

Marketing Research: Toothpaste Industry*

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Abstract - One of the fastest growing segments in the FMCG sector has been the toothpaste segment. As per Euromonitor India, 'the toothpaste industry in India is over Rs.6000 crore in 2013. The industry revenues grew at 9.1% as compared to the previous year'. The major players in the industry are Colgate and Palmolive with their time tested brand Colgate that holds close to 56% market share. "Over the years, Colgate has been able to develop strong brand equity" (Jain, Vipul & Jain, 2012). The trailer of the industry is HUL with popular brands – Pepsodent and Colgate. They collectively hold close to 28% market share and saw a growth of 15% in revenues year on year. Other players include Dabur Red, Cibaca, Meswak, Sensodyne, Babool and Oral-B. However, as per analysts the segment is turning out to be one of the most competitive segments in FMCG space. GSK with Sensodyne recently introduced "Sensitivity Protection" as an entirely new feature in the minds of Indian customer and gaining a 0.8% share of the market in less than a year. Similarly FMCG behemoth P&G also threw its hat in the fray by extending its dental care brand Oral-B to toothpaste segment. The brand emphasis of "Whiteness" is its central USP. The segment has also seen aggressiveness from the existent players when HUL introduced a directed campaign at Colgate to emphasize its superiority with implicit reference to Colgate. At this point, the importance of marketing research in the industry increases several folds. A comprehensive marketing research will be the only tool that can provide manufacturer's proximity to customers to both – new brands, who need to identify in roads to the market and for existing brands, who need to up their ante against the onslaught of competitors.

Keywords— *Toothpaste Industry, demographic, usage, attitude*

I. INTRODUCTION

"Numerous product launches in the oral care market in general, are expansions of recognized brands. Marketers realize that there is more demand for products that provide whitening and odour-fighting benefits. Taking advantage of recognized brand names is one strategy through which oral care marketers can bring innovative and novel products into the market." (Sriram, Dr. S & Pugalanthi, Dr. S., July 2013) The project revolves around the extensive application of marketing research techniques to understand the usage, attitude and preference of Indian consumers towards toothpaste, a very generic and routine product used by people of all age groups and demographics and with a very low involvement.

Customer satisfaction refers to the extent to which customers are happy with the product and services provided by a business." (Kavitha, Dr. T. N. R. & Vanitha, www.iosrjournals.org) Customer expectations, usage, attitude and brand comparison were studied for the toothpaste category, wherein the primary benefits that the consumer seeks while using a particular brand was analyzed with its

purchasing pattern and behavior, and the core triggers to purchase their favorite brand. The effect of demographic factors like age, gender, occupation, income level was observed with respect to the purchase of toothpaste. Switching behavior between various brands was analyzed with the help of factors like offering attractive discounts, use of samples, price points and availability.

Also, a typical customer was classified based on the demographic and lifestyle factors using 'Cluster Analysis'. 'Factor Analysis' helped us in identifying three major factors of place, price and promotion out of all the variables considered. Using 'Discriminant Analysis' on different variables like teeth whitening, gum problems, lather, long-lasting freshness, tooth decay etc., a model based on attributes to predict group membership was also analyzed, though the model was found to be insignificant. Techniques like 'Perceptual Mapping' were used to assess the relevance of branding campaigns and promotional activities on the purchase pattern. Brands taken into consideration were Colgate, Pepsodent, Close Up, Dabur Red and Sensodyne. As a result of which, Colgate was found out to be the most preferable and favored brand amongst the others. The 'toothpastes like Close-up, Colgate and Pepsodent gives emphasis upon the higher class people as well as self esteemed people. So, people using these brands feel higher in status and their performance is more psychological'. (Panigrahi, Anita Kumari, April, 2015)

Different brands have different marketing strategies; some focus on the taste and flavor attributes and some lay their focus on dental care exclusively. Based on our analysis, we found Colgate as the market leader and it should introduce new variants like its competitors have been doing. Brands like Pepsodent have been attacking its competition Colgate with its advertisements and a new variant 'Pepsodent Attack'. As a result, marketers should focus on factors like whiteness and sensitivity, infact a 'total care' as a whole, during their brand communication to its customers and association with Dental Professional Bodies can also be helpful.

The purchasing pattern says that customers are purchasing toothpastes from super markets and Kirana shops, thus these should be critical locations for the sales staff. Majorly, the product is a planned purchased or through monthly ration. Even the advertisement can be an important instrument that 'can create a clear cut difference in the mind of consumer' (Singh, Sukhbir, 2017), hence there is an discrete effect of toothpaste advertisement on the customers.

II. OBJECTIVES

The objectives of this research paper are:

- a) To understand the usage and preference of Indian consumers towards 'toothpaste' category products.
- b) Consumer Expectations
 - a. Primary benefits that a consumer associates with a toothpaste
- c) Usages and Attitude
 - a. Various usage patterns linked with toothpaste
 - b. Purchase behavior connected with toothpaste
 - c. Affect of demographic factors on the purchase of toothpaste
 - d. Analyzing the switching behavior
 - e. Identifying the various parameters that affect the purchase behavior
 - f. Classifying the customers based on demographic and lifestyle parameters
 - g. Develop a model based on attributes to predict group membership
- d) Brand Awareness and Comparison
 - a. Feature specific association with brands
 - b. Effect of branding campaigns and promotional schemes on usage patterns

III. RESEARCH METHODOLOGY

Due to a constraint on the cost and time aspects of the research a convenience sampling approach was employed. The survey was distributed to 83 respondents that were spread across the varied demographic profile. The questionnaire was coded on Qualtrics– a professional marketing research platform and was distributed to respondents primarily via email.

IV. OVERVIEW

DEMOGRAPHIC PROFILE

A. CONSUMER EXPECTATIONS

- ❖ Primary benefits that a consumer associates with a toothpaste
(One-Sample t-test)

The objective is to determine which product benefits of toothpaste are most important to customers.

The mean values were found out for each attribute. Higher the value, more important is the product benefit to customers.

Through a one-sample t-test, the significance of mean was determined.

H_0 : Mean value of Product Benefit=3

H_1 : Mean value of Product Benefit>3

Significance level=0.05

This is a one-tailed t-test, so p-value is divided by 2.

One-Sample t-test				
Rate your agreement/disagreement with the statements indicated below on a five point scale:	N	Mean	Sig. (2-tailed)	Sig. (1-tailed)
Prevention from tooth decay is most important	83	4.47	.000	.000
Prevention from gum problems is not important	83	3.84	.000	.000
Toothpaste should provide teeth whitening	83	4.13	.000	.000
Medicinal value of the toothpaste does not matter	83	3.69	.000	.000
Toothpaste that does not offer lather does not provide satisfaction	83	3.35	.008	0.004
I look at the ingredient (vegetarian/non vegetarian) while buying a toothpaste	83	3.07	.666	0.333
The best toothpaste is which prevents from bad breath and provides long lasting freshness	83	4.16	.000	0
Toothpaste should taste good	83	3.82	.000	0
I do not look for new features promised by the toothpaste every time I buy toothpaste	83	2.87	.235	0.1175

When p-value<0.05, H_0 is rejected implying the corresponding product benefit mean is significant.

From the above table significant attributes in the order of importance are identified:

1. Prevention from tooth decay
2. Prevents from bad breath and provides long lasting freshness
3. Provide teeth whitening
4. Prevention from gum problems
5. Taste good
6. Medicinal value
7. Lather

When p-value>0.05, there is not enough evidence to reject H_0 implying the corresponding product benefit mean is insignificant.

From the above table insignificant attributes are identified:

1. Ingredient (vegetarian/non vegetarian)
2. New features promised by the toothpaste

Demographic Variables vs Primary Benefits
(Independent sample t-test)

The objective is to understand the effect of demographic variables on average importance of product benefits.

The mean values were found out for each variable. Higher the value, more important is the product benefit to that category of variable.

Gender

Through an independent sample t-test, the significance of difference in mean was determined.

H₀: Mean importance to Males = Mean importance to Females

H₁: Mean importance to Males ≠ Mean importance to Females

Significance level=0.05

Descriptives			
Rate your agreement/disagreement with the statements indicated below on a five point scale:	Gender	N	Mean
Prevention from tooth decay is most important	Male	48	4.35
	Female	35	4.63
Prevention from gum problems is not important	Male	48	3.79
	Female	35	3.91
Toothpaste should provide teeth whitening	Male	48	4.31
	Female	35	3.89
Medicinal value of the toothpaste does not matter	Male	48	3.67
	Female	35	3.71
Toothpaste that does not offer lather does not provide satisfaction	Male	48	3.46
	Female	35	3.20
I look at the ingredient (vegetarian/non vegetarian) while buying a toothpaste	Male	48	2.88
	Female	35	3.34
The best toothpaste is which prevents from bad breath and provides long lasting freshness	Male	48	4.06
	Female	35	4.29
Toothpaste should taste good	Male	48	3.69
	Female	35	4.00
I do not look for new features promised by the toothpaste every time I buy toothpaste	Male	48	2.88
	Female	35	2.86
Independent Samples Test			
Rate your agreement/disagreement with the statements indicated below on a five point scale:	Levene's Test for Equality of Variances		t-test for Equality of Means
		Sig.	Sig. (2-tailed)
Prevention from tooth decay is most important	Equal variances assumed	.933	.072
	Equal variances not assumed		.084
Prevention from gum problems is not important	Equal variances assumed	.692	.670
	Equal variances not assumed		.672
Toothpaste should provide teeth whitening	Equal variances assumed	.913	.011
	Equal variances not assumed		.016

Medicinal value of the toothpaste does not matter	Equal variances assumed	.573	.837
	Equal variances not assumed		.835
Toothpaste that does not offer lather does not provide satisfaction	Equal variances assumed	.924	.321
	Equal variances not assumed		.323
I look at the ingredient (vegetarian/non vegetarian) while buying a toothpaste	Equal variances assumed	.686	.168
	Equal variances not assumed		.171
The best toothpaste is which prevents from bad breath and provides long lasting freshness	Equal variances assumed	.396	.213
	Equal variances not assumed		.200
Toothpaste should taste good	Equal variances assumed	.031	.124
	Equal variances not assumed		.113
I do not look for new features promised by the toothpaste every time I buy toothpaste	Equal variances assumed	.574	.937
	Equal variances not assumed		.937

Here, p-value corresponding to equality of variances is insignificant (>0.05). So, the variances of two groups are not equal.

When p-value<0.05, H₀ is rejected implying there is difference in the preference of corresponding benefit among males and females.

From the above table only 1 significant factor was identified i.e. 'toothpaste should provide teeth whitening'. It is more important for males than females, as shown by mean values.

When p-value>0.05, there is not enough evidence to reject null hypothesis. This means the difference in product benefit preference can be attributed to chance and not to gender. Differences in mean for all other factors were insignificant.

Occupation (ANOVA)

Through ANOVA, the significance of difference in mean was determined.

H₀: All means are equal

H₁: At least two means are not equal

Significance level=0.05

ANOVA						
Rate your agreement/disagreement with the statements indicated below on a five point scale-		Sum of Squares	df	Mean Square	F	Sig.
Prevention from tooth decay is most important	Between Groups	1.118	4	.279	.580	.678
	Within Groups	37.557	78	.481		
	Total	38.675	82			
Prevention from gum problems is not important	Between Groups	22.927	4	5.732	3.990	.005
	Within Groups	112.037	78	1.436		
	Total	134.964	82			
Toothpaste should provide teeth whitening	Between Groups	3.737	4	.934	1.663	.167
	Within Groups	43.806	78	.562		
	Total	47.542	82			
Medicinal value of the toothpaste does not matter	Between Groups	11.008	4	2.752	2.793	.032
	Within Groups	76.848	78	.985		
	Total	87.855	82			
Toothpaste that does not offer lather does not provide satisfaction	Between Groups	2.802	4	.701	.506	.732
	Within Groups	108.065	78	1.385		
	Total	110.867	82			
I look at the ingredient (vegetarian/non vegetarian) while buying a toothpaste	Between Groups	53.226	4	13.307	7.613	.000
	Within Groups	136.340	78	1.748		
	Total	189.566	82			
which prevents from bad breath and	Between Groups	4.457	4	1.114	1.792	.139

provides long lasting freshness	Within Groups	48.507	78	.622		
	Total	52.964	82			
Toothpaste should taste good	Between Groups	2.174	4	.544	.641	.635
	Within Groups	66.115	78	.848		
	Total	68.289	82			
I do not look for new features promised by the toothpaste every time I buy toothpaste	Between Groups	2.520	4	.630	.606	.659
	Within Groups	81.023	78	1.039		
	Total	83.542	82			

When $p\text{-value} < 0.05$, H_0 is rejected implying there is difference in the preference of corresponding benefit among different age groups.

