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Estimation of consumers' demand functions of cut-flowers products: A case study of Pakistan, Punjab

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ABSTRACT

The objective of this study was to estimate purchase frequency of the selected cut-flower items and demand functions in Punjab and Pakistan. Simple random sampling technique was employed to collect primary data from 120 consumers using a well-structured and field pretested questionnaire during the year 2012-13. The results of the findings revealed that the average price was the highest in case of flowers stage decoration (Rs. 9546), followed by jewelry set (Rs. 677), flower basket (Rs. 394), mala (Rs. 334,), bouquets (Rs. 259), garland (Rs. 41), and gajjra (Rs. 21). Most of the selected consumers (61%) occasionally purchased flowers. The reason of occasionally purchasing was that mostly the consumers purchased the flowers at the occasions of various ceremonial days, i.e., Valentine's Day, birth of baby, and death of a relative, etc. About 45% of the selected consumers preferred rose flower. The reasons of high preference for rose flowers were that this is a common flower, mostly grown in all areas of Pakistan and everyone is familiar to it. After rose the jasmine flower (27%) is preferred due to its attractive smell and fragrance, it is also a common flower and mostly grown in Pakistan. It is the national flower of Pakistan. The results of the demand function revealed that the variable of age was significant for the selected cut-flower items, but the variable of education of the consumers was insignificant in case of flowers car decoration. The consumers are restrained to decide about the rational price of the item purchased. There is a limited number of cut-flower shops. Majority of the shops are located in the rich areas of the cities. Common consumers are to travel long distances to purchase flower items. More retail flower shops should be set up by the local bodies in all parts of the cities. The market committees should standardize prices for cut-flower items for the benefit of consumers. Policy need to be designed to increase the demand of flowers by electronic and press media.

KEY WORDS: Consumer, cut-flower, demand function, Pakistan, purchase frequency

INTRODUCTION

Flowers are crowning beauty of God's creation. They are an inseparable part of human joy and sorrows. It is said that man is born with flowers, lives with flowers, and finally dies with flowers. Cut-flowers are useful in many ways.[1] Flowers are an integral part of human life due to their diversity in beauty, form, texture, color, and fragrance.[2] People all over the world realize that flowers enhance the quality of life and influence human feelings more than words or other gifts. This leads to increased use of flowers and ornamental plants. Flower is important for human civilization. Flowers are also largely grown for cut-flowers, making essential oils, water, perfume, and medicines, etc.[3]

Floriculture has become one of the important high-value agricultural industries in many countries of the world.

International trade in cut-flowers is growing at a rate of 25% annual growth rate. The international trade is around US$ 11 billion, and cut-flowers contribute 60% of the world trade in floriculture. The global exports increased over 10-folds from 0.5 billion in 1995 to 5.1 billion to 2005, which again is poised to double by 2025.[4]

The Netherlands is the largest cut-flower producer in the EU, accounting for nearly half the production value of the EU (€2 billion). The Netherlands is also the most important player in the EU trade of cut-flowers, accounting for 68% of total flower supplies to the EU. The flower auctions are the center of the EU flower business, handling approximately 60-70% of foreign supplies to the Netherlands. There are also approximately 130 importers and 900 wholesalers. Among the wholesalers are 45 Cash and Carry outlets and around 40 wholesalers

supplying directly from their trucks (so-called Flying Dutchmen). The Netherlands accounts for only 17% of total EU imports (€598 million). However, it accounts for 60% of total EU imports from developing countries (€503 million).[5]

Floriculture plays a vital role in human's life. Beside beautification, it also improves the environment. It can be used as a symbol of sentiments, and an essential part of religious and social ceremonies. It is also used in India and Pakistan for making Garlands and Attars. These are not only cultivated for domestic purposes but also for export.[6] The dried ones are exported to the USA and other countries as their essence is used in many food products.[7]

