

The Floriculture Market and its Relation to Consumer Behaviour: a Greek perspective

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Abstract

Floriculture is rather a new sphere of Greek agriculture, which does not yet play a significant economic or social role as do other branches. Where the international development of the floriculture market is concerned, in western European countries, as well as in the U.S.A., the flower trade is highly organized, involving billions of dollars. The revolution in the florist industry came with the advance in cultivation practices. Moreover, qualitative improvement has also been achieved, as consumers have become more quality conscious and the demand for innovations seems to be endless. Discriminant analysis is used in the present study to identify the behaviour of floral consumers, as well as potential differences between heavy and light floral consumers in Greece.

Keywords: *Ornamental plants, Greece, marketing, discriminant analysis.*

Introduction

Floriculture is an intensive agricultural activity; the area devoted to the growing of flowers is not large when compared to other branches of agriculture. The capital investment required for glasshouses and other equipment is very high. The advance made in cultivation practices and research has completely revolutionised the florist industry. Consumers in general are more quality conscious and express an unending demand for innovations (Behari 1993); thus better, superior varieties of flowers have been developed, and there have also been qualitative improvements.

Floriculture products were traditionally marketed through many small, vertically integrated retail florist firms (Sullivan et al., 1980). Sales of floriculture products through mass merchandisers, especially supermarkets, have steadily increased since that time, and now mass merchandisers are perceived to be the strongest competitors of retail florists in the floral industry.

Over the past decade, international trade in floriculture products was valued at US \$5.25 billion. Flowers are rapidly emerging as potential sources of money for many third world countries. The Netherlands, the world's leading flower producer, accounts for 75% of inter-Community exports. Dutch exporters supply more than 170,000 tonnes of flowers to West Germany, which is the largest im-

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porter of flowers in the world. In terms of value, the Dutch shares of the world exports of cut flowers and foliage plants are 65% and 51% respectively (Ramphal 1993).

In Greece, from the economic point of view, floriculture contributes approximately 3% to national agricultural production, while it occupies only 0.02% of the total cultivated area. In 1995, an area of 996 ha was devoted to floriculture with 15,000 people employed. Exports of floral products are not considered high in comparison to those of other agricultural products. Their value was only US\$ 989,000 in 1995 (Greek Ministry of Agriculture). Greece exports mainly cut flowers and live plants; imports come mainly from the EU. The other countries, which dominate the international market, are Columbia, Israel and Italy (13%, 8% and 7% of world share respectively; Ramphal 1993).

This paper concentrates mostly on ornamental pot plants. Ornamental plants are utilised as landscape plants, commercial interiorscape plants, container grown plants for the home or balcony, outdoor or indoor cut flowers, and flowering potted plants that are growing. As the global demand for floriculture products increases, it is obvious that increased marketing and production efforts are needed. Therefore, the objectives of this paper are: to examine the Greek market of ornamental plants in comparison to EU and international markets, as well as to identify whether the use for which the purchase is made causes any variations in the buying behaviour of floral consumers in Greece.

Elements of the floral market

The world floral market. The international trade in floriculture products (cut flowers, foliage and plants) is increasing rapidly. The world trade is estimated at around US\$ 4.93 billion, to which cut flowers contribute US\$ 2.34 billion, pot plants US\$ 2.05 billion, and bulbs US\$ 0.54 billion (Ramphal 1993). In overall world production, the share held by Europe is about 35% and that of Asia 30%, followed by lower percentages for the other continents (Ministry of Agriculture, Italy, 1993).

The EU floral market. The value of floriculture production in EU is estimated to comprise 3-4% of total EU agricultural production (Ministry of Agriculture, Italy, 1993). The market organization established at the EU level is very liberal and not interventionist. Aside from quality standards, there are no protective measures specifically aimed at imports into the EU.