From the above table following significant factors were identified:

1. Prevention from gum problems
2. Medicinal value of the toothpaste
3. Ingredient (vegetarian/non vegetarian)

DESCRIPTIVES			
Rate your agreement/disagreement with the statements indicated below on a five point scale-	N	Mean	
Prevention from gum problems is not important	a) Professional	17	4.35
	b) Business	12	3.25
	c) Student	42	4.05
	d) Homemaker	9	3.33
	e) Retired	3	2.00
	Total	83	3.84
Medicinal value of the toothpaste does not matter	a) Professional	17	4.18
	b) Business	12	3.42
	c) Student	42	3.62
	d) Homemaker	9	3.89
	e) Retired	3	2.33
	Total	83	3.69
I look at the ingredient (vegetarian/non vegetarian) while buying a toothpaste	a) Professional	17	2.59
	b) Business	12	4.33
	c) Student	42	2.67
	d) Homemaker	9	4.56
	e) Retired	3	2.00
	Total	83	3.07

It is most important for those respondents where mean>3 in that occupation in decreasing order:

BENEFIT	CATEGORY
Medicinal value of the toothpaste	1. Professional 2. Homemaker 3. Student 4. Business
Ingredient (vegetarian/non vegetarian)	1. Homemaker 2. Business
Prevention from gum problems	1. Professional 2. Student 3. Homemaker 4. Business

Post- Hoc Analysis

Difference of mean importance of benefits is significantly high for these pairs of variables wherever the p-value<0.05

Multiple Comparisons						
TukeyHSD						
Dependent Variable	(I) Occupation	(J) Occupation	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound Upper Bound
Prevention from gum problems is not important	a) Professional	b) Business	1.103	.452	.115	-.16 2.36
		c) Student	.305	.345	.901	-.66 1.27
		d) Homemaker	1.020	.494	.246	-.36 2.40
		e) Retired	2.353*	.751	.020	.26 4.45
		a) Professional	-1.103	.452	.115	-2.36 .16
	b) Business	c) Student	-.798	.392	.260	-1.89 .30
		d) Homemaker	-.083	.528	1.000	-1.56 1.39
		e) Retired	1.250	.774	.492	-.91 3.41
		a) Professional	-.305	.345	.901	-1.27 .66
	c) Student	b) Business	.798	.392	.260	-.30 1.89
		d) Homemaker	.714	.440	.488	-.52 1.94
		e) Retired	2.048*	.716	.042	.05 4.05
		a) Professional	-1.020	.494	.246	-2.40 .36
	d) Homemaker	b) Business	.083	.528	1.000	-1.39 1.56
		c) Student	-.714	.440	.488	-1.94 .52
		e) Retired	1.333	.799	.459	-.90 3.56
		a) Professional	-2.353*	.751	.020	-4.45 -.26
	e) Retired	b) Business	-1.250	.774	.492	-3.41 .91
		c) Student	-2.048*	.716	.042	-4.05 -.05
		d) Homemaker	-1.333	.799	.459	-3.56 .90
b) Business		-.760	.374	.261	-1.29 1.80	
Medicinal value of the toothpaste does not matter	a) Professional	c) Student	.557	.285	.298	-.24 1.35
		d) Homemaker	.288	.409	.955	-.86 1.43
		e) Retired	1.843*	.622	.032	.11 3.58
		a) Professional	-.760	.374	.261	-1.80 .29
		c) Student	-.202	.325	.971	-1.11 .70
	b) Business	d) Homemaker	-.472	.438	.817	-1.69 .75
		e) Retired	1.083	.641	.446	-.71 2.87
		a) Professional	-.557	.285	.298	-1.35 .24
	c) Student	b) Business	.202	.325	.971	-.70 1.11
		d) Homemaker	-.270	.365	.946	-1.29 .75
		e) Retired	1.286	.593	.203	-.37 2.94
		a) Professional	-.288	.409	.955	-1.43 .86
d) Homemaker	b) Business	.472	.438	.817	-.75 1.69	
	c) Student	.270	.365	.946	-.75 1.29	
	e) Retired	1.556	.662	.140	-.29 3.40	

I look at the ingredient (vegetarian/non vegetarian) while buying a toothpaste	a) Professional	b) Business	-1.745*	.498	.007	-3.14 -.35
		c) Student	-.078	.380	1.000	-1.14 .98
		d) Homemaker	-1.967*	.545	.005	-3.49 -.45
		e) Retired	.588	.828	.954	-1.72 2.90
	b) Business	a) Professional	1.745*	.498	.007	.35 3.14
		c) Student	1.667*	.433	.002	.46 2.88
		d) Homemaker	-.222	.583	.995	-1.85 1.41
		e) Retired	2.333	.853	.058	-.05 4.72
	c) Student	a) Professional	.078	.380	1.000	-.98 1.14
		b) Business	-1.667*	.433	.002	-2.88 -.46
		d) Homemaker	-1.889*	.486	.002	-3.25 -.53
		e) Retired	.667	.790	.916	-1.54 2.87
	d) Homemaker	a) Professional	1.967*	.545	.005	.45 3.49
		b) Business	.222	.583	.995	-1.41 1.85
		c) Student	1.889*	.486	.002	.53 3.25
		e) Retired	2.556*	.881	.038	.09 5.02
	e) Retired	a) Professional	-.588	.828	.954	-2.90 1.72
		b) Business	-2.333	.853	.058	-4.72 .05
		c) Student	-.667	.790	.916	-2.87 1.54
		d) Homemaker	-2.556*	.881	.038	-5.02 -.09

*. The mean difference is significant at the 0.05 level.

When between groups p-value>0.05, there is not enough evidence to reject null hypothesis. This means the difference in product benefit preference can be attributed to chance and not to age. Differences in mean for all other attributes were insignificant.

Similar Independent t-test/ANOVA analysis was conducted for all demographic variables. Following is the summary of the results:

S.No.	Demographic Variable	Significant Benefits (p-value<0.05)	Relative Importance in categories (Mean values >3 in decreasing order)	Post-Hoc Analysis(p-value<0.05)
1.	Gender	Teeth Whitening	1. Female 2. Male	N.A.
2.	Age	Prevents from bad breath and provides long lasting freshness	3. 16-25 4. 26-35 5. <16 6. >=46 7. 36-45	N.A.
3.	Monthly Household income (Rs.)	Prevention from tooth decay is most important	1. 50,001-75,000 2. 75,001-1,00,000 3. <25,000 4. 25,000-50,000 5. >1,00,000	50,001-75,000 and >1,00,000
4.	Occupation	Medicinal value of the toothpaste	1. Professional 2. Homemaker 3. Student 4. Business	Professional-Retired
		Ingredient (vegetarian/non vegetarian)	1. Homemaker 2. Business	1. Professional-Business 2. Professional-Homemaker 3. Business-Student 4. Homemaker-Retired 5. Student-Homemaker
		Prevention from gum problems	1. Professional 2. Student 3. Homemaker 4. Business	1. Professional - Retired 2. Student-Retired

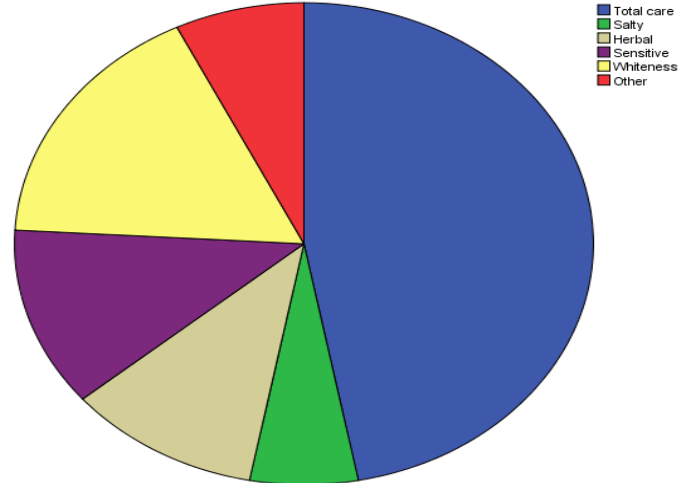
B. USAGE AND ATTITUDE

- ❖ Various usage patterns linked with toothpaste (Frequency Tables)

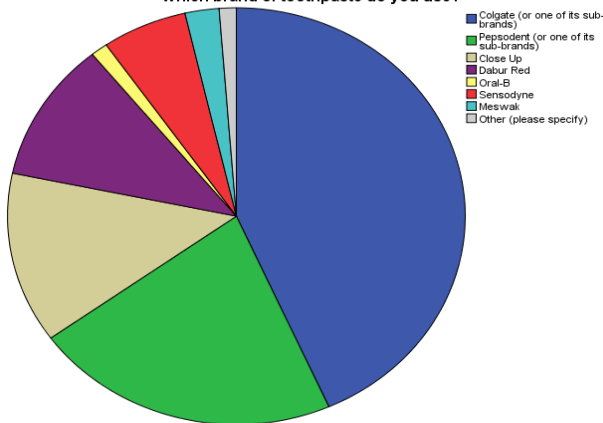
Which brand of toothpaste do you use?

	Frequency	Percent	Valid Percent	Cumulative
Colgate (or one of its sub-brands)	36	43.4	43.4	43.4
Pepsodent (or one of its sub-brands)	18	21.7	21.7	65.1
Close Up	11	13.3	13.3	78.3
Dabur Red	9	10.8	10.8	89.2
Oral-B	1	1.2	1.2	90.4
Sensodyne	5	6.0	6.0	96.4
Meswak	2	2.4	2.4	98.8
Other (please specify)	1	1.2	1.2	100.0
Total	83	100.0	100.0	

Which variant/type of the brand of toothpaste do you use?



Which brand of toothpaste do you use?



Interpretation

43% respondents use Colgate toothpaste, hence, it is the most used toothpaste among the given brands. Pepsodent with approximately 20 % respondents is the second most used brand. This is followed by Close- Up, Dabur Red and Sensodyne in the stated order.

Interpretation:

With 47% of the respondents using Total care as a toothpaste variant, it is the most used one. This is followed by Whiteness (17%) and Sensitive (12%) type of toothpastes.

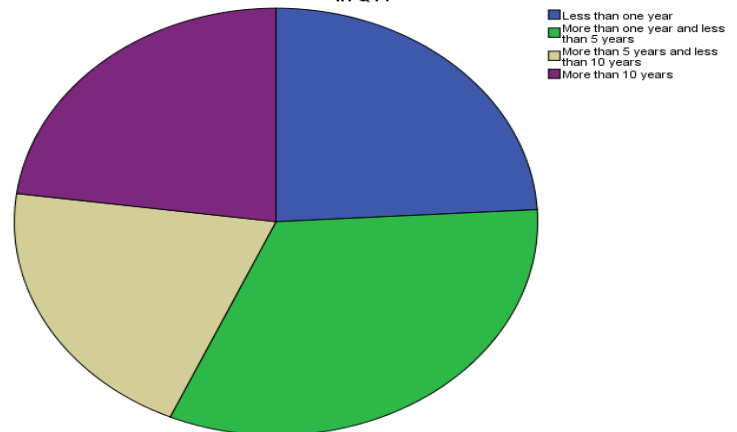
For how long have been you using the brand that you have indicated previously in Q1?

	Frequency	Percent	Valid Percent	Cumulative Percent
Less than one year	20	24.1	24.1	24.1
More than one year and less than 5 years	27	32.5	32.5	56.6
More than 5 years and less than 10 years	17	20.5	20.5	77.1
More than 10 years	19	22.9	22.9	100.0
Total	83	100.0	100.0	

Which variant/type of the brand of toothpaste do you use?

