"Reinventing Target Market For The Low End FMCG Category Products Using Logistic Regression Technique."

A Case of Glowskin Cosmeceuticals Ltd.

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Abstract :

It has been observed that during last few years, may be due to excessive advertising and extensive brand proliferation or due to simply difficult product differentiation, the low end FMCG products such as bathing soaps, detergents, tooth paste, shampoo are losing its consumer based brand value and are turning out to be almost a generic product. The consumers are buying a product called a bath soap or a shampoo or a detergent or just a tooth paste. Consumer never specifies the brand name. The glow of brand is just waning out especially for lower end FMCG brands. The concept of brand is restricted only to high end or luxury or premium brands. Consumers do not specify a brand name while buying these product they just ask for a sachet of shampoo or a tooth paste or a detergent or a bath soap and are ready to accept whatever has been given to them by the shopkeeper.

This case for an established company called Glowskin Ltd.(Name Changed to protect the identity of company) from Mumbai and operative in all India. Reveals the same dilemma faced by the marketing department. The basic issue was the consumers were not at all asking for a brand while buying these products but being a retailer driven segment, were accepting whatever has been given to them by the retailer. There by all the expenditure incurred on branding & advertising was going to drains. This was ultimately hampering the sales of the company for these products. To revisit the current market trends and understand the consumer psychology so that the product can be either repositioned or changed the target market, the management of Glowskin conducted a thorough market research. Vidarbha region was selected as market being the central zone and cosmopolitan in population with majority of population being from rural back ground of which Glowskin's products were promoted. From Vidarbha region over 600 samples were drawn on random basis irrespective of gender. They were approached through a scientific questionnaire. The data so collected was analyzed through use of SPSS-25.

The results so obtained were surprising to all and were quite a far off from the company's thought process. The tools used for this analysis were Logistic Regression, Logit Function and the optimization tool used was ROC curve & Youden's Index.

(Key Words : Predictive Analytics, Logistic Regression, Logit Function, Cox & Snell R^2 , Negelkerke R^2 , True Positives)

Introduction:

Rajendra Rajwansh, Arjun Kumar Pramanik and Ms.Shailaja Rajreddy, the three friends, passed out from top notch National Institute of Engineering, from the batch of 2005 Chemical & Mechanical Engineering branch, decided to venture into an Nanotechnology based start up manufacturing & marketing the complete range of nanotechnology based cosmetics products. These trio incubated with the same NIT for working on their start up business plan. After a lot of trials and clearances from the Food & Drugs Administrations of Maharashtra & Karnataka, finally they got a license to manufacture & market Bathing Soap, Detergent Soap, Shampoo and Tooth Paste, all nanotechnology based products, in the year 2010. It was a birth of the firm Glowskin Cosmeticulas (P) Ltd. The trio decided to establish its manufacturing facility in Mumbai and operate from Mumbai as their head office. Rajendra wanted to look after production facility, Shailaja wanted to look after marketing and Arjun was taking care of Finance. Soon they inducted Ms.Radha Krishnan as their head of HR, who also was their associate during their engineering, later went for pursuing her MBA. The brand names for their bathing soap was S-Glow, the same for their detergent was P-Glow, the same for their shampoo was H-Glow and for their tooth paste was finalized as T-Glow. The prefixes S,P,H & T represented Skin. Pot, Hair and Teeth respectively. After every micro planning the products were launched at the market place. The company undertook a massive launching on all India basis through mass media and television media. The official launch happened in the year April-2011through the West zone comprising of

Maharashtra-Goa, Gujrat, Rajasthan, Madhya Pradesh & Chhattisgarh states. They planned to be an all India operative company by 2025 with a retail penetration of 100% through a network of over 600 distributors across the country. The planned field force was 5000 by 2025.Skinglow management wanted create a brand identity of a bath soap and detergent company at the market place. They poised for a 15% market share 2025.