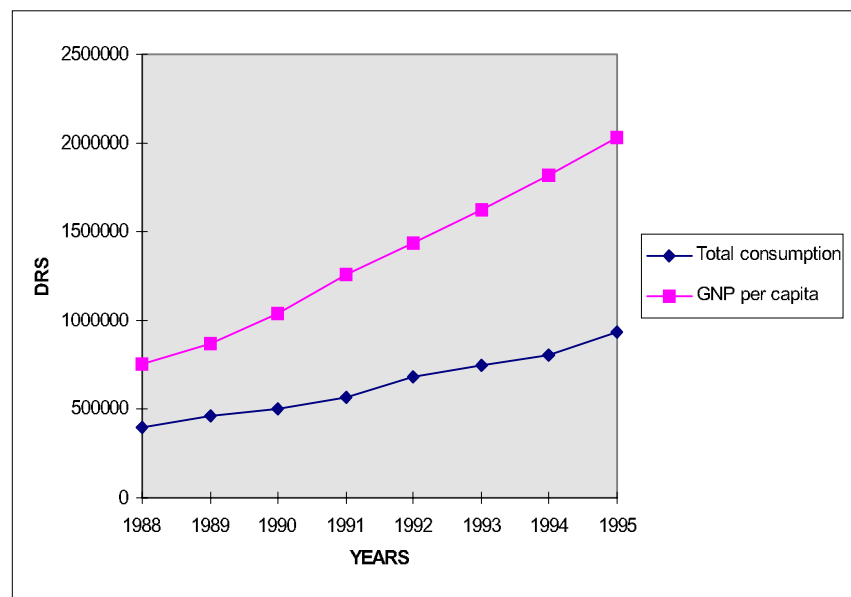
The main producers of cut flowers in EU are Italy (representing about 21% of EU floriculture production), the Netherlands (17% of EU total production), Germany (15%) and the United Kingdom (14%) (Ministry of Agriculture, Italy, 1993). The main supplier of cut flowers within the EU is The Netherlands, which accounts for a very high percentage of the total flower trade. The flower market in Amsterdam is the biggest in the world and equipped with modern facilities. The imports of cut flowers into the EU market are larger in winter, when there is a shortage and prices are higher because of the high energy and labour cost for the production of flowers in glasshouses. Germany is considered to be the main importer of floricultural products, receiving almost half of internal imports. France, Italy, the United Kingdom and the Netherlands are also considerable importers, but at lower percentages. The Netherlands is the main exporter of flo-

riculture products; it accounts for 75% of EU exports, followed by Denmark, Belgium, Germany, Italy, and France. The EU exports to countries with high per capita income, such as Switzerland and Canada. In 1993 the total balance of external trade for floriculture was positive with a surplus amounting to 362 million ECU.

The Greek floral market. Floriculture contributes approximately 3% to Greek agricultural production, while it occupies only 0.02% of the total area under cultivation. Floral production consists mainly of cut flowers and only a small percentage is devoted to other products. The main characteristics of Greek floral production are as follows: 1) a large percentage, almost 59.5%, is produced in greenhouses, whereas 40.4% of the floral products are produced in open fields, and ii) production of flowers in greenhouses is concentrated in the southern and central region; Attica and Crete account for almost 61% of the total production in greenhouses.

The growing of floricultural products in open fields is concentrated in the central region. Attica accounts for almost 81% of the total Greek floral production in open fields, followed by Macedonia (12%). This distribution is due to the perishability of floriculture products and especially of cut flowers, which also need special handling during transportation. Therefore, to reduce the cost of production, it is preferable for the producers to be near the market. The largest share of production is destined for the domestic market. In recent years there has been an increase in exports of floricultural products, especially cut flowers.

Fig. 1. Consumption of floral products (in 00000 drs) in Greece and per capita gross national income at current prices for 1990-1995 (Source: National Statistical Service Greece)



The consumption of floricultural products in Greece has exhibited an increasing tendency during the last 8 years with an average annual rate of growth of 13%. Increases in floral production follows the increase in per capita gross national income (Fig. 1).

Greece imports more floricultural products than it exports. The value of imports in 1995 was US\$ 32.2 million; imports in that year increased by 26% compared to those in 1994. Imports of floriculture products to Greece consist of multiplicative material, which comes from The Netherlands and is considered to be very important for Greek production. Pot plants, whose successful production is not assured in Greece, also constitute a significant share of imports. Greece imports cut flowers, which are either not produced in Greece, or production of units is small. The main share of imports (94%) comes from the EU floral market. Imports from the EU market in 1995 increased by 28% in relation to those in 1994. Only 6% of imports of floriculture products come from third countries and mainly consist of cut flowers and breeding material.