	Frequency	Percent	Valid Percent	Cumulative
Total care	39	47.0	47.0	47.0
Salty	5	6.0	6.0	53.0
Herbal	9	10.8	10.8	63.9
Sensitive	10	12.0	12.0	75.9
Whiteness	14	16.9	16.9	92.8
Other	6	7.2	7.2	100.0
Total	83	100.0	100.0	

For how long have been you using the brand that you have indicated previously in Q1?

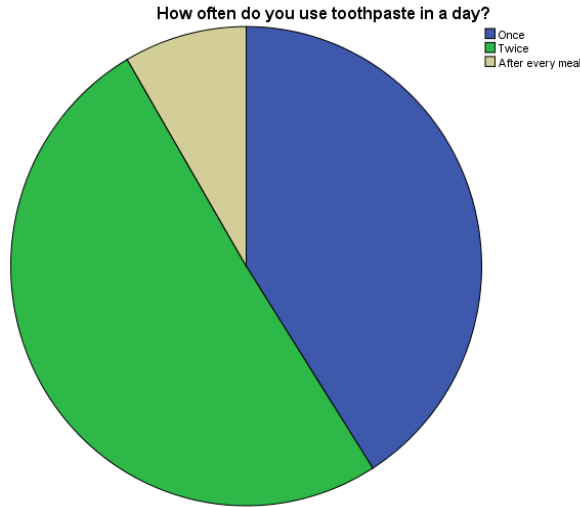


Interpretation:

Almost 45 % percent of the respondents have been using the same toothpaste for the last 5 years or more. This can show that toothpaste being a fairly low involvement product, a large number of people do not feel like changing it and continue using it.

How often do you use toothpaste in a day?

	Frequency	Percent	Valid Percent	Cumulative Percent
Once	34	41.0	41.0	41.0
Twice	42	50.6	50.6	91.6
After every meal	7	8.4	8.4	100.0
Total	83	100.0	100.0	



Interpretation:

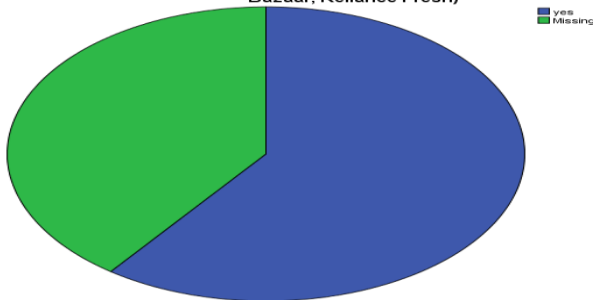
50.6% of the respondents use toothpaste twice a day and 41% use it once a day. There are very few people (8.4%) who use toothpaste after every meal. This shows that majority use toothpaste as a daily morning and night routine.

❖ Purchase behavior connected with toothpaste

Where do you buy your toothpaste from (select many)?-Supermarket (Like Big Bazaar, Reliance Fresh)

	Frequency	Percent	Valid Percent	Cumulative
Valid yes	50	60.2	100.0	100.0
Missing System	33	39.8		
Total	83	100.0		

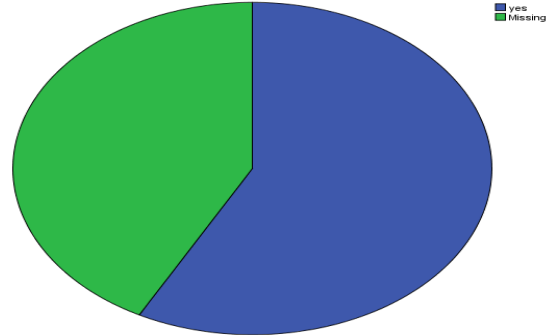
Where do you buy your toothpaste from (select many)?-Supermarket (Like Big Bazaar, Reliance Fresh)



Where do you buy your toothpaste from (select many)?-Kirana shop

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid yes	48	57.8	100.0	100.0
Missing System	35	42.2		
Total	83	100.0		

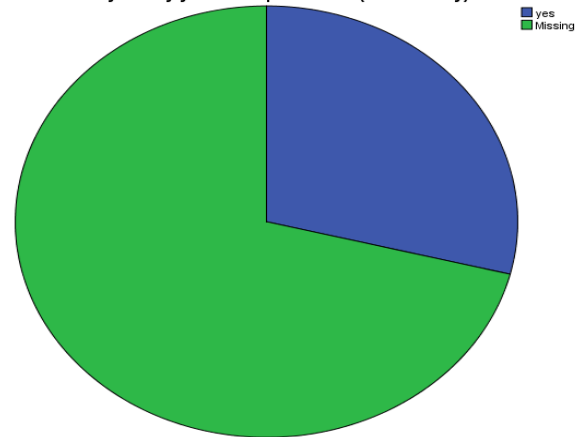
Where do you buy your toothpaste from (select many)?-Kirana shop



Where do you buy your toothpaste from (select many)?-Medical shop/ Chemist

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid yes	24	28.9	100.0	100.0
Missing System	59	71.1		
Total	83	100.0		

Where do you buy your toothpaste from (select many)?-Medical shop/ Chemist

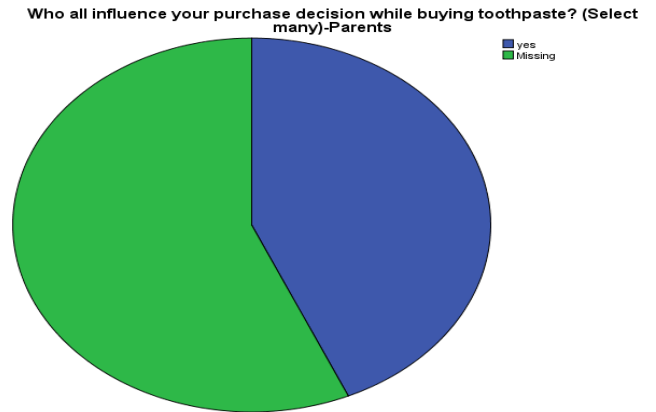
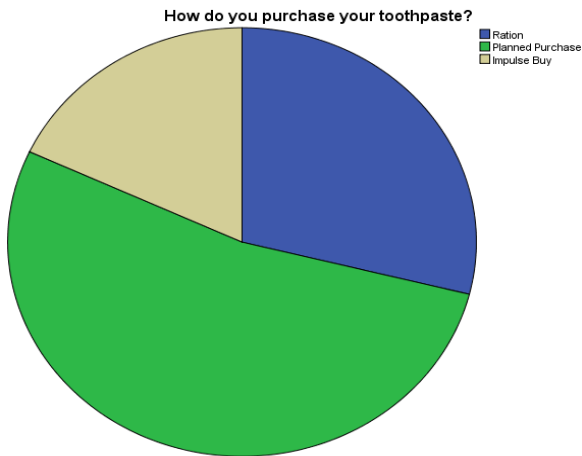


Interpretation:

60% of the respondents bought their toothpaste from supermarkets like, Big Bazaar, Reliance Fresh etc. Almost 58% of the respondents bought their toothpaste from Kirana shops and 29% of the respondents bought their toothpaste from Medical shops/ chemists. Thus more number of toothpaste purchases was from Supermarkets.

How do you purchase your toothpaste?

	Frequency	Percent	Valid Percent	Cumulative Percent
Ration	24	28.9	28.9	28.9
Planned Purchase	44	53.0	53.0	81.9
Impulse Buy	15	18.1	18.1	100.0
Total	83	100.0	100.0	



Interpretation:
 More than half of the total respondents (53 %) purchase toothpaste as a part of their planned decision. Fewer people (only 18 %) believe that they purchase it as an impulse buying decision. Also, about 28.9 % people also buy as a part of their monthly ration.

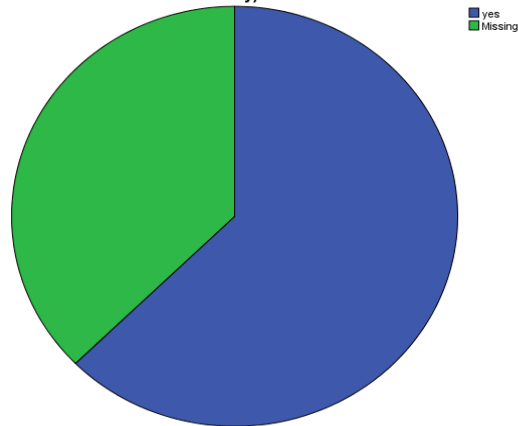
Who all influence your purchase decision while buying toothpaste? (Select many)-Individual Decision

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid yes	52	62.7	100.0	100.0
Missing System	31	37.3		
Total	83	100.0		

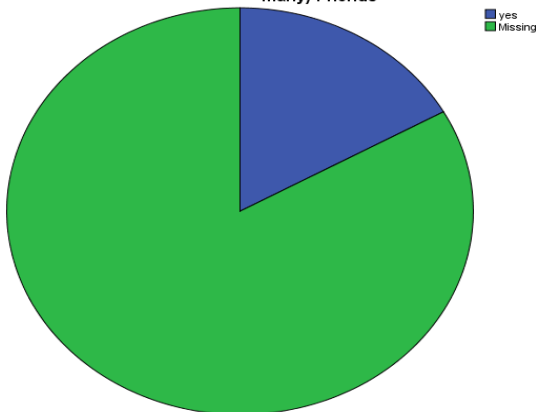
Who all influence your purchase decision while buying toothpaste? (Select many)-Friends

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid yes	14	16.9	100.0	100.0
Missing System	69	83.1		
Total	83	100.0		

Who all influence your purchase decision while buying toothpaste? (Select many)-Individual Decision



Who all influence your purchase decision while buying toothpaste? (Select many)-Friends



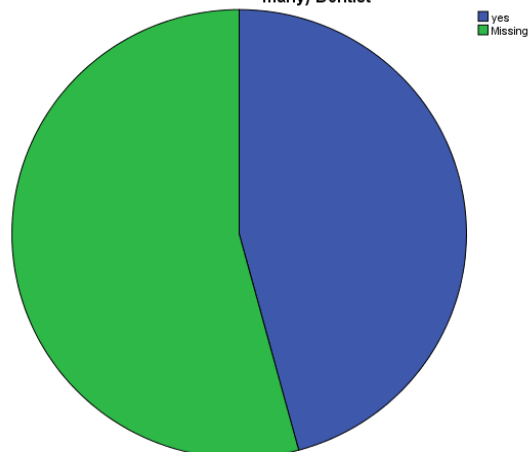
Who all influence your purchase decision while buying toothpaste? (Select many)-Dentist

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid yes	38	45.8	100.0	100.0
Missing System	45	54.2		
Total	83	100.0		

Who all influence your purchase decision while buying toothpaste? (Select many)-Parents

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid yes	36	43.4	100.0	100.0
Missing System	47	56.6		
Total	83	100.0		

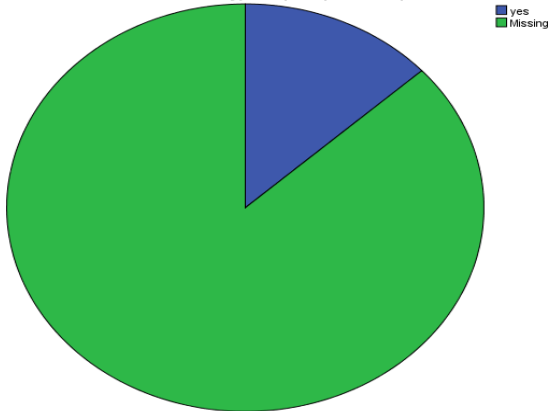
Who all influence your purchase decision while buying toothpaste? (Select many)-Dentist