Flower bouquets and garlands have been gaining wide popularity among the people. The universal usage has created a real trend of producing flower on a commercial basis to meet its increasing demand in the market.[8] In Pakistan, cut-flowers are mostly grown in Pattoki, Chunnian, Lahore, Rawalpindi, and Multan in Punjab, Karachi and Hyderabad in Sindh, Peshawar, Mansehra, and Haripur in Khyber Pakhtunkhwa, and Quetta in Balochistan. In Punjab tehsils, Pattoki and Chunnian are the major rose cut-flowers growing areas. The Pattoki market is the biggest cut-flowers selling and buying market in Pakistan. Rose, gladiolus, tuberose, statice, and marigold are the important cut-flowers grown in Pakistan.[9] Cut-flower cultivation in Pakistan is increasing day-by-day, due to the growing demand of fresh flowers for garlands, bouquets, and wreaths.

Up to know, there is no study on estimation of the demand function of cut-flower items in Pakistan. The present study is planned to fill this research gap. The objective of this study was to estimate purchase frequency of the cut-flower items, demand functions, and give policy implications. The remainder of the paper is organized as: Section 2 discusses research methodology; results and discussions are presented in section 3, and section 4 discusses summary and conclusion.

RESEARCH METHODOLOGY

Selection of the Respondents

The present study was conducted in Punjab and Pakistan during the year 2012-13. The data were collected through consumers' interviews using a well-structured and field pre-tested questionnaire. Random sampling technique was used for selection of the respondents. 60 consumers were selected from the city of Lahore (40 men and 20 women), 40 from Faisalabad (25 men and 15 women),

and 20 from Pattoki (12 men and 8 women) to collect data. The consumers of cut-flowers were interviewed at the major retail shops of Lahore, Faisalabad, and Pattoki. In total, 120 consumers were interviewed to collect data.

Analytical Framework

Data were edited and entered in the computer for analysis purposes and following statistical techniques were used to analyze and interpret data.

Average was calculated by using following formula:

$$AM = \sum X / N$$

Where;
AM = Arithmetic mean
N = Total number of observations
$\sum X$ = Total sum of variables

Percentage was calculated by using following formula

$$P = F/N*100$$

Where;
P = Percentage
F = Frequency
N = Total number of observations

Estimation of Consumers' Demand Function

The consumers' demand function was estimated by using the following equation:

$$\text{Ln } Q_p = \beta_0 + \beta_1 \text{Ln} X_1 + \beta_2 \text{Ln} X_2 + \beta_3 \text{Ln} X_3 + \beta_4 \text{Ln} X_4 + \beta_5 \text{Ln} D_1 + \beta_6 \text{Ln} D_2 + \mu_i$$

Q_p = Quantity purchased of the cut-flower items per year (bouquets, baskets, garlands, gujjary, jewelry set, mala, car decoration, and stage decoration)

B_0 = Constant
X_1 = Purchase price of selected cut-flower items (Rs.)
X_2 = Age (years)
X_3 = Education (years)
X_4 = Income per month (Rs.)
D_1 = Dummy for purchase frequency (1 = occasionally, 0 = otherwise)
D_2 = Dummy for gender (1 = male, 0 = female)

RESULTS AND DISCUSSION

Socioeconomic Characteristics of the Consumers

The results of Table 1 reveal that more than 50% of the consumers were in the age of 31-40 years. This was

because the youth was more conscious about celebrating various ceremonies on which the use of cut-flowers has become a norm. Old people, i.e., more than 50 years of age (8%) were least interested to purchase cut-flowers, maybe they did not have the purchasing power or they may not be used to or not like to spend money on the luxury of purchasing flowers for offering best wishes. As regards education level of the consumers, most of the consumers were matriculate or above were educated ones. As educated people are aware of the importance of flowers to be used for various ceremonies, they were more inclined to purchase flowers. Level of income is a prominent factor to become consumers of cut-flowers. Mostly, middle class earning an income of Rs. 21,000-40,000 per month (56%) were the main purchasers of cut-flowers. As the percentage of high-income people is low, their percentage of purchasers of cut-flowers was also low.

