

An Empirical Study on Selection Behaviour of Ball-point & Gel Pen Brands in Siliguri city of Northern West Bengal

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Abstract: Writing instruments continue to play integral part in the life of particularly every business, school and household. Pen and pencils continue to be the staples of everyday life and indispensable items for everyday use. The Indian writing instruments market today is still on the path of discovering new niches with ergonomic designed products, promotional marketing items and luxury items. Through this paper attempts have been made to crystallize the major pen-brand selection parameters for Ball-point & Gel pens and their categorization for identifying the least important ones. The study thereafter analyzes the inherent interrelationships between the pen brands popular in Siliguri city of Northern West Bengal and top most influential selection factors using statistical tools like ANOVA, Factor analysis and Chi-Square.

Keywords: Brand Selection, Inter factor Relationships, Utility factors Statistical, Hypothesis tests.

I. INTRODUCTION

Since the dawn of mankind there has been a felt need to document through the use of writing instrument. The advent of computers and related technology has yet to make writing industry and instruments slow placed and obsolete. In fact the writing instrument embraces the evolution of technology by incorporating it into new products and using it to enhance business aspects and client services. In India, the failure of multi-billion rupee computer industry in displacing the use of pen as nearly one third of over 1.3 billion population has just started to ink success by emerging from the darkness of illiteracy. Pen makers & marketers are not only concerned with quality and ergonomic benefits, value added features such as fragrances, glittering colors and often multi-function capabilities are ruling this segment to enhance business aspects and client services. Variety is the spice of life and writing instrument manufacturers and resellers are cashing in on this lucrative market by offering a plethora of products in different styles, costs and purposes. According to the industry report of the quarterly study conducted by The School, Home and Office Products Association (SHOPA) & A.C. Neilson, writing instruments sales in all outlets has grown nearly 9 percent in the second quarter of 2013 versus the second quarter of 2014 in India. The report also highlights the inverse relationship of volumes to value since pens sold for Rs 5 or less accounts for 60 per cent of total revenues. The aim of this study was set to analyse the main aspects of consumer behaviour currently prevailing in purchasing pen brands in Siliguri city of North Bengal. The study also helps the top Pen makers & marketers of Siliguri to understand attitude of the customers that guide their pen buying decisions. This research paper also tries to figure out whether there exist any substantial levels of association among the major variables affecting purchase of pen brands with job profile and finally succeeded to identify those factors that matter most with respect to working or non-working status in selecting pen's brand in Siliguri.

II. PEN INDUSTRY IN INDIA

The Indian pen industry, comprising of ball pens, fountain pens, gel pens and markers, is a Rs 2,500 crore market with a sizeable export. India is the only country after China to have fully fledged writing instruments industry built purely on the platform of its own domestic market demand. India's writing instrument industry is reserved for the small sector with a statutory limit on the maximum investment in plant and machinery at Rs 50 crores. As a result critical pen component like refills are manufactured in house, while all non-critical components are outsourced. Most Indian companies cater to the "Value for Money" (i.e. high volume low value strategy) while international player caters to premiums segment operating through exclusive distributors. About 60% of the market is organised in which Ball and gel pens contribute 70% and the top ten companies contribute 50% to the industry's revenues. Reynolds, Cello, Linc, Lexi, Classmate, Flair, Rotomac, Parker are among the leading pen manufacturers. Today, there are more than 50 brands in Indian market in organized as well as the unorganized sector, facing the cut-throat competition from each other. Competition has become fiercer after the

entry of Multinational brands as Reynolds, Parker, Mont Blanc, etc. in Indian market. Today, major competition is in the ball-pen industry. Demand for pen among the employed people is relatively stagnant while among the students, it is experiencing healthy growth. Moreover, the students seemed to be more brand conscious as compared to the employed persons. Nearly 85% users use blue, black and red ink. About 80% of India's pen industry revenue is derived from pens with a price range of up to Rs 15 While the market for lower price pens is growing annually at 7-8% the mid range market is growing at 8-10%. Globally writing instruments industry is estimated at Rs 50000 crores as of 2014. China controls approximately 10% of the global markets while the Indian share had so far been mini scale. But given the superior quality perception that "Made in India" pens have over the Chinese; the buying preference of major retailers has been shifting to Indian products and brands.

III. OBJECTIVE OF THE STUDY

- (i) To identify the major selection parameters of Ballpoint & Gel pens and statistically analyze their predictability using Reliability & ANOVA tests.
- (ii) Categorization of identified pen-brand selection factors into major Components (utility & non-utility) through Factor Analysis for eliminating the least important ones and thereafter analyzing their interrelationships in shaping the consumer attitude towards a pen brand before purchase.
- (iii) Determining whether pen brand selection is related with job profile & gender of the respondents (customers) using Chi-square & ANOVA.
- (iv) Examining statistically how do the top 3 utility factors influence pen brand selection behaviour of the customers residing in Siliguri sub-division of North Bengal.