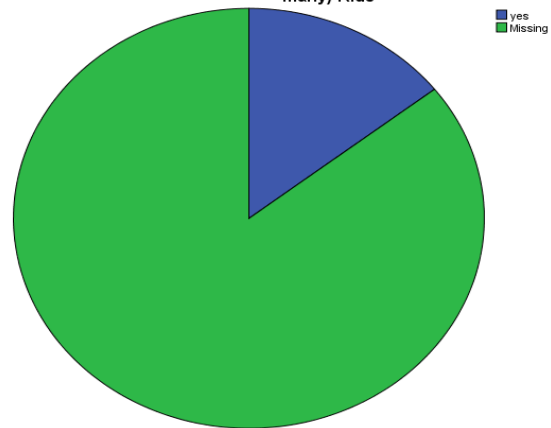
Who all influence your purchase decision while buying toothpaste? (Select many)-Shopkeeper/Salesperson

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid yes	11	13.3	100.0	100.0
Missing System	72	86.7		
Total	83	100.0		

Who all influence your purchase decision while buying toothpaste? (Select many)-Shopkeeper/Salesperson



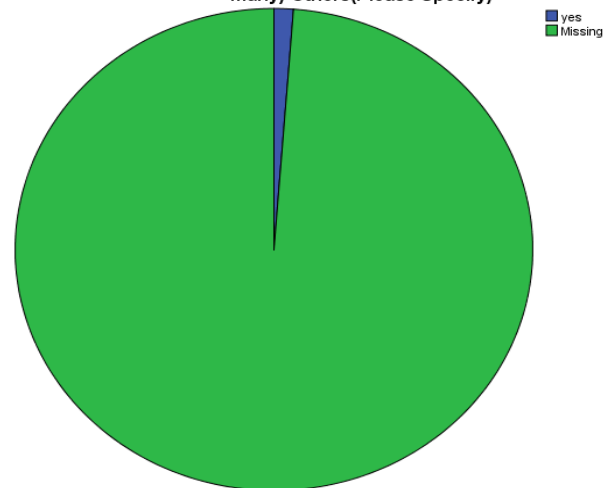
Who all influence your purchase decision while buying toothpaste? (Select many)-Kids



Who all influence your purchase decision while buying toothpaste? (Select many)-Others(Please Specify)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid yes	1	1.2	100.0	100.0
Missing System	82	98.8		
Total	83	100.0		

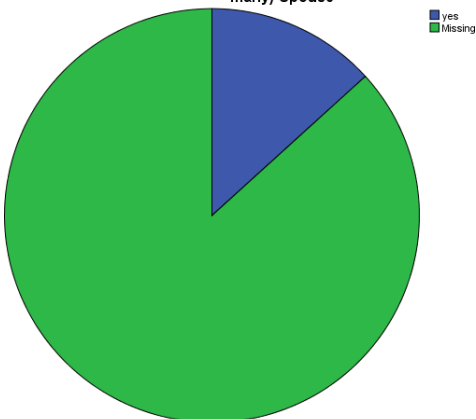
Who all influence your purchase decision while buying toothpaste? (Select many)-Others(Please Specify)



Who all influence your purchase decision while buying toothpaste? (Select many)-Spouse

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid yes	11	13.3	100.0	100.0
Missing System	72	86.7		
Total	83	100.0		

Who all influence your purchase decision while buying toothpaste? (Select many)-Spouse



Who all influence your purchase decision while buying toothpaste? (Select many)-Kids

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid yes	12	14.5	100.0	100.0
Missing System	71	85.5		
Total	83	100.0		

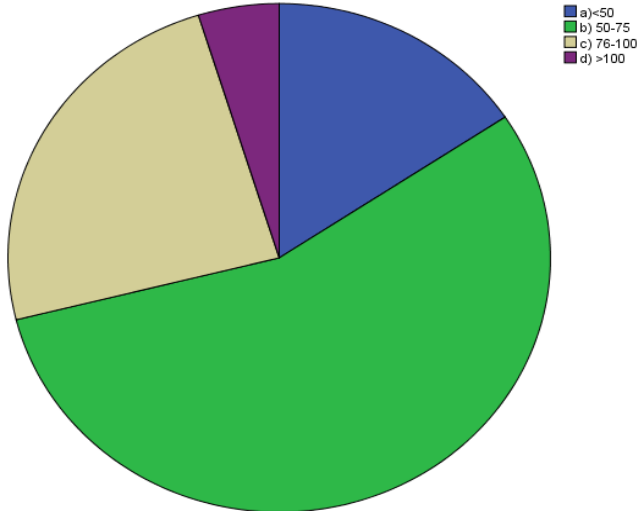
Interpretation:

For more than 60% respondents toothpaste buying is an individual decision. Next, 45% respondent's purchase decision was influenced by their dentist. Also, 43% of respondents were influenced by their parents while buying toothpaste.

How much are you willing to spend on a regular size (150 gm) of toothpaste? (Rs.)

	Frequency	Percent	Valid Percent	Cumulative
a) <50	13	15.7	15.7	15.7
b) 50-75	46	55.4	55.4	71.1
c) 76-100	20	24.1	24.1	95.2
d) >100	4	4.8	4.8	100.0
Total	83	100.0	100.0	

How much are you willing to spend on a regular size (150 gm) of toothpaste (Rs.)



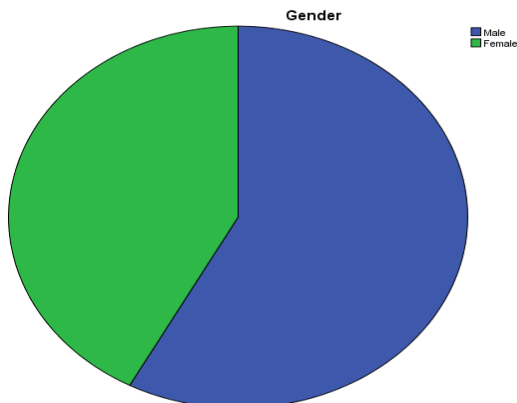
Interpretation:

Almost 70% respondents are willing to spend less than Rs.75 on a regular size (150gm) of toothpaste. Only 5% respondents are willing to spend more than Rs.100 for a regular size pack of toothpaste.

Affect of demographic factors on the purchase of toothpaste

(Crosstabs)
 Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	48	57.8	57.8	57.8
Female	35	42.2	42.2	100.0
Total	83	100.0	100.0	

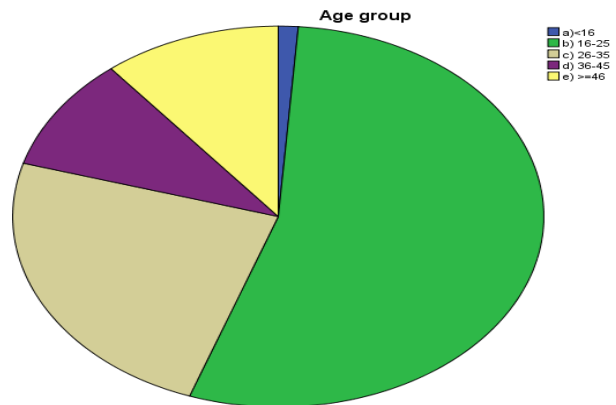


Interpretation:

Out of all the respondents, 57.8% were males and 42.2% were females.

Age group

	Frequency	Percent	Valid Percent	Cumulative Percent
a) <16	1	1.2	1.2	1.2
b) 16-25	45	54.2	54.2	55.4
c) 26-35	20	24.1	24.1	79.5
d) 36-45	8	9.6	9.6	89.2
e) >=46	9	10.8	10.8	100.0
Total	83	100.0	100.0	

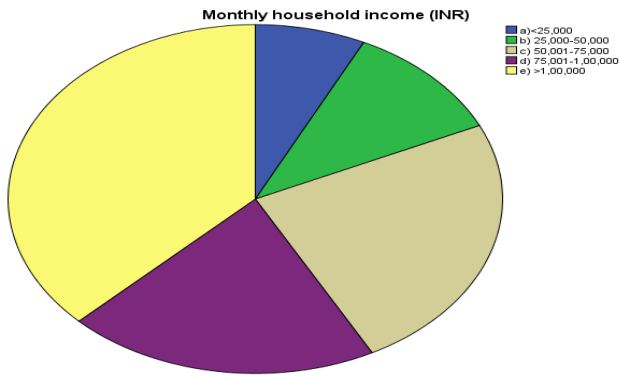


Interpretation:

More than half of the respondents, i.e., 54.2% lie in the age group of 16-25 years. About 24% respondents are from the 26-35 age group. Close to 10% respondents are from 36-45 years age group.

Monthly household income (INR)

	Frequency	Percent	Valid Percent	Cumulative Percent
a) <25,000	6	7.2	7.2	7.2
b) 25,000-50,000	9	10.8	10.8	18.1
c) 50,000-75,000	20	24.1	24.1	42.2
d) 75,000-1,00,000	17	20.5	20.5	62.7
e) >1,00,000	31	37.3	37.3	100.0
Total	83	100.0	100.0	

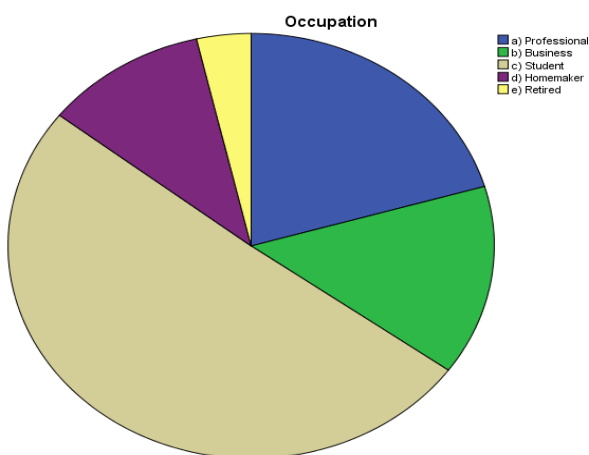


Interpretation:

- 37.3% of the respondents have a monthly household income of greater than INR 1,00,000,
- 24.1 % of the respondents have a household income between 50-75,000,
- Only 7.2 % of the respondents have a family monthly income of less than 25,000.

Occupation

	Frequency	Percent	Valid Percent	Cumulative Percent
a) Professional	17	20.5	20.5	20.5
b) Business	12	14.5	14.5	34.9
c) Student	42	50.6	50.6	85.5
d) Homemaker	9	10.8	10.8	96.4
e) Retired	3	3.6	3.6	100.0
Total	83	100.0	100.0	



Interpretation:

Nearly half 50% of the respondents are 'Students.' 20.5 % of the respondents are 'Professionals', 14.5 % are 'Businessman', only 3.6% are Retired people.

Summarized Rank Order

Promotion	Score	Rank
Combo offers (buy 1 get 1 free)	183	1
Value packs (buy 2@50/-, 3@80/-)	228	2
Price discounts (10% off on MRP)	242	3
Quantity discounts (50g extra)	291	4
-Freebies (free toothbrush, mouthwash etc.)	299	5

Interpretation:

The combo offers (buy one get 1 free) is considered to be most preferred. After this value packs appeal to the consumers more. The consumers are least attracted by freebies and have ranked them the least.

Crosstab- Satisfaction v/s frequent and brand loyal users

Satisfaction_level * Usage time Cross tabulation

		Usage time		Total
		Frequent shifters	Brand loyal	
Satisfaction_level	Low satisfaction	Count 7	Count 7	Count 14
	% within Usage time	35.0%	11.1%	16.9%
Satisfaction_level	High satisfaction	Count 13	Count 56	Count 69
	% within Usage time	65.0%	88.9%	83.1%
Total		Count 20	Count 63	Count 83
		% within Usage time	% within Usage time	%
		100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6.178 ^a	1	.013		
Continuity Correction ^b	4.592	1	.032		
Likelihood Ratio	5.477	1	.019		
Fisher's Exact Test				.034	.020
Linear-by-Linear Association	6.104	1	.013		
N of Valid Cases	83				

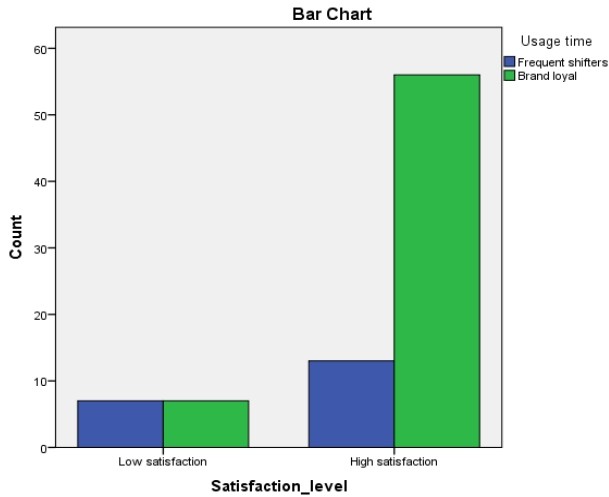
a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 3.37.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.273	.013
	Cramer's V	.273	.013
N of Valid Cases		83	

- a. Not assuming the null hypothesis.
- b. Using the asymptotic standard error assuming the null hypothesis.