Table 1:Year wise Volume Sales

Category/Year	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
S-Glow(All Variants)	1621160	1758120	1428380	1500900	1402080	1658765
P-Glow (All Variants)	6529806	6607008	7635960	7228020	6045060	5990231
T-Glow (All Variants)	174960	162160	180380	182080	174420	180911
H-Glow (All Variants)	3131488	3133766	3624978	3616504	3599866	3391096
Total Sales _SKUs	**11457414**	**11661054**	**12869698**	**12527504**	**11221426**	**11221003**

(Courtsey:Ms.Shailaja Rajreddy)

But during the first five years post launching, the management of Skinglow realized that the volume sales were not growing despite incurring a huge promotional expenses. It was almost stagnated rather the volume sale were declining. This was an alarming signal for the management. They wanted to explore the reasons behind this decline. So they chose to revisit their marketing strategy by reassessment of their target markets, their changing choices, changing aspirations etc. In a nutshell they wanted to revisit the consumer behaviour of Skinglow as well as all the FMCG consumers. They decided to conduct a detailed consumer research study for their Bath Soap & Detergent Brands. This study was decided to be conducted in Vidarbha , being the true representative of entire India and a cosmopolitan region with a good mix of Urban, Semi-Urban & Rural markets. During their elementary survey, they realized that lower brand segment in FMCG sector is fully sales driven. Consumers are hardly brand driven. They would readily accept whatever has been given to them by their retailers. The bench mark of differentiation among various products is very thin. So they wanted to move further to understand consumer choices more accurately so as to differentiate their products clearly and can be promoted to right customers enabling a brand driven market than sales driven market. In other words the management wanted to rephrase their target market. The study was conducted in the months of July -November 2018.

The management approached total over 634 respondents, out of which through initial editing, the data collected from 400 respondents were finalized for analysis.These respondents were from all age groups(Later on their age group was categorized into college going(Coded as 1) and office going (Coded as 2). Basis the gender the respondents were classed as Female (Coded as 0) and Male (Coded as 1). They were also classed basis their sociology as Urban(Coded as 1) and Semi-Urban (Coded as 2). Generally these three are considered as the response variables in any research but since in this research we had to determine the class membership of the respondent, so as to finalize the right target market, we decided to consider these regular response variables as the outcome variables for this entire study.

The **response variables (All Categorical Variables)** of the study for **bath soap category** were

1.Reasons to buy with five categories, (Brand, Familiarity with Ingredients, Fragrance and suitability with skin)

2.Fragrance with five categories(Fruits, Jasmine, Lemon, Neem, Rose & Sandal wood)

3.Familiar Ingredients were chosen with eight categories (Alovera, Cologne,Glycerine,Turmeric, Menthol, Milk Cream, Multani Mitti & Saffron.)

The **response variables (All Categorical Variables)** of the study for **detergent category** were

1.Reasons to buy with six categories, (Antibacterial Property, Brand, Ease in washing, Lather Forming Ability, Fragrance and Stain Removing Ability)

2.Fragrance with seven categories(Fruits, Jasmine, Lemon, Neem, Rose , Sandal wood & Menthol)

The total case processing summery has been given in the table 1.

The data so collected was subjected to the analysis through using SPSS-25.The analytical tool so applied was Logistic Regression with categorical variables where in we tried to determine the class membership of the incoming respondents basis the response variables. This would have become our specific target market for that particular category of the products.

So we started the study with an objective - To determine the class membership of any respondent. And the hypotheses framed for this research were,

1.Lower end FMCG brand cannot be differentiated basis the response variables such as Gender, Age Group and Sociology.

2.Marget Segmentation is not possible for lower end FMCG brands. It has to be off loaded into the market as Mass markets.

The analysis was done using a logit function using its exponential form. Since the entire data was a categorical data, we used Hosmer & Lemeshow test and Cox & Snell R^2 and Nagelkerke R^2 as a test for testing hypotheses.

Table 1: Case Processing Summary

Un weighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	400	100.0
	Missing Cases	0	.0
	Total	400	100.0
Unselected Cases		0	.0
Total		400	100.0

a. If weight is in effect, see classification table for the total number of cases.

Table 1 shows the case processing summery for the entire procedure.

Analysis for Bathing Soap Category

Hypothesis : H_0 : Observed frequencies for attribute based buying by females & males and predicted frequencies for attribute based buying by females & males is exactly same.