Purchase Frequency of Selected Cut-Flower Items/ Year

The results of the findings reveal that 38% of the consumers had never purchased bouquets in the year 2012-13. These consumers were old, uneducated, and poor people. These people either were quite poor or did not know the importance and uses of the bouquets. About 48% consumers purchased 1-5 bouquets per year. These people were educated and of upper middle class income level. About 14% upper middle class consumers purchased 11-15 bouquets and only 1-2% of rich consumers purchased 16-20 bouquets in a year [Table 2].

About 41% of the consumers did not purchase any basket of cut-flowers and 46% of the sampled consumers purchased 1-5 baskets per year. This indicates that mostly 1-5 baskets are used per year to celebrate different ceremonies. A small percentage (3%) of very rich people purchased 11-15 flower baskets per year [Table 3].

38% consumers did not purchase any haar (garlands) in a year. Mostly, the consumers (28%) purchased 1-5 garlands in a year. About 4% of the rich consumers purchased 11-15 garlands and very rich ones (10%) purchased 16-25 garlands in a year to celebrate various ceremonies [Table 4].

Majority of the consumers, i.e., 52% have purchased no gajjra in a year. These were uneducated and poor people who did not have the purchasing power and did not realize the esthetic value of the gajjra. About 22% of the sampled consumers purchased 1-5 gajjra per year and 15% purchased 6-10 gajjra per year [Table 5].

Table 1: Socioeconomic characteristics of the consumers

Characteristics	Percent of consumers
Age level (years)	
20-30	22
31-40	52
41-50	18
51-60	8
Total	100
Education level	
Illiterate	2
Primary	7
Middle	3
Matric	30
Inter	23
Graduate	27
Master and above	8
Total	100
Income level (Rs.)	
<20,000	23
21,000-40,000	56
41,000-60,000	14
61,000-80,000	6
81,000-100,000	1
Total	100

Source: Author's own survey

Table 2: Bouquets purchased per year by the selected consumers (No.)

Number of bouquets	Percent of consumers
0	38
1-5	48
6-10	8
11-15	4
16-20	2
Total	100

Source: Author's own survey

Table 3: Flower baskets purchased per year by the selected consumers (No.)

Number of baskets	Percent of consumers
0	41
1-5	46
6-10	10
11-15	3
Total	100

Source: Author's own survey

Table 4: Garlands purchased per year by the selected consumers (No.)

Number of garlands	Percent of consumers
0	38
1-5	28
6-10	20
11-15	4
16-25	10
Total	100

Source: Author's own survey

The purchase frequency per year of the selected consumers is presented in Table 6. The result of the findings demonstrated that only 1% of the consumers

daily purchased any kind of flowers. Most of the selected consumers (61%) occasionally purchased flowers. The reason of occasionally purchasing was that mostly the consumers purchased the flowers at the occasions of various ceremonial days, i.e., Valentine's Day, birth of baby, and death of a relative, etc. The results of the study revealed that only 10% of the consumers purchased flowers on the occasions of Eids and marriages. The percentage of the consumers who purchased flower fortnightly (3%) and monthly (12%) was very low. These were the rich and educated people who had the purchasing power as well as an esthetic sense of flowers.

About 45% of the selected consumers preferred rose flower. The reasons of high preference for rose flowers were that this is a common flower, mostly grown in all areas of Pakistan and everyone is familiar to it. After rose the jasmine flower (27%) is preferred due to its attractive smell and fragrance, it is also a common flower and mostly grown in Pakistan. It is the national flower of Pakistan. About 15% sampled respondents preferred gladiolus flower due to its beauty and long stick. Chrysanthemum and statice are though very beautiful flowers and have very attractive smell but due to lack of education and being less common had very low preference for these flowers [Table 7].