Interpretation:

The p-value (0.13 <math>α</math>) shows that there is a relationship between usage time and satisfaction level. Thus, it is observed that brand loyal people have high satisfaction with their brands as compared to the frequent users. Even though it has a weak relationship (phi = 0.273), 7.45% of variations in satisfaction level is explained by the type of respondents that are frequent shifters and brand loyal users.

Spending redef * Age redefined
 Crosstab

		Age redefined		Total
		Younger respondents	Older respondents	
Spending redef	less than equal to INR 75	Count: 37	Count: 22	Count: 59
		% within Age redefined: 80.4%	% within Age redefined: 59.5%	% within Total: 71.1%
	more than INR 75	Count: 9	Count: 15	Count: 24
		% within Age redefined: 19.6%	% within Age redefined: 40.5%	% within Total: 28.9%
Total		Count: 46	Count: 37	Count: 83
		% within Age redefined: 100.0%	% within Age redefined: 100.0%	% within Total: 100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square ^a	4.389	1	.036		
Continuity Correction ^b	3.428	1	.064		
Likelihood Ratio	4.394	1	.036		
Fisher's Exact Test				.051	.032
Linear-by-Linear Association	4.336	1	.037		
N of Valid Cases		83			

- a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.70.
- b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.230	.036
	Cramer's V	.230	.036
N of Valid Cases		83	

- a. Not assuming the null hypothesis.
- b. Using the asymptotic standard error assuming the null hypothesis.

Interpretation:

Younger respondents prefer to spend less than INR75 as compared to the older respondents. This can be seen to be significant with p-value (.036) greater than alpha (0.05). On further probing, using Phi test, we find that the strength of relationship is not very strong. But, phi square = 5.29% of variations in spending patterns for toothpaste are explained by age.

Spending redef * . Gender
 Crosstab

			. Gender		Total
			Male	Female	
Spending redef	less than equal to INR 75	Count: 37	Count: 22	Count: 59	
		% within Gender: 77.1%	% within Gender: 62.9%	% within Total: 71.1%	
	more than INR 75	Count: 11	Count: 13	Count: 24	
		% within Gender: 22.9%	% within Gender: 37.1%	% within Total: 28.9%	
Total			Count: 48	Count: 35	Count: 83
			% within Gender: 100.0%	% within Gender: 100.0%	% within Total: 100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.993 ^a	1	.158		
Continuity Correction ^b	1.361	1	.243		
Likelihood Ratio	1.978	1	.160		
Fisher's Exact Test				.220	.122
Linear-by-Linear Association	1.969	1	.161		
N of Valid Cases	83				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.12.

b. Computed only for a 2x2 table

Interpretation:

More males prefer spending less than INR 75 on toothpaste as compared to females. But, the results are insignificant as shown by chi square test.

Spending redef * Monthly household income (INR)

Crosstab

		Monthly household income (INR)					Total
		a) < 25,000	b) 25,000-50,000	c) 50,001-75,000	d) 75,001-1,00,000	e) >1,00,000	
Spending redef	less than equal to INR 75	Count 5	9	15	12	18	59
	% within Monthly household income (INR)	83.3%	100.0%	75.0%	70.6%	58.1%	71.1%
Spending redef	more than INR 75	Count 1	0	5	5	13	24
	% within Monthly household income (INR)	16.7%	0.0%	25.0%	29.4%	41.9%	28.9%
Total		Count 6	9	20	17	31	83
	% within Monthly household income (INR)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.807 ^a	4	.146
Likelihood Ratio	9.169	4	.057
Linear-by-Linear Association	5.385	1	.020
N of Valid Cases	83		

a. 4 cells (40.0%) have expected count less than 5. The minimum expected count is 1.73.

Interpretation:

Respondents with monthly household income between INR25001 and INR50000 prefer to spend less than INR75 on toothpaste purchase. But, chi square test is not valid here as 4 cells have expected count less than 5, so, no further analysis is done.

Spending redef * Occupation

Crosstab

		Occupation					Total
		a) Professional	b) Business	c) Student	d) Home maker	e) Retired	
Spending redef	less than equal to INR 75	Count 11	7	33	5	3	59
	% within Occupation	64.7%	58.3%	78.6%	55.6%	100.0%	71.1%
Spending redef	more than INR 75	Count 6	5	9	4	0	24
	% within Occupation	35.3%	41.7%	21.4%	44.4%	0.0%	28.9%
Total		Count 17	12	42	9	3	83
	% within Occupation	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.707 ^a	4	.319
Likelihood Ratio	5.446	4	.244
Linear-by-Linear Association	.876	1	.349
N of Valid Cases	83		

a. 5 cells (50.0%) have expected count less than 5. The minimum expected count is .87.

Interpretation:

Mostly retired people and students prefer spending less than INR75 on toothpaste. But, chi square test is not valid here as 5 cells have expected count less than 5, so, no further analysis is done.

Crosstabs

How do you purchase your toothpaste? * Age redefined

Crosstab

		Age redefined		Total	
		Younger respondents	Older respondents		
How do you purchase your toothpaste?	Ration	Count	11	13	24
		% within Age redefined	23.9%	35.1%	28.9%
	Planned Purchase	Count	23	21	44
		% within Age redefined	50.0%	56.8%	53.0%
	Impulse Buy	Count	12	3	15
		% within Age redefined	26.1%	8.1%	18.1%
Total	Count	46	37	83	
	% within Age redefined	100.0%	100.0%	100.0%	

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.737 ^a	2	.094
Likelihood Ratio	5.062	2	.080
Linear-by-Linear Association	3.771	1	.052
N of Valid Cases	83		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.69.

Interpretation:

Older respondents generally go for a planned purchase or ration as compared to younger respondents. Impulse buying behavior in case of toothpaste is shown more by the younger respondents. But, the results are insignificant as shown by chi square test.

How do you purchase your toothpaste? * . Gender

Crosstab

			. Gender	
			Male	Female
How do you purchase your toothpaste?	Ration	Count	13	11
		% within Gender	27.1%	31.4%
	Planned Purchase	Count	26	18
		% within Gender	54.2%	51.4%
	Impulse Buy	Count	9	6
		% within Gender	18.8%	17.1%
Total	Count	48	35	
	% within Gender	100.0%	100.0%	

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.190 ^a	2	.909
Likelihood Ratio	.189	2	.910
Linear-by-Linear Association	.155	1	.694
N of Valid Cases	83		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.33.

Interpretation:

Males generally go for a planned purchase or impulse buy for toothpaste whereas females purchase it with the monthly ration. But, the results are insignificant as shown by chi square test.

How do you purchase your toothpaste? * Monthly household income (INR)

Crosstab

		Monthly household income (INR)					Total	
		a) < 25,000	b) 25,000-50,000	c) 50,000-75,000	d) 75,000-1,00,000	e) >1,00,000		
How do you purchase your toothpaste?	Ration	Count	0	3	7	6	8	24
		% within Monthly household income (INR)	0.0%	33.3%	35.0%	35.3%	25.8%	28.9%
	Planned Purchase	Count	4	4	9	10	17	44
		% within Monthly household income (INR)	66.7%	44.4%	45.0%	58.8%	54.8%	53.0%
	Impulse Buy	Count	2	2	4	1	6	15
		% within Monthly household income (INR)	33.3%	22.2%	20.0%	5.9%	19.4%	18.1%
Total	Count	6	9	20	17	31	83	
	% within Monthly household income (INR)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.426 ^a	8	.711
Likelihood Ratio	7.469	8	.487
Linear-by-Linear Association	.527	1	.468
N of Valid Cases	83		

a. 9 cells (60.0%) have expected count less than 5. The minimum expected count is 1.08.

Interpretation:

Chi square test is not valid here as 9 cells have expected count less than 5, so, no further analysis is done.

How do you purchase your toothpaste? * Occupation

		Occupation					Total
		a) Professional	b) Business	c) Student	d) Homemaker	e) Retired	
How do you purchase your toothpaste?	Planned Purchase	Count 8	3	9	3	1	24
	% within Occupation	47.1%	25.0%	21.4%	33.3%	33.3%	28.1%
Impulse Buy	Count	5	6	25	6	2	44
	% within Occupation	29.4%	50.0%	59.5%	66.7%	66.7%	53.1%
Total	Count	4	3	8	0	0	15
	% within Occupation	23.5%	25.0%	19.0%	0.0%	0.0%	18.1%
Total		Count 17	12	42	9	3	83
		% within Occupation	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.248 ^a	8	.410
Likelihood Ratio	10.428	8	.236
Linear-by-Linear Association	.003	1	.955
N of Valid Cases	83		

a. 10 cells (66.7%) have expected count less than 5. The minimum expected count is .54.

Interpretation:

Chi square test is not valid here as 10 cells have expected count less than 5, so, no further analysis is done.

❖ Switching Behavior

(One- Sample t-test, Independent sample t-test, ANOVA)

The objective is to determine which factors are most important for switching or replacement among brands of toothpastes.

The mean values were found out for each factor. Higher the value, more important is that factor for customers for replacement.

Through a one-sample t-test, the significance of mean was determined.

H₀: Mean value of Replacement Factor = 3

H₁: Mean value of Replacement Factor > 3

Significance level=0.05

This is a one-tailed t-test, so p-value is divided by 2.

If you have changed your toothpaste, please rate your agreement/disagreement with the following factors	N	Mean	Sig. (2-tailed)	Sig. (1-tailed)
I was dissatisfied with the previous brand	83	2.86	.176	0.088
I had a new dental problem that the previous brand did not address	83	3.04	.789	0.3945
It was recommended by someone from my social circle	83	2.89	.405	0.2025
The advertisements of the new brand attracted me	83	3.10	.472	0.236
I used the free sample of the new brand and liked it	83	2.64	.007	0.0035
I was offered an attractive discount on the new brand (includes 1+1, or free gifts)	83	2.75	.058	0.029

My dentist strongly recommended the brand	83	3.13	.332	0.166
The other brand was cheaper	83	2.42	.000	0
The previous brand was not easily available at stores	83	2.24	.000	0

When p-value<0.05, H₀ is rejected implying the corresponding switching factor mean is significant.

From the above table significant factors in the order of importance are identified:

1. Offered an attractive discount on the new brand
2. Used the sample of the new brand and liked it.
3. The other brand was cheaper
4. The previous brand was not easily available at stores

When p-value>0.05, there is not enough evidence to reject H₀ implying the corresponding brand replacement factor mean is insignificant.

From the above table insignificant factors are identified:

1. Dissatisfaction with the previous brand
2. A new dental problem not addressed by previous brand
3. Recommendation by someone from social circle
4. Attractive advertisements of the new brand
5. Dentist recommendation

❖ Demographic Variables vs Switching Behavior

The objective is to understand the effect of demographic variables on factors considered most important for switching or replacement among different brands of toothpastes.

The mean values were found out for each factor across each variable category. Higher the value, more important is the factor to that category of variable.

Gender

Through an independent sample t-test, the significance of difference in mean was determined.