Table 2:Hosmer and Lemeshow Test Model 1

: Attributes Based Buying For Bathing Soap

Step	Chi-square	df	Sig.
1	4.364	8	.823

Table 2 indicates that the significance level of 0.823 (Sigma> 0.05) indicates that the model is a good fit and the observed frequencies and the predicted frequencies are exactly same. Thus we accept the null hypothesis.

Table 3: Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	518.332[a]	.060	.080

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

As indicated through Table 3, The Cox & Snell R^2 and Nagelkerke R^2 above indicates that the variation in the results would be between 6% to 8%, which is a fair variation and is within acceptable limits.

Table 4 : Classification Table[a] (Gender wise Classification)

	Observed		Predicted		
			Gender Wise Buyer		Percentage Correct
			Female	Male	
Step 1	Gender Wise Buyer	Female	189	45	80.8
		Male	111	55	33.1
	Overall Percentage				61.0

a. The cut value is .500

Table 4 indicates that at a cut off value of 0.5, 189 Females respondents were classified True Positives (with n=189,80.8%) and 55 Male respondents were classified as False Negatives (with n==55, i.e.33.1%).True positive females are those females who are existing buyers and are classified also as buyers, while false negatives are those males who are the buyers but are classified as Not buyers.

Table 5 : Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	**Attribute_ Bathing Soap**			12.081	4	.017			
	Brand	.958	1.137	.710	1	.399	2.607	.281	24.217
	Familiar Ingredients	1.246	1.144	1.185	1	.276	3.475	.369	32.716
	Fragrance	1.443	1.129	1.633	1	.201	4.233	.463	38.706
	Suitability For Skin	1.908	1.131	2.847	1	.092	6.742	.735	61.868
	Fragrance_ Bathing Soap			2.065	5	.840			
	Fruits	.102	.409	.062	1	.803	1.107	.497	2.468
	Jasmine	.480	.447	1.151	1	.283	1.616	.673	3.880
	Lemon	.174	.315	.304	1	.581	1.190	.642	2.205
	Neem	-.150	.327	.211	1	.646	.861	.453	1.634
	Sandal wood	.136	.338	.161	1	.688	1.145	.591	2.221
	Familiarity with Ingredients			9.658	7	.209			
	Alovera	.655	.423	2.402	1	.121	1.926	.841	4.411
	Cologne	-.138	.769	.032	1	.857	.871	.193	3.931
	Glycerine	.407	.433	.883	1	.347	1.502	.643	3.509
	Haldi	.675	.527	1.644	1	.200	1.964	.700	5.514

	Menthol	-.313	.467	.449	1	.503	.732	.293	1.826
	Milk Cream	.257	.428	.360	1	.548	1.293	.559	2.994
	Multani Mitti	.022	.538	.002	1	.967	1.022	.356	2.934
	Saffron	-2.126	1.179	3.248	1	.071	.119		
a. Variable(s) entered on step 1: Attribute_BS, Fragrance_BS, Ingredients_BS.									

Table 5 indicates that only Females (Being True Positives) makes the buying decisions for bathing soaps based on certain attributes. But these attributes are none from the suggested sub-categories (Brand, Familiarity with ingredients, Fragrance, and suitability for skin) as evidenced from significance level for buying attributes = 0.017 (<0.05) rest of the other categories and their sub-categories are significant.(>0.05). So we can conclude that the female buyers are prone to buying of bathing soaps based on certain attributes but not from the listed above. Thus the attributes based purchase by female model is significant but the indicative sub-categories are non-significant. Here is a need for further study.

Table 6 : Hosmer and Lemeshow Test

Age Group Wise Buying of Bathing Soap

Step	Chi-square	df	Sig.
1	8.233	8	.411

Hypothesis : H_0 : Observed frequencies for attribute based buying by College Going & Office Going Consumers and predicted frequencies for attribute based buying by College Going & Office Going Consumers is exactly same.

Table 6 indicates that the significance level of 0.411 (Sigma > 0.05) indicates that the model is a good fit and the observed frequencies and the predicted frequencies are exactly same for age group wise buying of bathing soap. Thus we accept the null hypothesis.

