the propagation and marketing of ornamental plants.

Key words: Ornamental plants, purchasing demand, logistic regression, green spaces, Logit Model, Malatya

INTRODUCTION

Rapid increase in urban population due to emigration from rural to urban in Turkey caused cities to expand and turn into grand metropols. This process continuing in the same velocity today increases public worrisome about the existence of and demand for green areas. Under this circumstance, local governments have to leave large budgets for landscape designs and people spend time, efforts and also money to constitute green areas in and around their close living areas. These practices partly lead to the formation of an important economic sector based on growing, selling and purchasing ornamental plants. Education and cultural level and life style of society are the parameters to support this sector to live. In addition, altering social needs and perception of city and environment increased the interest for ornamental plants.

It was during the last years of 19th and first years of 20th century that economic sector of ornamental plants, accepted to be a subclass of plant growth sector which has now a trading volume of 50 billion USD was first introduced to the world and the concepts like propagation, marketing and employment became the parts of this sector. Urbanisation process played the most effective role in the development this sector. It is thought today that some national socio-economical development indicators such as education level, GDP, etc. are closely related to the development of this sector. In the second half of 20th century, the sector based on ornamental plants turned out to be a significant economic sector for many countries in the world with its share in their added value. Significance of the sector brought together the expertise from bottom to top, production, marketing and consumption concepts like in an industrial sector and the sector began to be called Ornamental Plant Industry after standardisation, continuity and use of technology reached to a certain level in production (Karaguzel *et al*., 2010).

Propagation of ornamental plants first began in 1940s in Istanbul in Turkey with cut flower cultivation after that this practice and sector spread to the climatically suitable areas such as Aegean and Mediterranean regions. In the following years ornamental plant sector faced great interest and demand due to the increase in urbanisation and the development of aesthetical perspective of people resulting from increasing prosperity. However, sustainability of the sector depends largely on the innovation of new products, new ways of production and marketing. With different activity fields ornamental plant sector in Turkey is on the edge of important changes such

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Table 1: Turkey's ornamental plant production areas and yearly trends

	Surface area (da)					
Activity field	1999	2005	2006	2007	2008	2010
Cut flowers	7957.0	13310.0	12970.4	13282.3	13319.3	12126
Indoor ornamental plants	541.2	785.4	883.0	1249.5	1325.9	1135
Outdoor ornamental plants	5642.9	11809.7	15743.0	15339.1	16737.7	19680
Natural flower bulbs	270.0	471.5	570.0	651.8	750.7	649
Total	14411.5	26376.6	30166.6	30522.7	32133.6	33590

Table 2: Export of ornamental plants by year (1000$)

	Years (%)				
Crop groups	2007	2008	2009	2010	2010
Cut flowers	32.689	30.116	29.921	32.154	59.6
indoor ornamental plants	7.385	9.116	13.009	18.479	34.3
Outdoor ornamental plants	1.773	1.715	1.775	1.488	2.7
Natural flower bulbs	2.918	3.012	2.541	1.810	3.4
Total	44.735	43.959	47.246	53.931	100.0

as decision making and renovating and developing itself in a a process including existence, defining itself, integration with EU and the world (Karaguzel *et al*., 2010).

Decorative plants grown with aesthetical, functional and economical aims are called ornamental plants (Ay, 2009). Ornamental plant sector can be classified into 4 groups; cut flower, outdoor ornamental plants, indoor ornamental plants and natural flower bulbs (Titiz *et al*., 2000). Yearly trends in ornamental plant sector in Turkey is presented in Table 1 (Karaguzel *et al*., 2010).