H₀: Mean importance to Males = Mean importance to Females

H₁: Mean importance to Males ≠ Mean importance to Females

Significance level=0.05

Descriptives	Gender	N	Mean
If you have changed your toothpaste, please rate your agreement/disagreement with the following factors			
I was dissatisfied with the previous brand	Male	48	2.75
	Female	35	3.00
I had a new dental problem that the previous brand did not address	Male	48	2.81
	Female	35	3.34
It was recommended by someone from my social circle	Male	48	3.00
	Female	35	2.74
The advertisements of the new brand attracted me	Male	48	3.02
	Female	35	3.20
I used the free sample of the new brand and liked it	Male	48	2.56
	Female	35	2.74
I was offered an attractive discount on the new brand (includes 1+1, or free gifts)	Male	48	2.65
	Female	35	2.74

discount on the new brand (includes 1+1, or free gifts)	Female	35	2.89
My dentist strongly recommended the brand	Male	48	2.90
	Female	35	3.46
The other brand was cheaper	Male	48	2.40
	Female	35	2.46
The previous brand was not easily available at stores	Male	48	2.25
	Female	35	2.23

Independent Samples Test				
If you have changed your toothpaste , please rate your agreement/disagreement with the following factors		Levene's Test for Equality of Variances		t-test for Equality of Means
		F	Sig.	Sig. (2-tailed)
I was dissatisfied with the previous brand	Equal variances assumed	.270	.605	.246
	Equal variances not assumed			.256
I had a new dental problem that the previous brand did not address	Equal variances assumed	4.737	.032	.051
	Equal variances not assumed			.060
It was recommended by someone from my social circle	Equal variances assumed	.208	.650	.330
	Equal variances not assumed			.337
The advertisements of the new brand attracted me	Equal variances assumed	2.287	.134	.511
	Equal variances not assumed			.503
I used the free sample of the new brand and liked it	Equal variances assumed	.008	.930	.501
	Equal variances not assumed			.501
I was offered an attractive discount on the new brand (includes 1+1, or free gifts)	Equal variances assumed	.001	.970	.371
	Equal variances not assumed			.369

My dentist strongly recommended the brand	Equal variances assumed	1.004	.319	.040
	Equal variances not assumed			.038
The other brand was cheaper	Equal variances assumed	.857	.357	.797
	Equal variances not assumed			.799
The previous brand was not easily available at stores	Equal variances assumed	.306	.582	.926
	Equal variances not assumed			.928

Here, p-value corresponding to equality of variances is insignificant (>0.05). So, the variances of two groups are not equal.

When p-value<0.05, H₀ is rejected implying there is difference in the importance of replacement factor among males and females.

From the above table only 1 significant factor was identified i.e. 'my dentist strongly recommended the brand'. It is more important for females than males. In fact, males do not consider it an important attribute.

When p-value>0.05, there is not enough evidence to reject null hypothesis. This means the difference in switching factor preference can be attributed to chance and not to gender. Differences in mean for all other attributes were insignificant.

Age

Through ANOVA, the significance of difference in mean was determined.

H₀: All means are equal

H₁: At least two means are not equal

Significance level=0.05

ANOVA		
If you have changed your toothpaste , please rate your agreement/disagreement with the following factors		Sig.
I was dissatisfied with the previous brand	Between Groups	.339
	Within Groups	
	Total	
I had a new dental problem that the previous brand did not address	Between Groups	.440
	Within Groups	
	Total	
It was recommended by someone from my social circle	Between Groups	.906
	Within Groups	
	Total	
The advertisements of the new brand attracted me	Between Groups	.455
	Within Groups	

	Total	
I used the free sample of the new brand and liked it	Between Groups	.572
	Within Groups	
	Total	
I was offered an attractive discount on the new brand (includes 1+1, or free gifts)	Between Groups	.133
	Within Groups	
	Total	
My dentist strongly recommended the brand	Between Groups	.985
	Within Groups	
	Total	
The other brand was cheaper	Between Groups	.064
	Within Groups	
	Total	
The previous brand was not easily available at stores	Between Groups	.785
	Within Groups	
	Total	

When between groups p-value > 0.05, there is not enough evidence to reject null hypothesis. Differences in mean for all switching factors w.r.t. age are insignificant. This means the difference in factors importance on switching behavior of respondents can be attributed to chance and not to age.

Similar results were observed when ANOVA analysis was conducted for all other demographic variables (**income, occupation**).

Therefore, the differences in the average importance of above factors on switching behavior among toothpaste brands can be attributed to chance.

- Identifying the various parameters that affect the purchase behavior (FACTOR ANALYSIS)

The major objective of doing factor analysis is to analyze together and extract underlined factors from variables under investigations.

STEP 1: Analyzing KMO and Bartlett's test
 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.710
Approx. Chi-Square	430.746
Bartlett's Test of Sphericity	
Df	45
Sig.	.000

Since, the value of KMO statistics is greater than 0.5, this indicates that factor analysis can be used for the given set of data.

Also since the p-value in a Bartlett's test < 0.05. Hence indicating that the correlation coefficient matrix is significant.

STEP 2: Analyzing Total Variance explained
 Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.861	38.607	38.607	3.861	38.607	38.607	2.696	26.964	26.964
2	1.912	19.119	57.726	1.912	19.119	57.726	2.333	23.331	50.295
3	1.405	14.049	71.774	1.405	14.049	71.774	2.148	21.480	71.774

4	.830	8.296	80.070						
5	.692	6.918	86.989						
6	.432	4.323	91.312						
7	.303	3.029	94.341						
8	.265	2.654	96.996						
9	.209	2.092	99.088						
10	.091	.912	100.000						

Extraction Method: Principal Component Analysis.

Through this table we can see that:

- There are 3 factors with eigen values greater than one. The percentage of variance explained by these 3 factors are 26.9, 23.3, 21.4 respectively.
- A total variance explained by these factors is 71.774%.

Step3: Analyzing Communalities

Communalities	Initial	Extraction
Rate your agreement/disagreement with the following statement of factors which influence your purcha...I select the toothpaste because it is cheaper than the other toothpastes	1.000	.800
Rate your agreement/disagreement with the following statement of factors which influence your purcha...The toothpaste is available at the store in my locality	1.000	.848
Rate your agreement/disagreement with the following statement of factors which influence your purcha...The toothpaste is prominently placed in departmental stores	1.000	.772
Rate your agreement/disagreement with the following statement of factors which influence your purcha...I see the hoardings, posters, newspaper ads, of popular brands and then decide.	1.000	.808
Rate your agreement/disagreement with the following statement of factors which influence your purcha...I buy that toothpaste which is endorsed by the brand ambassador I like	1.000	.639
Rate your agreement/disagreement with the following statement of factors which influence your purcha...I prefer a toothpaste because it offers attractive schemes and discounts	1.000	.520
Rate your agreement/disagreement with the following statement of factors which influence your purcha...I prefer a toothpaste which gives value for money.	1.000	.671
Rate your agreement/disagreement with the following statement of factors which influence your purcha...The toothpaste is available at most of the places.	1.000	.910
Rate your agreement/disagreement with the following statement of factors which influence your purcha...I watch the TV advertisement and decide the brand.	1.000	.811
Rate your agreement/disagreement with the following statement of factors which influence your purcha...I buy that toothpaste which is recommended by dentists	1.000	.399

Extraction Method: Principal Component Analysis.

This table depicts that:

80% of variation in "selection of toothpaste because it is cheaper than other toothpaste" are explained by these 3 factors. A similar analysis of the other 9 variables can be done.

Step 4: Factor Deduction using Component Matrix

Using component matrix and a **cut-off point of 0.6** the following variables can be clubbed into their respective factors.

Rotated Component Matrix^a

	Component		
	1	2	3
Rate your agreement/disagreement with the following statement of factors which influence your purchase...I select the toothpaste because it is cheaper than the other toothpastes	.113	.887	.026
Rate your agreement/disagreement with the following statement of factors which influence your purchase...The toothpaste is available at the store in my locality	.902	.187	.011
Rate your agreement/disagreement with the following statement of factors which influence your purchase...The toothpaste is prominently placed in departmental stores	.838	.055	.259
Rate your agreement/disagreement with the following statement of factors which influence your purchase...I see the hoardings, posters, newspaper ads, of popular brands and then decide.	.083	.113	.888
Rate your agreement/disagreement with the following statement of factors which influence your purchase...I buy that toothpaste which is endorsed by the brand ambassador I like	.124	.594	.521
Rate your agreement/disagreement with the following statement of factors which influence your purchase...I prefer a toothpaste because it offers attractive schemes and discounts	.256	.610	.286
Rate your agreement/disagreement with the following statement of factors which influence your purchase...I prefer a toothpaste which gives value for money.	.108	.812	-.019
Rate your agreement/disagreement with the following statement of factors which influence your purchase...The toothpaste is available at most of the places.	.930	.205	.043
Rate your agreement/disagreement with the following statement of factors which influence your purchase...I watch the TV advertisement and decide the brand.	.193	.199	.857
Rate your agreement/disagreement with the following statement of factors which influence your purchase...I buy that toothpaste which is recommended by dentists	-.408	-.173	.450

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.
 a. Rotation converged in 5 iterations.

S.No	Factor 1	Factor 2	Factor 3
1	available at the store in my locality	is cheaper than the other toothpastes	See the hoardings, posters, newspaper ads, of popular brands and then decide.
2	prominently placed in departmental stores	it offers attractive schemes and discounts	Watch the TV advertisement and decide the brand.
3	Toothpaste is available at most of the places.	Toothpaste which gives value for money.	
FACTOR NAME	<i>Place</i>	<i>Price</i>	<i>Promotion</i>

Hence, the 3 factors that can explain these 10 variables are:

Factor 1: Place

Factor 2: Price

Factor 3: Promotion

- ❖ Classifying the customers based on demographic and lifestyle parameters (Cluster Analysis)

Agglomeration Schedule

Stage	Cluster Combined		Coefficients	Stage Cluster First		Next Stage
	Appears			Cluster 1	Cluster 2	
	Cluster 1	Cluster 2				
1	33	54	.000	0	0	2
2	1	33	.000	0	1	13
3	47	80	6.000	0	0	8
4	46	70	6.000	0	0	9
5	44	51	6.000	0	0	22
6	23	45	6.000	0	0	23
7	64	65	8.000	0	0	35
8	47	58	8.000	3	0	16
9	12	46	8.000	0	4	36
10	30	34	8.000	0	0	15
11	9	17	8.000	0	0	36
12	43	56	9.000	0	0	23
13	1	49	9.000	2	0	32
14	6	35	9.000	0	0	26
15	5	30	9.000	0	10	30
16	47	53	10.333	8	0	19
17	20	57	11.000	0	0	38
18	26	36	11.000	0	0	43
19	4	47	11.750	0	16	25
20	19	81	12.000	0	0	41
21	52	62	12.000	0	0	28
22	44	50	12.000	5	0	28
23	23	43	12.500	6	12	29
24	31	82	13.000	0	0	50
25	4	21	13.400	19	0	31
26	6	13	13.500	14	0	38
27	11	37	14.000	0	0	35
28	44	52	14.333	22	21	34
29	8	23	14.750	0	23	46
30	5	63	15.000	15	0	42
31	4	61	15.833	25	0	42
32	1	39	16.250	13	0	39
33	29	69	17.000	0	0	57
34	44	60	17.000	28	0	44
35	11	64	17.500	27	7	51
36	9	12	17.667	11	9	48
37	3	41	18.000	0	0	48
38	6	20	18.833	26	17	59
39	1	83	19.000	32	0	53
40	71	75	19.000	0	0	71
41	19	42	20.000	20	0	46
42	4	5	20.393	31	30	52
43	7	26	20.500	0	18	58
44	44	48	20.833	34	0	52
45	24	40	21.000	0	0	68
46	8	19	21.933	29	41	65
47	22	28	22.000	0	0	56
48	3	9	22.400	37	36	56
49	10	79	23.000	0	0	73
50	31	77	23.500	24	0	53
51	11	55	23.500	35	0	66
52	4	44	23.792	42	44	58
53	1	31	24.278	39	50	62
54	25	76	26.000	0	0	81
55	15	74	26.000	0	0	68
56	3	22	27.143	48	47	61
57	29	78	27.500	33	0	63
58	4	7	28.037	52	43	61
59	6	38	28.200	38	0	60
60	6	16	31.167	59	0	65
61	3	4	31.381	56	58	67
62	1	59	31.444	53	0	69
63	29	72	33.333	57	0	70
64	68	73	34.000	0	0	77
65	6	8	34.375	60	46	67
66	2	11	35.200	0	51	71
67	3	6	36.451	61	65	73
68	15	24	37.500	55	45	74