The descriptive statistics of the selected cut-flower items is presented in Table 8. The results of the study reveal that the average number of bouquets purchased by the sampled consumers in the study area per year was 5 with a maximum of 20 and minimum 1. The average price paid per bouquets by the sampled consumers was Rs. 259. The average number of flower baskets purchased by the sampled consumers per year was 4 with a maximum of 15. The average price paid by the consumers per basket was Rs. 394 with a maximum of Rs. 700. The results of the findings demonstrated that the average number of garlands purchased per year was 9 and the average number of gajjra purchased per year was 9. The average price paid by the consumers per garland and gajjra was Rs. 41 and Rs. 9, respectively. The average number of flowers mala and jewelry set purchased per year by the sampled consumers were 1 and 2, respectively. The average price paid by the consumers per flower mala and jewelry set was Rs. 334 and Rs. 677, respectively. The results of the findings reveal that the average number of stages decorated by the sampled consumers per year was 2 and the average price paid per stage was Rs. 9546.

Demand Functions of Various Items Made from Flowers

Demand function of bouquets purchased per year (No.)

The results of Table 9 reveal that with the increase in the

Table 5: Gajjra purchased per year by the selected consumers (No.)

Number of gajjra	Percent of Consumers
0	52
1-5	22
6-10	15
11-20	11
Total	100

Source: Author's own survey

Table 6: Purchase frequency per year of the selected consumers

Purchase frequency	Percent of consumers
Daily	1
Weekly	2
Fortnightly	3
Monthly	12
Occasionally	61
Never purchased	12
Eid and marriage ceremonies	10
Total	100

Source: Author's own survey

Table 7: Preferences of various types of flowers by the selected consumers

Type of flower	Percent of consumers
Rose	45
Gladiolus	15
Jasmine	27
Marigold	8
Tuberose	5
Statice	-
Chrysanthemum	-
Total	100

Source: Author's own survey

Table 8: Descriptive statistics of the selected cut-flower items

Item/unit	Minimum	Maximum	Mean
Bouquets' purchased/year (No.)	1	20	5
Price/bouquet (Rs.)	100	500	259
Basket purchased/year (No.)	1	15	4
Price/basket (Rs.)	100	700	394
Garland purchased/year (No.)	1	25	9
Price/garland (Rs.)	20	100	41
Gajjra purchased/year (No.)	1	20	9
Price/gajjra (Rs.)	12	40	21
Mala purchased/year (No.)	1	3	1
Price/mala (Rs.)	150	500	334
Jewelry set purchased/year (No.)	1	3	2
Price/jewelry set (Rs.)	400	1000	677
*Stage decorated/year	1	2	2
Price per stage decoration (Rs.)	4300	22750	9546

Source: Author's own survey (*Stage Mehndi, Stage Barat, Stage Walima, and Stage Masehri)

price of bouquets, demand of bouquets per year decreased. The variable of the purchase price of the bouquet was negative and significant. It indicated that with the increase in the price of the bouquet, the demand of the dependent variable (the number of bouquets) decreased by 0.53%. The variable of the age was also negative but insignificant. It indicated that with the increase in the age of consumers,

Table 9: Regression results of estimated demand function of flower bouquets

Variable/unit	B	t value	Significance level
Constant	−3.89	−2.54	0.01
ln-Purchase price per bouquet (Rs.)	−0.53	−9.04	0.00[S]
ln-Age (years)	−0.07	−1.64	0.10[NS]
ln-Education (years)	0.31	5.35	0.00[S]
ln-Income per Month (Rs.)	0.11	2.46	0.02[S]
Dummy purchase frequency (1=Occasionally, 0=Otherwise)	0.14	2.90	0.00[S]
Dummy gender (1=Male, 0=Female)	0.05	1.38	0.17[NS]
R^2	0.84		
Adjusted R^2	0.83		
F value	96.64		

Source: Author's own calculations. S: Significant, NS: Insignificant

less number of bouquets per year was purchased. The reason is that the old age people are not interested in the purchase of the bouquets as they have a low sensitive esthetic value of flowers.

The coefficient of the variable of education has positive and significant impact on demand of bouquets. It shows that with 1% increase in the education of the consumers, quantity demanded of the bouquets increased by 0.31%. Educated people demand flowers more than the illiterate ones because they have a high esthetic value of the flowers. The variable of the income was positive and significant. It reveals that with 1% increase in income of the consumers, quantity demanded of the bouquets increased by 0.11%. The higher income people purchased more cut-flowers as they can afford this luxury.