Another component of market demand for ornamental plants is export. Export rates of ornamental plants in Turkey are presented in Table 2. It can clearly be understood from the rates that ornamental plant sector occupies an important place in Turkey. From this point of view, topics related to ornamental plants carrying economic, aesthetic and ecologic values should be evaluated in details. There are several studies today where consumption habits and bias of people towards various goods and services were evaluated using different methods effective factors on consumption and consumption structure models were determined (Ozcicek, 2003; Hatirli *et al*., 2004; Cobanoglu *et al*., 2005; Tosun and Hatirli, 2009; Cankurt and Miran, 2010; Cankurt *et al*., 2010; Lorcu and Bolat, 2012). There are also some studies taking into consideration urban people's demand and preferences for ornamental plants and their demographic features functional and aesthetic features of outdoor ornamental plants related to design principles and ratio of demographic variables to demand in rational scale (Yilmaz and Zengin, 2003; Yilmaz, 2006). However such studies are closely related to the determination of existent situation in rational scale rather than people's demand or statistical model formation for ornamental plants.

The aim of present study is to investigate the consumer behaviours when purchasing ornamental plants. It is vitally important for all sides including directly or indirectly related to ornamental plants and decision makers ranging from civilians and private sector representatives to public institutions, to know what factors are effective on the determination of public demands for purchasing ornamental plants and to develop strategy for production and marketing.

MATERIALS AND METHODS

This study was conducted in Malatya declared to be grand municipality in 2002. World's apricot need is met by the production in Malatya in the rate of 75% and the city offers a broad range of ecologically and economically valuable agricultural crops. During the completion process of grand municipality an intense demand may be seen for ornamental plants.

Malatya City is located in East Anatolia Region (35°54' to 39°03'N, 38°45' to 39°08'E), sub-region of Upper Euphrates and in the Southwest edge of depression zone covering the provinces of Adiyaman, Elazig, Bingol, Mus and Van. The province covering surface area of 12.313 km^2 is surrounded by Elazig and Diyarbakir in the east, Adiyaman in the South, Kahramanmaras in the West, Sivas and Erzincan in the West (Fig. 1). Malatya functions as a passage point through the valleys of Sultansuyu and Surgu Creek to Mediterranean region, to Middle Anatolia through Tohma Valley, to East Anatolia through Euphrates Valley (Anonymous, 2010).

Material of the study is accepted to be local people of Malatya who were subjected to a survey questionnaire in the city centre. Secondary material is the literature including previous studies such as statistics, annual reports, etc. Equation 1 was used in order to determine the sample size (Newbold, 1995) (Eq. 1):

$$n = \frac{Np(1-p)}{(N-1)\sigma_{px}^2 + p(1-p)} \quad (1)$$

Where:

n = The sample size
N = The population size
σ_{px}^2 = Variance[1]
p = The rate of people purchasing ornamental plants[2]

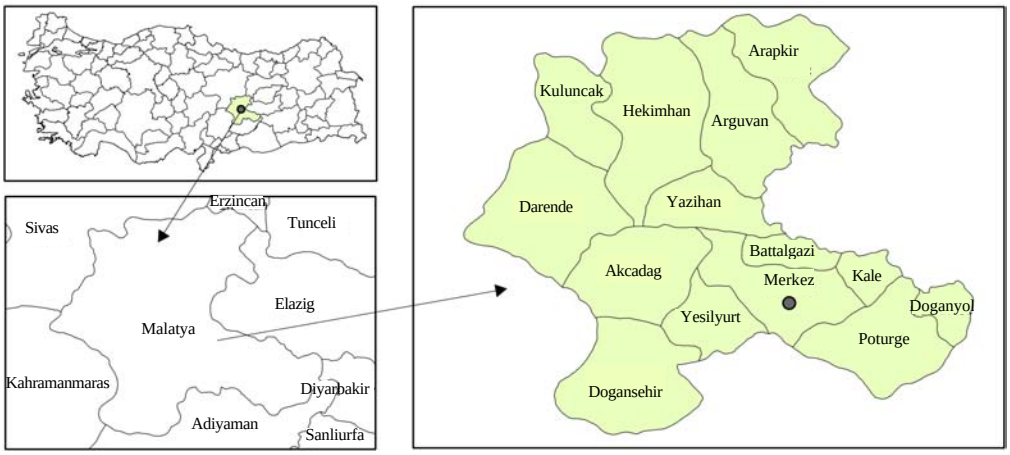

Fig. 1: Location of Malatya

In the determination of largest sample size, the value of [1] was accepted to be 1.645 S_p^2 = 0.05 and S_p^2 = 0.03; value of [2] was calculated to be p = 0.5.