69	1	18	39.100	62	0	72
70	29	67	41.500	63	0	80
71	2	71	42.333	66	40	78
72	1	66	42.818	69	0	75
73	3	10	44.189	67	49	74
74	3	15	44.399	73	68	75
75	1	3	48.358	72	74	76
76	1	14	51.317	75	0	77
77	1	68	56.578	76	64	78
78	1	2	59.981	77	71	80
79	27	32	63.000	0	0	82
80	1	29	66.195	78	70	81
81	1	25	95.848	80	54	82
82	1	27	98.920	81	79	0

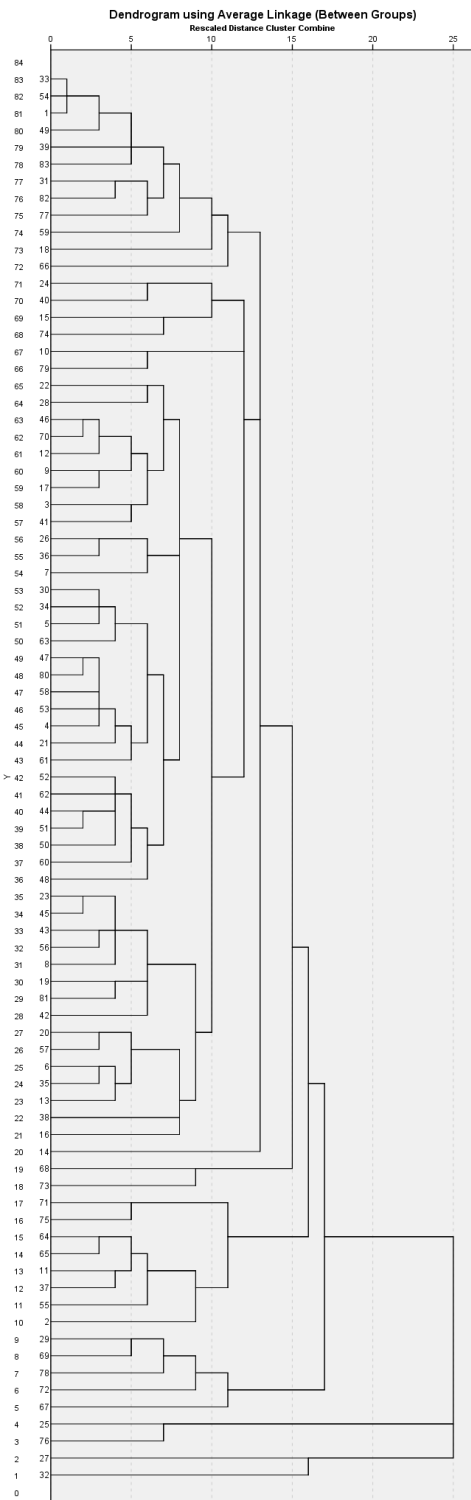
As per the agglomeration schedule, the largest difference is between 95.848-66.195=29.653 between 3 cluster and 4 cluster solution. Hence, there is a 3 cluster solution.

Cluster Membership

Case	5 Clusters	4 Clusters	3 Clusters	2 Clusters
1	1	1	1	1
2	1	1	1	1
3	1	1	1	1
4	1	1	1	1
5	1	1	1	1
6	1	1	1	1
7	1	1	1	1
8	1	1	1	1
9	1	1	1	1
10	1	1	1	1
11	1	1	1	1
12	1	1	1	1
13	1	1	1	1
14	1	1	1	1
15	1	1	1	1
16	1	1	1	1
17	1	1	1	1
18	1	1	1	1
19	1	1	1	1
20	1	1	1	1
21	1	1	1	1
22	1	1	1	1
23	1	1	1	1
24	1	1	1	1
25	2	2	2	1
26	1	1	1	1
27	3	3	3	2
28	1	1	1	1
29	4	4	1	1
30	1	1	1	1
31	1	1	1	1
32	5	3	3	2
33	1	1	1	1
34	1	1	1	1
35	1	1	1	1
36	1	1	1	1
37	1	1	1	1
38	1	1	1	1
39	1	1	1	1
40	1	1	1	1
41	1	1	1	1
42	1	1	1	1
43	1	1	1	1
44	1	1	1	1
45	1	1	1	1
46	1	1	1	1
47	1	1	1	1
48	1	1	1	1
49	1	1	1	1
50	1	1	1	1
51	1	1	1	1
52	1	1	1	1

53	1	1	1	1
54	1	1	1	1
55	1	1	1	1
56	1	1	1	1
57	1	1	1	1
58	1	1	1	1
59	1	1	1	1
60	1	1	1	1
61	1	1	1	1
62	1	1	1	1
63	1	1	1	1
64	1	1	1	1
65	1	1	1	1
66	1	1	1	1
67	4	4	1	1
68	1	1	1	1
69	4	4	1	1
70	1	1	1	1
71	1	1	1	1
72	4	4	1	1
73	1	1	1	1
74	1	1	1	1
75	1	1	1	1
76	2	2	2	1
77	1	1	1	1
78	4	4	1	1
79	1	1	1	1
80	1	1	1	1
81	1	1	1	1
82	1	1	1	1
83	1	1	1	1

As per the cluster membership we can observe that majority of the variables lie in the 1st cluster. Hence, it has a one cluster solution.



As per the dendrogram, most respondents lie in one cluster only. Hence, it has a one cluster solution.

Hence, by using K-means we find out the 3cluster solution and their scores.

Final Cluster Centers

	Cluster		
	1	2	3
I prefer eating vegetarian food over non- vegetarian food	2.310	2.600	4.538
I prefer fast food over home-cooked food	3.000	1.933	2.487
I smoke more than 3 cigarettes a day	2.552	1.467	1.000
I like ice-creams	3.966	2.533	4.179
I drink at least 3 cups of coffee/ tea per day	3.310	2.800	2.795
I love going out with friends over family	3.897	1.733	3.256
I prefer alcoholic beverages when I go out	3.724	1.533	1.590
I chew tobacco	2.276	1.733	1.077
I like watching soap operas	2.241	2.333	2.564
I prefer sweets after my meals	3.000	2.400	3.590
I like drinking soft drinks with my meal	2.897	2.067	2.923
I like chocolates/ candies	3.621	2.533	4.077
I travel at least once in 6 months	3.724	1.933	3.538
I hang out more than once a week	3.448	1.800	3.103
I work out every day	3.379	1.600	2.308
I prefer watching movies on theatre	3.448	2.200	3.897

From this we can observe that none of the variables lie in the second cluster. Hence, a three cluster solution is not possible.

Hence, we study the 2 cluster solution.

Final Cluster Centers

	Cluster	
	1	2
I prefer eating vegetarian food over non- vegetarian food	3.167	3.596
I prefer fast food over home- cooked food	2.944	2.277
I smoke more than 3 cigarettes a day	2.056	1.298
I like ice-creams	4.056	3.617
I drink at least 3 cups of coffee/ tea per day	3.944	2.234
I love going out with friends over family	3.944	2.638
I prefer alcoholic beverages when I go out	3.222	1.638
I chew tobacco	1.778	1.489
I like watching soap operas	2.333	2.468
I prefer sweets after my meals	3.444	2.957
I like drinking soft drinks with my meal	3.139	2.468
I like chocolates/ candies	3.861	3.468
I travel at least once in 6 months	3.917	2.851
I hang out more than once a week	3.750	2.404
I work out every day	2.806	2.362
I prefer watching movies on theatre	3.611	3.298

On the basis of the above data we can classify the respondents into 2 clusters.

The first cluster consists of consumers having:

- Prefer fast food over home- cooked food
- Smoke more than 3 cigarettes a day
- Like ice-creams
- Drink at least 3 cups of coffee/ tea per day
- Love going out with friends over family

- Prefer alcoholic beverages when go out
- Chew tobacco
- Prefer sweets after meals
- Drink soft drinks with meals
- Like chocolates/ candies
- Travel at least once in 6 months
- Hang out more than once a week
- Work out every day
- Prefer watching movies on theatre

Hence, we can classify them as outgoing western consumers
 The second cluster consists of consumers having traits:

- Prefer vegetarian over non-vegetarian food
- Like watching soap operas

Hence, we can say that the consumers are traditional in their habits.

- ❖ Develop a model based on attributes to predict group membership :
 (Discriminant Analysis)

A discriminant analysis was done with the aim to develop a model to predict brand selection (group membership) based on attribute based preference of each customer. The predictor variables were determined from Q7 where users were asked to represent their importance for specific features on a five point scale. These variables were:

1. Tooth Decay
2. Gum Problems
3. Teeth Whitening
4. Medicinal Value
5. Lather
6. Ingredients
7. Long lasting Freshness
8. Taste

ANOVA

	Cluster		Error		F	Sig.
	Mean Square	df	Mean Square	df		
I prefer eating vegetarian food over non- vegetarian food	3.753	1	2.498	81	1.503	.224
I prefer fast food over home- cooked food	9.092	1	1.251	81	7.271	.009
I smoke more than 3 cigarettes a day	11.703	1	1.305	81	8.967	.004
I like ice-creams	3.920	1	1.272	81	3.083	.083
I drink at least 3 cups of coffee/ tea per day	59.637	1	1.485	81	40.150	.000
I love going out with friends over family	34.778	1	1.145	81	30.376	.000
I prefer alcoholic beverages when I go out	51.144	1	1.421	81	36.000	.000
I chew tobacco	1.696	1	1.506	81	1.126	.292
I like watching soap operas	.370	1	1.799	81	.206	.651
I prefer sweets after my meals	4.835	1	1.467	81	3.296	.073
I like drinking soft drinks with my meal	9.173	1	1.358	81	6.754	.011
I like chocolates/ candies	3.149	1	1.062	81	2.966	.089
I travel at least once in 6 months	23.148	1	1.145	81	20.225	.000
I hang out more than once a week	36.919	1	.964	81	38.305	.000
I work out every day	4.016	1	1.512	81	2.656	.107
I prefer watching movies on theatre	2.000	1	1.462	81	1.369	.245

Next we see the Anova table to see which all variables that distinguished between both the clusters were not significant. The p-value of variable “prefer vegetarian over non-vegetarian” which is 0.224 and ‘watching soap operas’ which is .651 are greater than significance level of .05.

Hence, we can conclude that the two variables are not significant enough to distinguish between clusters.

We now find out the two cluster solution using SPSS. The conclusion we get is that the cluster quality for a two cluster solution is poor.

A discriminant analysis was performed on the variables and the data file and output file for the model are included in the CD.