The dummy variable of purchase frequency has positive and significant impact on the demand of the dependent variable (number of bouquets). The majority of the consumers purchased bouquets on different occasions, i.e., birthdays, marriages, and festivals, etc. Very few people purchased bouquets on weekly, fortnightly, and monthly basis. Due to these reasons, quantity demanded of the bouquets increases at ceremonial occasions. The results of the demand function of bouquets reveal that with 1% increase in the occurrence of any event, demand of the bouquets increased by 0.4%. The variable of gender has positive, but insignificant impact on the quantity demanded of bouquets. The five variables out of six were significant. The R^2 value of 0.84 and F-value of 96.64 indicate the overall positive significance of demand function of bouquets.

Demand Function of Flower Baskets Purchased Per Year (No.)

The variable of age had negative and significant impact on demand of the flower baskets. The young age people

purchased flower baskets more than the old ones. Old age people have less esthetic value to the flower baskets than the young consumers. The variable of education had positive and significant impact on demand of the flower baskets. Educated people give high value to flowers. Illiterate people are not aware about the esthetic beauty of the flowers. The variable of education had positive and significant impact on demand of the flower baskets. It indicated that with 1% increase in the income level of the consumers' their demand for flower baskets increased by 0.19%.

The coefficient of dummy variable of purchase frequency was 0.16; it was positive and significant at 1% level. It indicated that demand of the flower baskets increased at important events such as birthdays, marriages, baby births, and festivals, etc. The coefficient of dummy variable of gender was also highly significant at 1% level. It revealed that the male consumers purchased more number of flower baskets. The coefficient of the purchased price of flower baskets was negative (−0.14) and had a significant impact on the dependent variable. It indicated that with 1% increase in the purchase price of the flower baskets, their demand decreased by 0.14%. The higher prices of the flower baskets decreased their demand. It was reported that purchase prices of the flower baskets was the highest during ceremonial events of the year. The consumers were very conscious about the purchase price of the flower baskets [Table 10].

Demand function of flower garlands (haars) purchased per year (No.)

The coefficient of the purchase price of garlands was −0.06 and insignificant. It indicated that with an increase in the purchase price of garlands, the demand of garlands decreased but not significantly [Table 11]. The coefficient of the age of the consumers was positive and insignificant. The coefficient of the education (years of schooling) was 0.10. It had positive and significant impact on the dependent variable (demand of flower garlands). Educated people purchased more number of garlands per year than the uneducated ones.

The results of the findings indicate that the coefficient of income was 0.11 and significant at 4% level. It illustrates that with 1% increases in the level of income, demand of garlands purchased per year increased by 0.11%. The income level is a very important variable regarding the decision to purchase flower garlands. The dummy variable of purchase frequency was negative (−0.06) and insignificant. The dummy variable of gender was positive (0.75) and highly significant at 1% level. It indicates that

the majority of garlands were purchased by the male consumers.

Demand function of flower gajra purchased per year (No.)

The coefficient of the purchase price of gajra was negative (−0.65) and significant. It indicates that with 1% increase in purchase price of flower gajra, demand decreased by 0.65%. At higher prices, consumers purchased less number of flower gajra. The coefficient of the age of consumers was negative (−0.03) and insignificant, with an increase in the age of the consumers, demand of the flower gajra decreased but insignificantly. The coefficient of education (schooling years) was positive (0.13) and significant. It had positive and significant impact on the dependent variable (quantity demanded of flower gajra). Literate people purchased more flower gajra than that of illiterate ones.

The results of the study indicate that with 1% increase in the income level of the consumers, their demand of flower gajra increased by 0.09%. Dummy variable of purchase frequency is also very important variable as flower gajra are mostly purchased at certain important events (marriages, birthdays, and festivals etc.). The coefficient of dummy variable of purchase frequency was positive (0.22) and significant at 1% level. The dummy variable of gender was negative and insignificant. It indicated that female consumers demand more number of flowers gajra than males but not significantly [Table 12].