p is the number of parts having specific features in the population and can be estimated intuitively as in previous studies. p should be 0.5 in order to reach maximum population size. p-values lower or higher than 0.5 reduces sample size. Therefore, working with maximum sample size may reduce possible errors if p is not known (Miran, 2003). There is no literature related to the rate of purchasing ornamental plants in Malatya. Since, no pre-survey questionnaire was completed in order to determine p-value, p was accepted to be 0.5 which can give the largest possible sample size in give p (1-p).

Population in city centre is 419,959 while the number of house holders is 163,718. From the Eq. 1, minimum sample size was calculated to be 277 which was increased in the rate of 5% and reached to 291. Questionnaire forms were completed face to face in every neighbourhood of the city in order to provide participation from all sides of society.

Statistical models developed to explain events in nature may sometimes be inefficient in doing so. Regression analysis method evaluating the effective relationships on the study subject should be convenient with the nature of data. Analysis methods to be used when the number of dependent variables is two (0, 1) are limited in number however, extensively used ones are Logistic Regression (LR), Logit, Probit and Linear Probability Models (Gujarati, 1995).

Logistic regression is a method used alternatively to linear regression analysis since, normality assumption is not valid when variables are two or more classed nonlinear. Mathematical flexibility of the model obtained from the solution, limited assumption and easiness to use and interpret increased the interest to the method (Cankurt *et al*., 2010; Ozdamar, 1999).

Logistic regression is now used extensively in several fields such as marketing, sociology, economy, psychology and medicine (Cankurt *et al*., 2010; Keskinoglu *et al*., 2006; Ozkan *et al*., 2007). However, there is no study on the analysis of people's demand for ornamental plants using logistic regression.

There are several studies related to the determination of demand types for long and short living products like animal and agriculture based frozen or fresh food and devices used in agricultural practices. Common characteristics of such studies are that their consumption structures are evaluated considering dependent variable as categorical or puppet variable (Ozcicek, 2003; Hatirli *et al*., 2004; Tosun and Hatirli, 2009; Cankurt and Miran, 2010; Lorcu and Bolat, 2012). Assumptions related to the logistic model are briefly as follows:

- $Y_1, \ldots, Y_n$ values are statistically independent
- Independent variables are independent from each other (X_k)
- $Y_i \in (0, 1)$; i = 1, 2, …, n
- $P(Y_i = 1/X_i) = P_i$; i = 1, 2, …, n

Logistic Regression Method is frequently preferred for its flexibility and advantages such as independent variables' both linear and non-linear values in regression analysis; the number of parameters in function; unlimited distribution of probability on functions of independent variables; resistance to hypothesis invalidity (Cankurt and Miran, 2010; Anderson and Blair, 1982).

By considering its advantages mentioned earlier and easiness to interpret, Logistic Regression Model was used in the study to determine what and how much variables may be effective on people's demand for purchasing ornamental plants. Dependent variable of the study is whether families buy ornamental plants by accepting the families buying ornamental plants to be 1 while those not are 0. Categorically structured independent variables; gender, age, marital status, occupation, education level of family member going shopping, tenant or homeownership of family, type of house family stay, gross surface area of the house, presence of balcony, total family income, having pat in the house, how long the family has been living in the same house and nonlinear scaled variables, the number of family members are the variables candidate to enter logistic model.

Iyit and Genc (2005) suggested that at the stage of the formation of multivariable double logistic regression model, significance test of constants should be performed at first using single variable logistic regression analysis of candidate variables. From this point of view, for the determination of possible variables related to the demand for ornamental plants accepted to be dependent variable, single variable logistic regression analysis was applied and candidate variables for multivariable model were determined.