Table 7 : Model Summary:

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	285.795[a]	.038	.072

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Table 7 shows that the Cox & Snell R^2 and Nagelkerke R^2 above indicates that the variation in the results would be between 3.8% to 7.2%, which is a fair variation and is within acceptable limits.

Table 8 : Classification Table[a] (Age Group wise Classification)					
	Observed		Predicted		
			Age Group Wise Buyer		Percentage Correct
			College Going	Office Going	
Step 1	Age Group Wise Buyer	College Going	350	0	100.0
		Office Going	49	1	2.0
	Overall Percentage				87.8
a. The cut value is .500					

Table 8 Indicates the classification of College Going buyers and office going buyers. All those college going buyers who are present buyers based on attributes of bathing soap and also are predicted to remain as attribute based buyers for bathing soap are classified as true positives. Out of 400 samples 350 respondents are(100%) are true positive buyers (College Going)

Table 9 : Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	**Attribute_BS**			5.750	4	.219			
	Brand	-2.230	1.016	4.818	1	.028	.107	.015	.788
	Familiar Ingredients	-1.556	1.005	2.397	1	.122	.211	.029	1.512
	Fragrance	-1.673	.974	2.950	1	.086	.188	.028	1.266
	Suitability For Skin	-1.961	.985	3.960	1	.047	.141	.020	.971
	Fragrance_BS			6.427	5	.267			
	Fruits	-1.275	.809	2.484	1	.115	.280	.057	1.364
	Jasmine	-.181	.685	.070	1	.792	.835	.218	3.193
	Lemon	-.775	.530	2.140	1	.144	.461	.163	1.301
	Neem	.363	.437	.689	1	.406	1.438	.610	3.387
	Sandal wood	.016	.471	.001	1	.973	1.016	.404	2.557
	Ingredients_BS			6.083	7	.530			
	Alovera	-.716	.610	1.378	1	.240	.489	.148	1.615
	Cologne	1.339	.908	2.172	1	.141	3.814	.643	22.622
	Glycerine	-.243	.593	.168	1	.682	.785	.245	2.508
	Haldi	-.243	.729	.111	1	.739	.784	.188	3.275
	Menthol	-.234	.636	.136	1	.713	.791	.228	2.750
	Milk Cream	-.351	.588	.355	1	.551	.704	.222	2.231
	Multani Mitti	-.257	.718	.128	1	.721	.774	.189	3.160
	Constant	.283	1.061	.071	1	.790	1.326		

a. Variable(s) entered on step 1: Attribute_BS, Fragrance_BS, Ingredients_BS.

From Table 9 it is evident that the college going students (irrespective of Gender) buys bathing soap due to the attributes such as brand and suitability to skin. Nothing else attracts them for buying a bathing soap. Thus now the target market and positioning is getting clearer. Bathing soap should be promoted to college going youths(irrespective gender) where in the positioning the brand of soap for safety over their skin. This is evident only because the significance values for these two attributes are < 0.05

Table 10 : Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	440.380[a]	.054	.079

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Table 10 shows that the Cox & Snell R^2 and Nagelkerke R^2 above indicates that the variation in the results would be between 5.4% to 7.9%, which is a fair variation and is within acceptable limits.

Hypothesis : H_0 : Observed frequencies for attribute based buying by Urban & Semi-Urban Consumers and predicted frequencies for attribute based buying by Urban & Semi-Urban Consumers is exactly same.

Table 11 : Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	10.886	8	.208

Table 11 indicates that the Observed frequencies for attribute based buying by Urban & Semi-Urban Consumers and predicted frequencies for attribute based buying by Urban & Semi-Urban Consumers is exactly same as significance level > 0.05 (Sigma=0.208). Thus we accept the null hypothesis.