The Greek export share in the world trade of floriculture is very meagre and rather insignificant. Exports of floriculture products are lower compared to other agricultural products. Their value was US\$ 1.2 million in 1995, which was 17% lower than in 1994. Slightly more than 50% of exports of floriculture products were traded in the EU and 49.8% in third countries. After 1991, exports of cut flowers to the EU market decreased remarkably. In 1995 exports of both cut flowers and of pot plants to the EU market were reduced by 38% and 58% respectively, in relation to those in 1994. In 1995, exports of cut flowers included roses (46%), carnations (19%), and chrysanthemums (4%). The exports of pot plants in 1995 comprised 24% of the total exports, while in 1994 reached to 37% of the total exports.

Materials and Methods

Consumer Research. Floricultural market research could be characterised as either market or consumer research. Market research describes industry characteristics and trends. Floral market research has been limited to production statistics, while some investigation of retail marketers has been conducted (Behe 1993).

Floral consumer behaviour studies have examined the demographic characteristics of individuals who purchased the flowers, the purchase process of floriculture products and the level of satisfaction with the purchase. More recent floral market research has been used to describe multiple attributes of floral products and the reason for product purchase or use.

The purpose of floriculture market research is to segment supermarket consumers of floriculture products on the basis of demographic characteristics and purchase factors of floriculture products, including their attitudes toward these products, types of products purchased and the uses of floriculture product purchased in the recent past. An effective marketing strategy enables management to allocate scarce resources more efficiently while achieving a profit (Kotler 1984).

Market segmentation is orientated to customer philosophy, therefore the needs of customers within a submarket (segment) have first to be identified, and

then satisfied. The aim is to segment markets in such a way that each market responds in a homogeneous fashion to a given marketing program. Volume segmentation divides a consumer market according to purchasing frequency; it is a procedure that has been used successfully in other markets (Kotler 1984). The studies on volume segmentation show that there are additional aspects of difference between consumers who purchase a product more frequently and those who purchase the product less frequently. According to marketing theory it is easier to have a current consumer make an additional purchase than to solicit a new consumer (Kotler 1984). In addition, managers seek to expand the market by increasing the total number of purchases per consumer rather than increasing the total number of consumers in the market.

Floral marketing consists of several consumer segments. Compared to other markets with floral consumers, supermarket customers have been surveyed and profiled more often (Behe 1985). Behe and Wolnick (1991b) concluded that there are three consumer segments: light users (one to three floral purchases per year); medium users (four to eight floral purchases per year); and heavy users (nine or more floral purchases per year).

Sample Collection. Personal in-depth interviews were used in this research, which took place in Thessaloniki in March 1997. The target population consisted of floral consumers, aged 18 years or more. The first consideration was to obtain a sample which took into account the proportion of males to females in the population of Thessaloniki. The sample size required was almost 1,000 persons, according to the formula (1) (Lehmann, 1989):

$$n = \frac{Za^2 p(100-p)}{(\text{tolerance})^2} \quad (1)$$

where:

n = sample size

Za = 1.96 as found in the table of standard normal distribution for significance level at 0.05

p = 47.3%; i.e. the proportion of males in the population of Thessaloniki

tolerance = 3 as a measure of accuracy

On the other hand the cost of the survey was not to exceed \$1,000. Taking into account fixed and variable costs (travel tickets, questionnaire reproduction, accommodation, etc.) and applying the formula (2) given by Lehmann (1989):

$$\text{sample size} = \frac{\text{budget} - \text{fixed costs}}{\text{variable cost}} \quad (2)$$

it was concluded that the sample size could not exceed that of 170 respondents. Hence, the size of the sample, when only those who accurately answered the questionnaire were included, was 150 (one hundred and fifty) consumers of floriculture products.

For the purposes of this market study, discriminant analysis was used to explain the difference between two groups: heavy and light consumers. A discrimi-

nant function is obtained in order to describe the relationship between these mutually exclusive groups.

Results and Discussion

The dependent variable in the function is the number of purchases of ornamental plants, either for personal use or as a gift, and the independent variables are gender, age, income, education, employment status, money spent each time flowers are purchased, number of ornamental plants owned, time usually spent on gardening, number of books owned, consumers' knowledge of plants, willingness to test new plants, and ornamental plants which are delicate and wither easily.

The standardized discriminant function coefficients can be useful in describing the discriminant function. Coefficients with relatively larger standardized values explain more variances, thus, they are more closely related to the function than variables with smaller value.

Multivariate results (Table 1) reveal the standardized discriminant function coefficients that comprise the discriminant equation. High + or – values indicate a strong relationship. The equation is found to be statistically significant ($p=0.000 < 0.05$).