Wald test statistics is used to control the significance of each constant in the model in the selection of candidate variables to enter the multivariable model. Hypothesises used for this aim are given below (Iyit and Genc, 2005); $H_0 = \beta_i = 0$; $H_1 = \beta_i \neq 0$.

It was stated in the studies by Bendel and Afifi (1977) and Mickey and Greenland (1989) that when probability value of Wald test statistics is lower than error value of 0.25 ($p<0.25$), related variables can be candidate to multivariable model.

Since, all the numerical variables used in the present study were determined in whole numbers, there was no need for them to control their linear relationship with Logit and if they were entered to model using true model scale (Guerro and Johnson, 1982).

Multivariable regression model was founded by choosing independent variables to enter model according to the significance level of constant.

Hosmer-Lemeshow test was used for the determination of the harmony of newly founded multivariable logistic regression model by using observed and expected frequencies belonging to 20 people. Hosmer-Lemeshow $\hat{C}_g^*$ statistic o_{kl} values are calculated as in the Eq. 2 to show frequencies observed in each variable group buying or not buying ornamental plants (Lemeshow and Hosmer, 1982):

Table 3: Categorical variables used in the model and their distribution for the categories

Variables	Category	Number	Rate(%)
Gender	(0) Male	49	16.8
	(1) Female	242	83.2
Marital status	(0) Single	10	3.4
	(1) Married	269	92.4
	(2) Other	12	4.1
Age	(0) 20 years and below	10	3.4
	(1) 21-40 years	164	56.4
	(2) 41-60 years	87	29.9
	(3) 61 and above	30	10.3
Occupation	(0) Other (housewife, student, etc.)	111	38.1
	(1) Public officer	53	18.2
	(2) Worker	35	12.0
	(3) Pensioner	27	9.3
	(4) Self employed	44	15.1
	(5) Unemployed	16	5.5
	(6) Farmer	5	1.7
Education	(0) Uneducated	12	4.1
	(1) Primary school	48	16.5
	(2) Secondary school	36	12.4
	(3) High-school	96	33.0
	(4) Vocational school	28	9.6
	(5) University graduate	63	21.6
	(6) Master education	8	2.7
Homeowner/Tenant	(0) Tenant	116	39.9
	(1) Homeowner	175	60.1
Home type	(0) Site	54	18.6
	(1) Apartment with garden	30	10.3
	(2) No garden apartment	130	44.7
	(3) Detached house with garden	72	24.7
	(4) Detached house without garden	5	1.7
Income	(0) 0-750 TL	23	7.9
	(1) 751-1500 TL	97	33.3
	(2) 1501-3000 TL	143	49.1
	(3) 3001-4500 TL	24	8.2
	(4) 4501 TL and above	4	1.4
Pet	(0) No	237	81.4
	(1) Yes	54	18.6
Balcony	(0) No	37	12.7
	(1) Yes	254	87.3
Surface area home	(0) 0-80 m^2	58	19.9
	(1) 81-120 m^2	181	62.2
	(2) 121-180 m^2	46	15.8
	(3) 181 m^2 and above	6	2.1
Time period lived	(0) <1 year	40	13.7
	(1) 1-5 years	153	52.6
	(2) 6-10 years	72	24.7
	(3) 10 years and above	26	8.9
Buying rate	(0) No	169	58.1
	(1) Yes	122	41.9

$$\hat{C}_g^* = \sum_{k=0}^{1}\sum_{l=1}^{10}\frac{(o_{kl} - e_{kl})^2}{e_{kl}} \quad (2)$$

Harmony of the model was evaluated comparing $\hat{C}_g^*$ statistics at $\alpha = 0.05$ significance level and freedom degree of 8 using Chi-square distribution (Iyit and Genc, 2005).