Table 12 : Classification Table[a]

	Observed		Predicted		
			Demography Wise Buyer		Percentage Correct
			Urban	Semi-Urban	
Step 1	Demography Wise Buyer	Urban	288	6	98.0
		Semi-Urban	95	11	10.4
	Overall Percentage				74.8

a. The cut value is .500

Table 12 Indicates the classification of Urban buyers and Semi-Urban buyers. All those urban buyers who are present buyers based on attributes of bathing soap and also are predicted to remain as attribute based buyers for bathing soap are classified as true positives. Out of 400 samples 288 respondents are(98%) are true positive buyers (Urban Buyers)

Table 13:Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	**Attribute_BS**			6.595	4	.159			
	Brand	-.104	.927	.013	1	.911	.901	.146	5.548
	Familiar Ingredients	-.743	.957	.604	1	.437	.476	.073	3.101
	Fragrance	-.506	.925	.299	1	.584	.603	.098	3.694
	Suitability For Skin	.092	.922	.010	1	.921	1.096	.180	6.675
	Fragrance_BS			9.655	5	.086			
	Fruits	.706	.435	2.629	1	.105	2.025	.863	4.754
	Jasmine	1.357	.463	8.570	1	.003	3.883	1.566	9.630
	Lemon	.331	.354	.875	1	.349	1.392	.696	2.784
	Neem	.326	.368	.786	1	.375	1.385	.674	2.848
	Sandal wood	.264	.394	.449	1	.503	1.302	.601	2.820
	Ingredients_BS			4.093	7	.769			
	Alovera	.069	.477	.021	1	.885	1.072	.421	2.729
	Cologne	-.531	.929	.327	1	.568	.588	.095	3.634
	Glycerine	.093	.488	.036	1	.849	1.098	.422	2.855
	Haldi	.013	.607	.000	1	.982	1.014	.308	3.332
	Menthol	.424	.497	.730	1	.393	1.529	.578	4.045
	Milk Cream	-.064	.489	.017	1	.896	.938	.360	2.444
	Multani Mitti	-.646	.684	.891	1	.345	.524	.137	2.004
	Constant	-1.163	1.002	1.346	1	.246	.313		

a. Variable(s) entered on step 1: Attribute_BS, Fragrance_BS, Ingredients_BS.

From Table 13 it is evident that the Urban buyers (irrespective of Gender) buys bathing soap due to the attributes such as Fragrance (Jasmine Variant). Nothing else attracts them for buying a bathing soap. Thus now the target market and positioning is getting further clearer. Bathing soap should be promoted to Urban Buyers (irrespective gender) with Jasmine Fragrance. This is evident only because the significance values for attribute Jasmine fragrance attribute is < 0.05.

Analysis & Market Segmentation For Detergent Soaps

Table 14: Model Summary _ Gender wise

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	530.588[a]	.030	.041

a. Estimation terminated at iteration number 3 because parameter estimates changed by less than .001.

Table 14 shows that the Cox & Snell R^2 and Nagelkerke R^2 above indicates that the variation in the results would be between 3% to 4.1%, which is a fair variation and is within acceptable limits.

Hypothesis : H_0 : Observed frequencies for attribute based buying by Male & Female Consumers and predicted frequencies for attribute based buying by Male & Female Consumers for detergent soap is exactly same.

Table 15 :Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	3.310	7	.855

Table 15 shows that the Observed frequencies for attribute based buying by Male & Female Consumers and predicted frequencies for attribute based buying by Male & Female Consumers for detergent soap is exactly same. Significance level sigma >0.05. Thus we accept the null hypothesis.

Table 16:Classification Table[a]

	Observed		Predicted		
			Gender Wise Buyer		Percentage Correct
			Female	Male	
Step 1	Gender Wise Buyer	Female	211	23	90.2
		Male	131	35	21.1
	Overall Percentage				61.5

a. The cut value is .500

Table 16 Indicates the classification of Female buyers and Male buyers. All those Female buyers who are present buyers based on attributes of detergent soap and also are predicted to remain as attribute based buyers for detergent soap are classified as true positives. Out of 400 samples 211 respondents are(90.2%) are true positive buyers (Female)