Demand function of cut-flower jewelry sets purchased per year (No.)

The coefficient of the purchase price was negative (−0.13) and significant. It shows that with 1% increase in the purchase price, the demand of flower jewelry sets decreased by 0.13%. The results of the study indicated that the coefficient of age was negative (−0.42) and significant at 1% level. It indicated that with 1% increase in age, demand for flower jewelry sets decreased by 0.42%. The young age consumers purchased more jewelry sets than old age. The coefficient of education (schooling years) was also positive (0.42) and significant, indicating that with increase in the education level of the consumers, their demand for the purchase of flower jewelry sets increased significantly [Table 13].

The coefficient of income per month of the consumers was 0.28 and significant, indicates that with 1% increase in the income level of the consumers, the demand of the flower jewelry sets increased by 0.28%. The coefficient

Table 10: Regression results of estimated demand function of flowers basket

Variable/unit	B	t value	Significance level
Constant	−3.58	−1.43	0.16
ln-Purchase price per basket (Rs.)	−0.14	−1.98	0.05[S]
ln-Age (years)	−0.30	−4.31	0.00[S]
ln-Education (years)	0.36	4.80	0.00[S]
ln-Income per month (Rs.)	0.19	2.63	0.01[S]
Dummy purchase frequency (1=Occasionally, 0=Otherwise)	0.16	2.49	0.01[S]
Dummy gender (1=Male, 0=Female)	0.28	4.01	0.10[NS]
R^2	0.58		
Adjusted R^2	0.56		
F value	26.30		

Source: Author's Own Calculations. S: Significant, NS: Insignificant

Table 11: Regression results of estimated demand function of flowers garland

Variable/unit	B	t value	Significance level
Constant	−7.53	−3.12	0.00
ln-Purchase price per garland (Rs.)	−0.06	−1.04	0.30[NS]
ln-Age (years)	0.04	0.82	0.42[NS]
ln-Edu (years)	0.10	1.91	0.06[S]
ln-Income per month (Rs.)	0.11	2.13	0.04[S]
Dummy purchase frequency (1=occasionally, 0=Otherwise)	−0.06	−1.12	0.27[NS]
Dummy gender (1=Male, 0=Female)	0.75	13.15	0.00[S]
R^2	0.76		
Adjusted R^2	0.75		
F value	59.24		

Source: Author's own calculations. S: Significant, NS: Insignificant

Table 12: Regression results of estimated demand function of flowers gajra

Variable/unit	B	t value	Significance level
Constant	−3.55	−1.96	0.05
ln-Purchase price per gajra (Rs.)	−0.65	−12.01	0.00[S]
ln-Age (years)	−0.03	−0.84	0.40[NS]
ln-Education (years)	0.13	3.13	0.00[S]
ln-Income per month (Rs.)	0.09	2.19	0.03[S]
Dummy purchase frequency (1=occasionally, 0=Otherwise)	0.22	4.49	0.00[S]
Dummy gender (1=Male, 0=Female)	−0.01	−0.14	0.89[NS]
R^2	0.86		
Adjusted R^2	0.85		
F value	17.31		

Source: Author's own calculations. S: Significant, NS: Insignificant

Table 13: Regression results of estimated demand function of cut-flowers jewelry set

Variable/unit	B	t value	Significance level
Constant	−0.74	−0.51	0.61
ln-Purchase price per jewelry set (Rs.)	−0.13	−2.12	0.04[S]
ln-Age (years)	−0.42	−6.82	0.00[S]
ln-Education (years)	0.42	6.34	0.00[S]
ln-Income per month (Rs.)	0.28	4.64	0.00[S]
Dummy purchase frequency (1=occasionally, 0=Otherwise)	0.23	3.45	0.12[NS]
Dummy gender (1=Male, 0=Female)	−0.26	−4.27	0.00[S]
R^2	0.60		
Adjusted R^2	0.57		
F value	27.77		

Source: Author's own calculations. S: Significant, NS: Insignificant

of the dummy variable of purchase frequency was 0.23. It was positive and significant at 1% level. It indicated that with 1% increase in the events (festivals, ceremonies, and marriages etc.), the demand of flower jewelry sets increased by 0.23%. The coefficient of dummy variable of gender was −0.26 and significant at 1% level. It indicated that female consumers mostly purchased flower jewelry sets.