Findings: Totally 291 locals living in Malatya were subjected to the questionnaire using face to face method. Data obtained from questionnaire forms belonging to variables their categories are presented in Table 3. All the variables planed to take place in the model excepting

Table 4: The results of single variable logistic regression models of variables thought to be associated with the purchase of ornamental plants

Variables	$\hat{\beta}$	SE ($\hat{\beta}$)	Wald	SD	Significance	Probable ($\hat{\beta}$)
Gender	0.475	0.331	2.056	1	0.152*	1.608
Marital status	-	-	1.631	2	0.443^{NS}	-
Marital status (1)	-0.307	0.644	0.227	1	0.634^{NS}	0.735
Marital status (2)	-1.099	0.199	1.429	1	0.232*	0.333
Age			3.605	3	0.307^{NS}	
Age (1)	0.259	0.664	0.152	1	0.697^{NS}	1.295
Age (2)	-0.087	0.682	0.016	1	0.899^{NS}	0.917
Age (3)	-0.442	0.759	0.339	1	0.560^{NS}	0.643
Occupation	-	-	22.008	6	0.001*	-
Occupation (1)	0.586	0.343	2.915	1	0.088*	1.797
Occupation (2)	0.249	0.405	0.379	1	0.538^{NS}	1.283
Occupation (3)	0.552	0.438	1.591	1	0.207*	1.737
Occupation (4)	1.756	0.395	19.732	1	0.000*	5.790
Occupation (5)	-0.013	0.577	0.001	1	0.982^{NS}	0.987
Occupation (6)	-0.611	1.137	0.289	1	0.591^{NS}	0.543
Education	-	-	8.776	6	0.187*	-
Education (1)	1.797	1.087	2.732	1	0.098*	6.032
Education (2)	2.175	1.097	3.930	1	0.047*	8.800
Education (3)	2.104	1.065	3.906	1	0.048*	8.200
Education (4)	2.833	1.114	6.470	1	0.011*	17.000
Education (5)	2.110	1.075	3.853	1	0.050*	8.250
Education (6)	1.887	1.274	2.192	1	0.139*	6.660
Homeowner/tenant	-0.315	0.242	1.692	1	0.193*	0.730
House type	-	-	8.951	4	0.062*	-
House type (1)	0.208	0.456	0.207	1	0.649^{NS}	1.231
House type (2)	-0.080	0.324	0.061	1	0.805^{NS}	0.923
House type (3)	-0.881	0.379	5.417	1	0.020*	0.414
House type (4)	-21.129	17974.843	0.000	1	0.999^{NS}	0.000
Household income	-	-	39.258	4	0.000*	-
Household income (1)	19.791	8380.752	0.000	1	0.998^{NS}	3.935
Household income (2)	21.357	8380.752	0.000	1	0.998^{NS}	1.885
Household income (3)	23.601	8380.752	0.000	1	0.998^{NS}	1.777
Household income (4)	42.406	21773.969	0.000	1	0.998^{NS}	2.610
Pet	1.804	0.347	27.105	1	0.000*	6.074
Balcony	0.756	0.391	3.735	1	0.053*	2.130
Gross surface area of house			41.857	3	0.000*	
Gross surface area of house (1)	1.745	0.457	14.589	1	0.000*	5.725
Gross surface area of house (2)	3.718	0.581	40.985	1	0.000*	41.167
Gross surface area of house (3)	23.362	16408.711	0.000	1	0.999^{NS}	1.400
Living in the same house	-	-	2.698	3	0.441^{NS}	-
Living in the same house (1)	-0.284	0.357	0.632	1	0.427^{NS}	0.753
Living in the same house (2)	-0.411	0.399	1.058	1	0.304^{NS}	0.663
Living in the same house (3)	0.254	0.505	0.253	1	0.615^{NS}	1.289
Number of members	0.142	0.082	3.000	1	0.083*	1.152

*Significant; NS = Not Significant

householders were turned into categorical variables in order to obtain probability rates between the differences of categories. In this respect, age, marital status, occupation and education level of shopping member of family were divided into four, three, seven and seven categories respectively while house type householders live and income level, time period they have lived in their houses and gross surface area of house were divided into five, four and four categories, respectively. Puppet variables belonging to categorical structure and representatives of gender, being home owner/tenant, feeding pet in the house, having balcony in the house were used. Number of householders was determined to be numeric (non-linear scaled) variable.