Table 17 : Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	**Attribute_Detergent**			9.678	5	.085			
	Antibacterial Properties	-.366	.615	.354	1	.552	.694	.208	2.317
	Brand	.398	.310	1.646	1	.199	1.489	.811	2.735
	Ease of Washing	.621	.297	4.370	1	.037	1.860	1.039	3.328
	Lather	1.101	.478	5.298	1	.021	3.006	1.178	7.674
	Fragrance	.197	.304	.418	1	.518	1.217	.671	2.209
	Fragrance_Detergent			2.860	6	.826			
	Fruits	.492	.531	.861	1	.354	1.636	.578	4.628
	Jasmine	.054	.387	.019	1	.890	1.055	.494	2.254
	Lemon	.095	.327	.084	1	.772	1.099	.580	2.085
	Neem	-.188	.501	.141	1	.707	.828	.310	2.212
	Rose	.378	.380	.991	1	.319	1.459	.693	3.072
	Sandal wood	.342	.427	.644	1	.422	1.408	.610	3.249
	Constant	-.726	.297	5.976	1	.015	.484		

a. Variable(s) entered on step 1: Attribute_D, Fragrance_D.

From Table 17 it is evident that the Female buyers (being true positives) buys detergent soap due to the attributes such as ease of washing & lather creation properties of soap. Nothing else attracts them for buying a detergent soap. Thus now the target market and positioning for detergent soap is getting further clearer. Detergent Soap should be promoted to Female Buyers with for these attributes. This is evident only because the significance values for attributes ease of washing and lather forming ability < 0.05. This would increase the sales of detergent by 1.8 times and 3.00 times respectively if positioned for these attributes.

Table 18 : Model Summary_ Age wise buyers

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	285.047[a]	.040	.076

a. Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

Table 18 shows that the Cox & Snell R^2 and Nagelkerke R^2 above indicates that the variation in the results would be between 4% to 7.6%, which is a fair variation and is within acceptable limits.

Hypothesis : H_0 : Observed frequencies for attribute based buying by all age group Consumers and predicted frequencies for attribute based buying by all age group Consumers for detergent soap is exactly same.

Table 19 :Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	7.086	7	.420

Table 19 shows that the observed frequencies for attribute based buying by all age group Consumers and predicted frequencies for attribute based buying by all age group Consumers for detergent soap is exactly same. Since sigma > 0.05.Thus we accept the null hypothesis.

Table 20 : Classification Table[a]

	Observed		Predicted		
			Age Group Wise Buyer		Percentage Correct
			College Going	Office Going	
Step 1	Age Group Wise Buyer	College Going	350	0	100.0
		Office Going	50	0	.0
	Overall Percentage				87.5

a. The cut value is .500

Table 20 Indicates the classification of college going buyers and office going buyers into true positives and false negatives. All those college going buyers who are present buyers based on attributes of detergent soap and also are predicted to remain as attribute based buyers for detergent soap are classified as true positives. Out of 400 samples 350 respondents are (100%) are classified as true positive buyers (irrespective of gender)

Table 21 : Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	**Attribute_D**			7.293	5	.200			
	Antibacterial Properties	-19.409	10700.180	.000	1	.999	.000	.000	.
	Brand	.044	.442	.010	1	.920	1.045	.439	2.488
	Ease of Washing	-.910	.561	2.633	1	.105	.402	.134	1.208
	Lather	.878	.536	2.681	1	.102	2.405	.841	6.875
	Fragrance	-.452	.484	.872	1	.350	.636	.246	1.643
	Fragrance_D			4.780	6	.572			
	Fruits	-1.188	1.102	1.162	1	.281	.305	.035	2.642
	Jasmine	.166	.535	.096	1	.757	1.180	.413	3.368
	Lemon	-.218	.473	.213	1	.645	.804	.318	2.031
	Neem	-.675	.838	.649	1	.420	.509	.098	2.632
	Rose	-.310	.585	.282	1	.596	.733	.233	2.306
	Sandal wood	.487	.561	.754	1	.385	1.628	.542	4.889
	Constant	-1.694	.412	16.883	1	.000	.184		

a. Variable(s) entered on step 1: Attribute_D, Fragrance_D.

From Table 21 it is evident that in the case of the college going students (irrespective of Gender) nothing can attract them for buying a detergent soap. Thus now the target market and positioning is getting clearer. Detergent soap should not be promoted to college going youths(irrespective gender).