Table 1 Standardised discriminant function coefficients from the discriminant analysis for light and heavy consumers of ornamental plants

| Variable | Standardized discriminant function coefficients |
|--|---|
| Gender | -0.375 |
| Age | 0.138 |
| Income | 0.019 |
| Education | -0.077 |
| Employment status | 0.067 |
| Money spent per purchase | 0.444 |
| Number of ornamental plants owned | 0.145 |
| Time usually spent for gardening | 0.215 |
| Number of books owned. | 0.638 |
| Rating of their plant knowledge by Themselves | 0.284 |
| Willingness to try new plants | 0.283 |
| Ornamental plants are delicate and wither easily | -0.081 |
| Eigenvalue = 0.301, Canonical correlation = 0.481, Wilk's L = 0.768, $\chi^2 = 36.600$, $df = 10$, Significance = 0.000 Group centroids: light consumers, -0.350, heavy consumers, 0.847 | |

For descriptive purposes, the three largest coefficients, canonical correlation, eigenvalue and Wilk's Lambda, were examined (Rummel 1970). According to these coefficients the discriminant function produced by discriminant analysis is a "good" function that separates the two groups well.

The group centroids mapped on the discriminant function were -0.350 for light consumers and +0.847 for heavy consumers. Thus, the discriminant function separated the group centroids from -0.350 to +0.847.

The standardized canonical correlation coefficients indicate the direction and strength of the relationship between variables in the discriminant function. The number of books about gardening owned was the variable most strongly and positively related to the discriminant function, meaning that it contributes the most to the discrimination between heavy and light floral consumers. More precisely, the coefficient sign (+0.638) indicates that this variable is positively related to the group of heavy consumers. In particular, heavy consumers own more books about floriculture and gardening than light consumers do.

As far as the other variables are concerned, money spent per purchase, consumers' rating of knowledge about gardening, willingness to try new plants and time spent on gardening are also positively related to the group of heavy consumers. The latest means that heavy floral consumers (i) use to spend more money each time they purchase flowers, (ii) believe that they have a high knowledge about gardening, (iii) are more attracted by new kinds of ornamental plants and finally (iv) they spend more time on gardening than light consumers do. Conversely, the coefficient sign of gender indicates that this variable is positively related to light floral consumers. More specifically, gender contributes the most to the discrimination between light and heavy floral consumers.

The results obtained by multivariate statistics in the present study were similar to the results presented by Behe and Wolnick (1991a, 1991b). In their research, as in the present research, multivariate results showed that the number of books owned, floral knowledge rating, age and the number of plants at home have a strong positive relation to the discriminant function between light and heavy floral consumers.

Conclusions

This paper deals with a comparison between the Greek market in ornamental plants and the EU and international situation in floriculture activity. As has been discussed above, floriculture is a relatively new branch of Greek agriculture. Therefore, it cannot be considered as a dynamic economic sector.

Floral production consists mainly of cut flowers and only a small percentage is devoted to other floriculture products. Another characteristic of Greek floral production is that 59.5% takes place in greenhouses, whereas 40.4% is produced in open fields. Furthermore, the main share of production is consumed in the internal market, although cut flower exports have increased significantly in recent years.

Greece can be considered as an importer rather than an exporter of floriculture plants. The main imported products are breeding material and pot plants. The Greek share of exports in the international floriculture market is very small.

However, more than 50% of exports are traded within the EU and about 49.8% outside it. It is critical that production and marketing services improve in order for Greece to become a significant trader in floriculture, since it has become obvious that the global demand for floral products increases.

Floral consumption in Greece also seems to have increased during the latest years, following the increase in per capita gross national income. Floral consumers were divided in two groups, light and heavy consumers, according to the number of purchases made of ornamental plants for personal use or as a gift over an one year-period.

Heavy users have more ornamental plants at home and spend more time gardening than light users. They also read more books related to flowers and plants, and rate themselves higher with respect to knowledge about gardening than light users. According to the results of discriminant analysis, light and heavy consumers differ from each other in respect of several characteristics such as the number of books owned, the number of ornamental plants in the house, the rating of their knowledge about gardening, employment status, age etc.

Today, volume segmentation is still considered fundamental to management strategies. Floriculture companies should have an understanding of it and try to expand the market by increasing the number of purchases that are made. A segmentation based upon the type of floral product purchased would reach different groups of consumers. More effective market strategies can be developed by targeting specific floral products towards these market segments. Also, future efforts should be focused on the influence of advertising on the number of purchases of ornamental plants.

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