Demand function of flower mala purchased per year (No.)

The purchase price of flower mala had negative (−0.12) and insignificant impact on the demand of mala. The increase in price decreased demand of flower mala but not significantly. The coefficient of age was −0.23 and significant. It reveals that with an increase in the age of the consumers, demand for flower mala decreased significantly. The old aged consumers had less demand of flower mala than young people. The coefficient of education was 0.18 and significant. It indicated that with the increase in the schooling years, the demand of flower mala increased by 0.18%.

The coefficient of income was positive and significant, illustrating that with 1% increase in the level of income, the demand of flower mala increased by 0.41% [Table 14]. The coefficient of dummy variable of purchased frequency was −0.07 and insignificant. The results of the findings reveal that male consumers purchased more number of flower mala.

Demand function of cars decorated per year (No.)

The coefficient of the purchase price of flowers for cars decorated was negative and significant. It indicated that with 1% increase in the price of flower for cars' decoration, demand for car decoration decreased by 0.17%, high purchase price had negative impact on demand of flowers for cars' decoration [Table 15]. The coefficient of the variable of age was −0.37 and significant at 1% level. The flowers for car decoration demanded by young consumers for marriages were positive. The coefficient of the education was 0.05 and insignificant.

The results of the findings demonstrate that the coefficient of income (0.35) had positive and significant impact on the dependent variable. It shows hat with 1% increase in the level of income, the demand of flowers for car decoration increased by 0.35. The coefficient of the dummy purchase frequency variable was also positive and significant. It shows that demand of flowers for car decoration increased on special occasions, i.e., marriages, festivals, and parties,

Table 14: Regression results of estimated demand function of flowers mala

Variable/Unit	B	t value	Significance level
Constant	−6.24	−3.12	0.00
ln-Price per mala (Rs.)	−0.12	−1.59	0.12[NS]
ln-Age (years)	−0.22	−3.24	0.00[S]
ln-Education (years)	0.18	2.07	0.04[S]
ln-Income per month (Rs)	0.41	5.67	0.00[S]
Dummy purchase frequency (1=occasionally, 0=Otherwise)	−0.07	−0.74	0.46[NS]
Dummy gender (1=Male, 0=Female)	0.32	3.10	0.00[S]
R^2	0.51		
Adjusted R^2	0.48		
F value	19.50		

Source: Author's own calculations. S: Significant, NS: Insignificant

Table 15: Regression results of estimated demand function of car decoration

Variable/Unit	B	t value	Significance level
Constant	−2.80	−1.77	0.08
ln-Purchase price/car decoration (Rs.)	−0.17	−2.40	0.02[S]
ln-Age (years)	−0.37	−4.98	0.00[S]
ln-Education (years)	0.05	0.68	0.50[NS]
ln-Income per month (Rs.)	0.35	4.57	0.00[S]
Dummy purchase frequency (1=Occasionally, 0=Otherwise)	0.14	1.95	0.05[S]
Dummy gender (1=Male, 0=Female)	0.20	3.17	0.00[S]
R^2	0.60		
Adjusted R^2	0.58		
F value	27.88		

Source: Author's own calculations. S: Significant, NS: Insignificant

etc. The coefficient of dummy variable of gender was positive and significant.

Demand function of flowers for stage decoration per year (No.)

The purchase price of flowers for stage decoration had negative (−0.20) and significant impact on the demand of flowers for stage decoration. It indicated that with 1% increase in purchase price, the demand of flowers for stage decoration decreased by 0.20%. The coefficient of age was negative (−0.34) and significant at 1% level. It shows that with 1% increase in age, the demand of flowers for stage decoration decreased significantly. The young people mostly decorated the stage with flowers. The coefficient of education (schooling years) was 0.29 and significant. It indicated that with an increase in the education, demand for flowers for stage decoration increased significantly [Table 16].