When considered the preference of families for purchasing ornamental plants as dependent variable, it was found that the rate of those buying ornamental plants is 41.9%.

Table 4 represents the results of single variable logistic regression analysis conducted for each variable in order to determine candidate variables to enter multivariable logistic regression model related to data obtained from questionnaire.

As the result of the significance test conducted with the help of Table 4 related to constants of variables taking place in single variable model, gender, education, being homeowner/tenant, feeding pet, having balcony and the number of family members were determined to be candidate variables for multivariable model since there is

Table 5: The results of the multivariate logistic regression model involving variables defined to be significant in single variable model

Variables	$\hat{\beta}$	SE ($\hat{\beta}$)	Wald	SD	Significance	Probable $\hat{\beta}$	Confidence level for probable $\hat{\beta}$ is 95%	
							Bottom	Upper
Gender (1)	0.606	0.367	2.717	1	0.099*	1.832	0.892	3.765
Education	-	-	8.696	6	0.191*	-	-	-
Education (1)	1.063	1.113	0.911	1	0.340^{NS}	2.895	0.327	25.660
Education (2)	1.609	1.120	2.062	1	0.151*	4.997	0.556	44.897
Education (3)	1.562	1.083	2.082	1	0.149*	4.769	0.571	39.797
Education (4)	2.428	1.137	4.559	1	0.033*	11.336	1.220	105.293
Education (5)	1.708	1.093	2.445	1	0.118*	5.520	0.649	46.980
Education (6)	1.499	1.300	1.331	1	0.249*	4.478	0.351	57.179
Home owner/Tenant (1)	-0.103	0.270	1.144	1	0.704^{NS}	0.903	0.531	1.533
Pet (1)	1.802	0.363	24.586	1	0.000*	6.062	2.973	12.357
Balcony (1)	0.873	0.444	3.863	1	0.049*	2.394	1.002	5.718
Number of members	0.149	0.096	2.382	1	0.123*	1.160	0.961	1.401
Constant	-4.047	1.244	10.591	1	0.001	0.017	-	-

*Significant; NS: Not Significant

a statistically significant relationship between them and dependent variable. Results of multivariable model founded using candidate variables are presented in Table 5.

It was determined as the results of the significance test of constants of variables in multivariable logistic regression comprising candidate variables defined to be significant in single variable model with the help of Table 5 that all the variables except for education and being homeowner/tenant were in a statistically significant relationship (at a confidence level of 95%) with dependent variable.

From the results of the model founded, it was determined that ornamental plant purchasing rate of females was 83% more than males. This condition may be expressed by the fact that in Turkish society and family life women are generally responsible for the design, placement and maintenance of living areas.

Results of the study for education level showed that possibility for an uneducated person to buy ornamental plants is 2.9, 5, 4.8, 11.3, 5.5 and 4.5 folds lower than those primary school, secondary school, high school, vocational school, B.Sc and master education graduates, respectively. However, differences between purchasing ornamental plants and education levels are not statistically significant.

On the contrary to the general expectance, homeowners buy ornamental plants more than tenants in the rate of 11%. Being homeowner shows no statistically significant differences in dependent variable.

Families having pet and balcony buy more ornamental plants than those not in the rates of 6.1 and 2.4 folds, respectively. The number of family members was found to affect the rate of buying ornamental plants. From the model, it was found that one increase in the number of members caused an increase in the buying in rate of 16%. Modelling of factors effective on ornamental plant purchasing according to the results of multivariable logistic regression given in Table 5 is obtained with the help of the logit model in Eq. 3:

Table 6: Classification table of the model

Observed	Estimated: Do you buy ornamental plants? No	Yes	Rate of estimation (%)
Do you buy ornamental plants?			
No	150	19	88.8
Yes	67	55	45.1
Total			70.4

$$g(x) = -4.047 + 0.606\,(\text{gender}\,(1)) + 1.802\,(\text{pet}\,(1)) + 0.873\,(\text{balcony}\,1)) + 0.149\,(\text{number of members}\,(1)) \quad (3)$$