Table 22 : Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	448.472[a]	.035	.051

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Table 22 shows that the Cox & Snell R^2 ratio is 3.5% and Nagelkerke R^2 ratio is 5.1 which is within acceptable region.

Hypothesis : H_0 : Observed frequencies for attribute based buying by College Going & Office Going Consumers and predicted frequencies for attribute based buying by College Going & Office Going Consumers is exactly same.

Table 23 :Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	6.221	7	.514

Table 23 indicates that the significance level of 0.514 (Sigma > 0.05) indicates that the model is a good fit and the observed frequencies and the predicted frequencies are exactly same for age group wise buying of bathing soap. Thus we accept the null hypothesis.

24.Classification Table[a]

			Predicted		
			Demography Wise Buyer		Percentage Correct
			Urban	Semi-Urban	
Step 1	Demography Wise Buyer	Urban	293	1	99.7
		Semi-Urban	106	0	.0
	Overall Percentage				73.3

a. The cut value is .500

Table 24 Indicates the classification of urban & semi-urban buyers into true positives & false negatives. All those urban buyers who are present buyers based on attributes of detergent soap and also are predicted to remain as attribute based buyers for detergent soap are classified as true positives. Out of 400 samples 293 respondents are (99.7%) are classified as true positive buyers (irrespective of gender)

Table 25 : Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	**Attribute_D**			4.355	5	.499			
	Antibacterial Properties	.942	.576	2.674	1	.102	2.564	.829	7.927
	Brand	-.013	.361	.001	1	.971	.987	.487	2.001
	Ease of Washing	.321	.329	.949	1	.330	1.378	.723	2.627
	Lather	-.307	.590	.271	1	.602	.736	.232	2.337
	Fragrance	.292	.332	.772	1	.380	1.339	.698	2.566
	Fragrance_D			10.316	6	.112			
	Fruits	-.458	.633	.523	1	.470	.633	.183	2.189
	Jasmine	-.258	.425	.368	1	.544	.773	.336	1.776
	Lemon	-.395	.358	1.216	1	.270	.674	.334	1.359
	Neem	.606	.497	1.489	1	.222	1.833	.693	4.851
	Rose	-.356	.424	.704	1	.401	.701	.305	1.609
	Sandal wood	.535	.439	1.486	1	.223	1.708	.722	4.040
	Constant	-1.009	.317	10.128	1	.001	.365		

a. Variable(s) entered on step 1: Attribute_D, Fragrance_D.

From Table 25 it is evident that in the case of the Urban buyers (irrespective of Gender) nothing can attract them for buying a detergent soap. Thus now the target market and positioning is getting clearer. Detergent soap should not be promoted to urban buyers (irrespective gender). This mind set need a further deep research.

Final Results :

On performing a detailed analysis, the organization reached to a conclusion that the way they are currently marketing their products is incorrect. They were doing mass marketing currently. Rather they should revise their target markets basis Gender, Sociology and Age Group wise. And depending on the product attribute, they should promote their brands of Bathing Soap & Detergent Soap to selective markets with highly selective positioning. The research also revealed the following conclusions -

1. Only Females (Being True Positives) makes the buying decisions for bathing soaps based on certain attributes. But these attributes are none from the suggested sub-categories (Brand, Familiarity with ingredients, Fragrance, and suitability for skin)

2. It is also evident that the college going students (irrespective of Gender) buys bathing soap due to the attributes such as brand and suitability to skin. Nothing else attracts them for buying a bathing soap.

3. It is evident that the Urban buyers (irrespective of Gender) buys bathing soap due to the attributes such as Fragrance (Jasmine Variant). Nothing else attracts them for buying a bathing soap.

4. It is evident that the Female buyers (being true positives) buys detergent soap due to the attributes such as ease of washing & lather creation properties of soap.

5. It is evident that in the case of the college going students (irrespective of Gender, true positives) nothing can attract them for buying a detergent soap.

6. It is evident that in the case of the Urban buyers (irrespective of Gender, true positives) nothing can attract them for buying a detergent soap.