Descriptive Statistics: The mean scores along with standard deviation for predictor variables are indicated below:

Group Statistics

Brand	Mean	Std. Deviation	Valid N (listwise)		
			Unweighted	Weighted	
Colgate (or one of its sub-brands)	Prevention from tooth decay	4.39	.838	36	36.000
	Prevention from gum problems	3.72	1.344	36	36.000
	Teeth whitening	4.03	.941	36	36.000
	Medicinal value	3.58	1.052	36	36.000
	Lather	3.47	1.183	36	36.000
	Ingredient (vegetarian/non vegetarian)	3.00	1.568	36	36.000
	Long lasting freshness	4.11	.785	36	36.000
	Taste	3.94	.860	36	36.000
Pepsodent (or one of its sub-brands)	Prevention from tooth decay	4.56	.616	18	18.000
	Prevention from gum problems	3.78	1.263	18	18.000
	Teeth whitening	4.44	.616	18	18.000
	Medicinal value	3.61	1.092	18	18.000
	Lather	3.28	1.179	18	18.000
	Ingredient (vegetarian/non vegetarian)	3.17	1.581	18	18.000
	Long lasting freshness	4.28	.895	18	18.000
	Taste	3.67	1.029	18	18.000
Close Up	Prevention from tooth decay	4.27	.467	11	11.000
	Prevention from gum problems	3.82	1.250	11	11.000
	Teeth whitening	4.00	.447	11	11.000
	Medicinal value	3.55	1.128	11	11.000
	Lather	3.64	1.433	11	11.000
	Ingredient (vegetarian/non vegetarian)	2.45	1.572	11	11.000
	Long lasting freshness	4.36	.505	11	11.000
	Taste	4.09	.539	11	11.000
Total	Prevention from tooth decay	4.42	.727	65	65.000
	Prevention from gum problems	3.75	1.287	65	65.000
	Teeth whitening	4.14	.808	65	65.000
	Medicinal value	3.58	1.059	65	65.000
	Lather	3.45	1.212	65	65.000
	Ingredient (vegetarian/non vegetarian)	2.95	1.566	65	65.000
	Long lasting freshness	4.20	.775	65	65.000
	Taste	3.89	.868	65	65.000

Tests of Equality of Group Means

	Wilks' Lambda	F	df1	df2	Sig.
Prevention from tooth decay	.982	.563	2	62	.572
Prevention from gum problems	.999	.027	2	62	.974
Teeth whitening	.944	1.838	2	62	.168
Medicinal value	1.000	.013	2	62	.987
Lather	.990	.310	2	62	.734
Ingredient (vegetarian/non vegetarian)	.977	.735	2	62	.484
Long lasting freshness	.982	.565	2	62	.571
Taste	.970	.959	2	62	.389

Correlation Matrix: The pooled within-group matrices were used to present the correlation for the entire predictor variables. Since the correlation coefficient between any pair of predictor variables does not exceed 0.75, therefore there is no problem of multi-collinearity.

Pooled Within-Groups Matrices

	Prevention from tooth decay	Prevention from gum problems	Teeth whitening	Medicinal value	Lather	Ingredient (vegetarian/non vegetarian)	Long lasting freshness	Taste
Correlation	1.000	-.006	.171	.084	-.005	-.042	.158	.199
Prevention from tooth decay		1.000	-.247	.279	-.230	-.074	.347	-.180
Prevention from gum problems	-.006		1.000	-.141	.269	-.142	.005	-.017
Teeth whitening	.171	-.247		1.000	-.205	.014	-.069	.160
Medicinal value	.084	.279	-.141		1.000	-.142	-.065	.287
Lather	-.005	-.230	.269	-.205		1.000	.005	-.017
Ingredient (vegetarian/non vegetarian)	-.042	-.074	.176	.014	-.142		1.000	-.107
Long lasting freshness	.158	.347	-.061	-.069	-.065	.005		1.000
Taste	.199	-.180	-.006	.160	.287	-.017	-.107	

Unstandardized Discriminant Functions:

Tests for differences in group means: The following figure indicates test of equality of mean. As per the significance values (greater than 0.05), there is no significant difference in the mean values of the variables.

Canonical Discriminant Function Coefficients

	Function	
	1	2
Prevention from tooth decay	.505	-.544
Prevention from gum problems	.000	-.045
Teeth whitening	.833	.697
Medicinal value	.135	.081
Lather	-.204	-.117
Ingredient (vegetarian/non vegetarian)	.125	-.392
Long lasting freshness	-.011	1.018
Taste	-.601	.260
(Constant)	-3.439	-4.328

Unstandardized coefficients

The results in the form of discriminant functions:

$$Y_1 = -3.439 + 0.505 X_1 + 0.833 X_3 + 0.135 X_4 - 0.204 X_5 + 0.125 X_6 - 0.011 X_7 - 0.601 X_8$$

$$Y_2 = -4.328 - 0.544 X_1 - 0.45 X_2 + 0.697 X_3 + 0.81 X_4 - 0.117 X_5 - 0.392 X_6 + 1.018 X_7 + 0.26 X_8$$

- Where, Y1= Discriminant Score 1
 Y2= Discriminant Score 2
 X1= Prevention of Tooth Decay
 X2= Prevention of Gum Problems
 X3= Teeth Whitening
 X4= Medicinal Value
 X5= Lather
 X6= Ingredients
 X7= Bad Breath
 X8= Taste

Eigenvalues

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	.121 ^a	74.6	74.6	.329
2	.041 ^a	25.4	100.0	.199

a. First 2 canonical discriminant functions were used in the analysis.

The eigenvalue for the discriminant functions comes out to be 0.121 and 0.041. Canonical Correlation is the correlation between the discriminant score and the group membership (Colgate/Pepsodent/Close up). Square of the canonical correlation is $(0.329)^2 = 0.108$, which means 10.8 percent of the variance in the discriminating model between Colgate/Pepsodent/Close Up is due to the changes in Function 1, making it more important than Function 2 (with canonical correlation as 0.199)

Significance of discriminant function model:

Wilks' Lambda

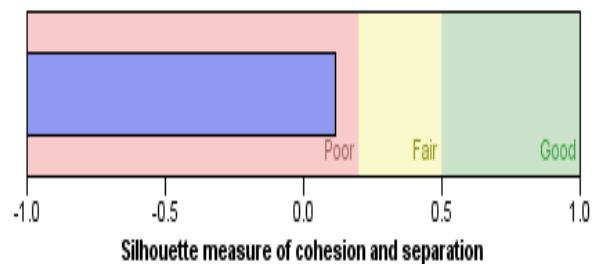
Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1 through 2	.856	9.062	16	.911
2	.960	2.365	7	.937

Wilks' Lambda is 0.856 for Function 1 and 0.96 for Function 2. The lower the value of Wilks' Lambda (ranging from 0 to 1), the higher is the significance of the discriminant function. Thus, in the case of Colgate/Pepsodent/Close Up discriminant analysis for various attributes, it can be inferred that the discriminant function is not significant. Also, the significance value is more than 0.05, and thus cannot be used for further interpretation of results.

Model Summary

Algorithm	TwoStep
Inputs	16
Clusters	2

Cluster Quality



Hence, we conclude that we have a one cluster solution. Since the product is a low involvement product all the consumers do not think much and all have a similar preference. Due to the limitation of our profile that has roughly around 50% students between the age group of 16-25, all have a similar lifestyle.

C. BRAND COMPARISON

- ❖ Feature specific association with brands Effect of branding campaigns and promotional schemes on usage patterns (Perceptual Mapping)

Based on the rating provided by the respondents on various attributes to each brand the perceptual map for the various brands was created.

Steps in conducting a perceptual map

Step 1: Means for each attribute for various brands were calculated.

Step 2: Factor analysis was conducted on these attributes and the results were as shown:

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.777	55.540	55.540	2.777	55.540	55.540	2.724	54.481	54.481
2	1.710	34.195	89.735	1.710	34.195	89.735	1.763	35.254	89.735
3	.512	10.240	99.976						
4	.001	.024	100.000						
5	2.959E-017	5.917E-016	100.000						

Extraction Method: Principal Component Analysis.

This result indicates that the two factors explain a total variance of 89.735%.

Where factor 1 explain a variance of 54.48%, factor 2 explain a variance of 35.25%.

Rotated Component Matrix^a

	Component	
	1	2
prevention_of_tooth_decay	.987	-.021
long_lasting_freshness	-.954	.125
teeth_whitening	.910	-.004
taste_flavour	.009	.946
prevention_of_gumproblem	.105	-.923

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Taking a cut-off point of 0.7, the rotated component matrix indicate that

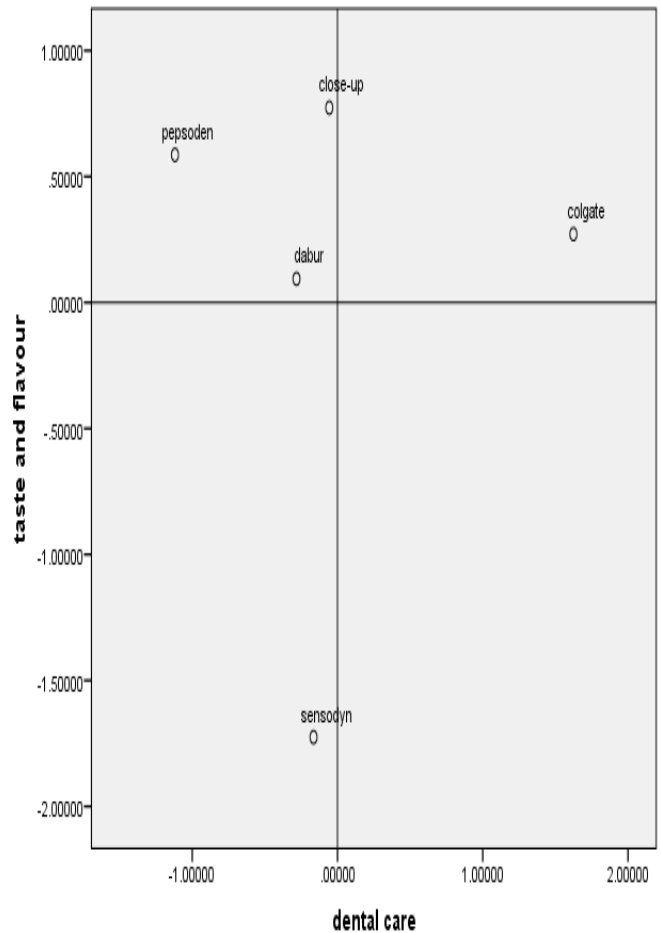
Factor 1 comprises of attributes like prevention_of_tooth_decay and teeth_whitening.

Factor 2 comprises of attributes like taste and flavour.

Hence we can name Factor1 as “Dental care” and Factor 2 as “Taste and Flavour”.

Step 3:Based on these factors we plot the various brands on the map with Dental care on the x-axis and taste and flavour on the y-axis.

The perceptual map for the various brands is as follows:



Inferences :

- Colgate is very high on the second factor i.e “dental care” and is decent on the first factor i.e. “taste and flavour”.
- Hence colgate is perceived as a total dental care brand and is the most preferred brand.
- Close-up is very high on the first factor i.e., “taste and flavour” and is low on dental care.
- Pepsodent is very low on dental care and high on taste factor.
- Sensodyne is very bad on taste and flavour and less on dental hygiene. Sensodyne only focuses on gum problems and sensitivity and hence it lies in the lower half of the graph.
- Dabur red is a brand that is moderate on both the factors.

V. MARKETING IMPLICATIONS & CONCLUSION

- Colgate is the market leader, so it should try and maintain its strategy. People for whom taste and flavour is an important parameter are also buying Colgate, hence Colgate should introduce new variants depending on taste to increase its market share.
- Pepsodent with its recent ads is trying to attack the market leader Colgate by its new variant "Pepsodent attack".
- People, who prefer taste the most, are purchasing Close-up but it is not perceived as a dental care product. Hence if it wishes to improve its market share, it has to improve on the dental care factor. Also it needs to be beware of Pepsodent which is trying big time to move closer to colagte.
- Sensodyne is a new brand and is targeting an entirely new problem-sensitivity. It right now lies in the lower half. Currently if we look at its market share it is decent keeping in mind a new brand. People are accepting this brand and have a positive attitude towards it. If this attitude continues it can move up the map.
- Colgate (43.4%) is the market leader, Pepsodent trailing at 20%. Colgate's success can be attributed to Total Care Product and can be visualized in the Perceptual Map.
- Whiteness and Sensitivity are important parameters also with a combined preference of 28%.
- Toothpaste usage pattern indicates medium brand loyalty.
- While 45% of customers have been using the current toothpaste for more than 5 years, 55% of respondents indicated changing their brand in last 5 years. The reasons for changing were :
 - Unavailability of the previous brand
 - Free sample of the new brand.
 - Attractive discounts
 - New cheaper brandsAforementioned factors could be important avenues for a new brand looking for roadway into the market
- Customers are purchasing toothpastes from super markets (60%) and Kirana shops (58%) These should be critical locations for the sales staff.
- Product is being is a planned purchased (53%) or through monthly ration (28.9%). Impulse while small is still a considerable part (18%) and point of sale merchandise will be important for new brands
- 45% respondents consider there Dentist's recommendation on toothpaste. Association with Dental Professional Bodies can be helpful
- Less than Rs 75 for 150g pack is the preferred price range (75%)

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