Equation 4 gives the equivalent providing the probability of one person's ornamental plant buying in Malatya:

$$\pi(x) = \frac{1}{\{1+\exp[-4.047+0.606(g(1))+ 1.802(\text{pet}(1)) + 0.873\,(\text{balcony}\,(1)) + 0.149\,(\text{number of people}\,(1))]\}} \quad (4)$$

Categorisation table giving specificity and sensitivity of model was given in Table 6. According to table, it can be seen that the model can accurately estimate the number of people not buying ornamental plants (150 in 169 people; specificity 88.8%) while determining the number of people buying ornamental plants (55 in 122 people) (sensitivity 45.1%). Overall estimation rate of the model is 70.4%.

Table 7 represents the frequencies observed and expected belonging to 20 groups of the model in order to determine the suitability level. Value of

Table 7: Observed and expected frequencies in each factor of the model

		Groups										
Values	Frequency	1	2	3	4	5	6	7	8	9	10	Total
0	Observed	26.0	23.0	21.0	22.0	17.0	22.0	15.0	10.0	8.0	5.0	169
	Expected	26.1	21.6	20.7	18.7	19.4	20.9	16.5	13.7	7.9	3.5	-
1	Observed	4.0	5.0	8.0	6.0	14.0	13.0	14.0	20.0	21.0	17.0	122
	Observed	3.9	6.4	8.3	9.3	11.6	14.1	12.5	16.3	21.1	18.5	

Hosmer-Lemeshow $\hat{C}_g^*$ statistics was found to be 0.649. It can be seen that Hosmer-Lemeshow $\hat{C}_g^*$ statistics value is lower ($\hat{C}_g^* = 0.649 < \chi^2(8) = 5.982$, $p > 0.05$) when Hosmer-Lemeshow $\hat{C}_g^*$ statistics compares to Chi-square distribution at $\alpha = 0.05$ significance level and 8 degree of freedom. This result can show the good suitability of the model.

RESULTS AND DISCUSSION

Ornamental plants, main export commodity of some countries are gaining value all over the world as an important trade material. Ornamental plants are natural and living materials adding aesthetics and beauty to living areas, closing people to nature and refreshing them psychologically. These plants humans have used to show their various emotions such as love throughout the history faced huge demands after industrial and urbanisation development which caused a production boom whose share in the world trade continues to increase day by day. People's demands for purchasing ornamental plants constitute depending on various factors and multifaceted relationships between them as in all other commodities and services.

In the present study, factors effective on people's demand for purchasing ornamental plants tried to be determined using logistic regression model in Malatya City. Rational sampling method and sample size were estimated considering the number of householders in the centre of Malatya City. Questionnaire was applied to householders in the number of samples and houses calculated before and a suitable model was determined.

Effective factors and size of their effects on people's purchasing ornamental plants were determined according to the model constituted. Four variables were found to be effective on families' demand for ornamental plants; gender of family members going shopping, presence of pet and balcony in the house and the number of family members.

Rate of women's purchasing ornamental plants was found to be nearly 1.8 fold more than men. Having balcony in the house increases 2.4 folds demand and purchasing ornamental plants than the houses without balcony. The number of family members increased significantly the demand for purchasing ornamental plants. One individualistic increase may cause an increase in the demand for purchasing ornamental plants in the rate of 16%. Fourth variable found to be effective on purchasing ornamental plants is to own pet animals in the house. According to the model, purchasing rate of ornamental plants is 6 folds more in pet owner families than those not.

Companies occupying with the propagation and trade of ornamental plants can develop strategies for advertisement, promotion and marketing considering the results of the study.

CONCLUSION

Results of this study can be used to define target mass or update the existent definitions in the sector and may contribute to the marketing success of the sides related to the ornamental plant sector. Modelling in the present study may turn out to be a good practice example for other regions with different socio-cultural and economic structure considering different types of products and services.

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