The results of the findings indicate that with the increase in the level of income, the demand of flowers for stage decoration increased significantly. It shows that with 1% increase in the level of income, demand for flowers for stage decoration increased by 0.20%. The coefficient of dummy variable of purchase frequency was 0.43

Table 16: Regression results of estimated demand function of flowers stage decorated

Variable/Unit	B	t value	Significance level
Constant	−0.24	−0.10	0.92
ln-Purchase price/stage (Rs.)	−0.20	−3.04	0.00S
ln-Age (years)	−0.34	−5.27	0.00S
ln-Education (years)	0.29	4.28	0.00S
ln-Income per month (Rs.)	0.20	2.97	0.00S
Dummy purchase frequency (1=Occasionally, 0=Otherwise)	0.43	6.63	0.00S
Dummy gender (1=Male, 0=Female)	0.02	0.25	0.80NS
R^2	0.56		
Adjusted R^2	0.54		
F value	23.84		

Source: Author's own calculations. S: Significant, NS: Insignificant

and significant. It indicates that demand for flowers for stage decoration increased significantly at important events, i.e., weddings, parties, and conferences, etc. The coefficient of dummy variable of gender was positive and insignificant.

SUMMARY AND CONCLUSION

The objective of this study was to estimate purchase frequency of the selected cut-flower items, demand functions, and give policy implications. Simple random sampling technique was employed to collect primary data from 120 consumers using a well-structured and field pretested questionnaire in 2012-13. The results of the findings revealed that the average price was the highest in case of flowers stage decoration (Rs. 9546), followed by jewelry set (Rs. 677), flower basket (Rs. 394), mala (Rs. 334,), bouquets (Rs. 259), garland (Rs. 41), and gajjra (Rs. 21). Most of the selected consumers (61%) occasionally purchased flowers. The reason of occasionally purchasing was that mostly the consumers purchased the flowers at the occasions of various ceremonial days, i.e. Valentine's Day, birth of baby, and death of a relative, etc. About 45% of the selected consumers preferred rose flower. The reasons of high preference for rose flowers were that this is a common flower, mostly grown in all areas of Pakistan, and everyone is familiar to it. The results of the demand function revealed that the variable of age was significant for the selected cut-flower items, but the variable of education of the consumers was insignificant in case of flowers car decoration.

There were problems faced by the cut-flower consumers in the study area. Due to lack of standardized practices, the price and quality of the cut-flower items vary from shop to shop. This may be due to type and number of cut-flowers in the flower items arrangement. The consumers

are restrained to decide about the rational price of the item purchased. There is a limited number of cut-flower shops. Majority of the shops are located in the rich areas of the cities. Common consumers are to travel long distances to purchase flower items.

Suggestions

- The old age people are not interested in the purchase of flowers, as they have a low sensitive esthetic value of flowers. Educated people demand flowers more than the illiterate ones because they have a high esthetic value of the flowers. The higher income people purchased more cut-flowers as they can afford this luxury. The majority of the consumers purchase flowers on different occasions, i.e., birthdays, marriages, death, Valentine's Day, and festivals, etc. Very few people purchased flowers on weekly, fortnightly, and monthly basis. Due to these reasons, quantity demanded of the flowers increases at ceremonial occasions. Policy need to be designed to increase the demand of flowers by electronic and press media
- The consumers were very conscious about the purchase price of the flowers. Due to lack of standardized practices, the price and quality of the cut-flower items vary from shop to shop. The consumers are restrained to decide about the rational price of the flower items purchased. The market committees should standardize prices for cut-flower items for the benefit of consumers
- There is a limited number of cut-flower shops. Majority of the shops are located in the rich areas of the cities. Common consumers are to travel long distances to purchase flower items. More retail flower shops should be set up by the local bodies in all parts of the cities.

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