IV. RESEARCH METHODOLOGY

- (a) Approach: Survey Method conducted for four months (March –June'14) at Siliguri and its adjoining areas.
- (b) Types of Data Collected: (i) Primary Data through questionnaires for consumer, (ii) Secondary Data through Internet and company's report.
- (c) Data Collection Instrument: A semi-structured questionnaire with open ended, closed ended and multiple choice questions, having of a 5-point Likert Scale ranging from 'strongly disagree' to 'strongly agree' options.
- (d) Sampling Procedure: (i) Sampling Method: Random Sampling Method (ii) Sample Unit: Job holders & Businessmen. (iii) Sample Size: 100 Respondents
- (e) Statistical Tool Used: KMO & Bartlett's Test, Factor Analysis, Reliability test, Chi-Square test, ANOVA.
- (f) Study Area: Municipal Corporation Area (Total 44 municipal wards) of Siliguri city of Northern West Bengal.
- (g) Respondent profile: Young Customers/users categorized into three groups – (a) Salaried Professionals (Doctors, Engineers, Lawyers etc), (b) Salaried Job holders other than Professionals (Govt, Private job holders & Business men), (c) Students of Colleges & Universities

Top Pen Brands (Both Gel & Ball-point) Selected for Study

1. Cello, 2. Linc, 3. Reynolds, 4. Classmate, 5. Rotomac, 6. Flair, 7. Montex, 8. Lexi, 9. Parker, 10. Pierre Cardin

Top 10 Pen (Brand) Selection parameters identified (As per Field Survey)

- (i) Brand Image, (ii) Smooth writing with standard ink quality, (iii) Price (Value for Money), (iv) Comfortable grip. (v) Availability (Place Utility), (vi) Availability in different ink colours, (vii) Variety (both in Gel & Ball-point in terms of shape, look, colour etc), (viii) Ink Leakage Proofness, (ix) Refilling scope (Use & throw), (x) Multi occasion use,

Research Query I: Does a substantial relational association prevail among the top 10 Pen brand selection parameters identified from field study so that Factor Analysis may be a conducted. In order to measure the sampling adequacy, Keiser Meyer Olkin (KMO) & Bartlett's Test was conducted whose outcomes are given below-

KMO Measure		0.607
Bartlett's Test of Sphericity	Appx Chi-Square value	793.62
	Degree of Freedom	190
	Significance	0.000

Table No: 1 KMO & Bartlett's Test Results

Inference from Table 1: From the above table KMO value of 0.607 & Bartlett's Sphericity based Chi-Square value 793.62 indicates suitability of application of Factor Analysis here because of the presence of correlations among survey – queries. Initially, regression analysis has been used for its strong predictability of the dependent variable, Pen Brand selection from the given values of 10 independent variables/parameters of Pen Brand selection. Using SPSS (Version 11.1) for Reliability Testing the following results were obtained.

Cronbach's Alpha	0.782
Cronbach's Alpha Based on Standardized Items	0.791

N of Items (Selection Parameters)	10
Case Processing Summary	
Valid Cases (No of Respondents Surveyed)	100.00 (100%)
Excluded Cases	0 (0%)
Total	100.00 (100%)

Table No: 2 Reliability Test Statistics

Inference from Table 2: Cronbach's Alpha value of 0.782 (very close to 1) reflects high level of reliability among brand selection parameters of pen as well as high level of internal consistency.

Model No	R value (Multiple correlation coefficients)	R ² value (Coefficient of determination)	Adjusted R ² value	S E of Estimate
1	0.761*	0.584	0.579	0.115

Table No: 3 Model Summaries

*: Predictor Variables: Brand Image, Smooth writing with standard ink quality, Price, Comfortable grip, Availability (Place Utility), Availability in different ink colours, Variety, Ink Leakage Proofness, Refilling scope and Multi occasion use.

Inference from Table 3: R being the index for prediction-quality of the dependent variable (Pen Brand selection) with value of 0.761 indicates a good quality prediction and 0.584 value of R² denotes that here the predictor (independent) variables explain 58.4% of the variability of the dependent variable i.e. Pen Brand Selection.

Model No	Particulars	S.S	d.o.f	M.S	F ratio value	Sig
1	Regression	4.597	10	0.46	34.93	0.000**
	Residual	3.136	89	0.01		
	Total	7.733	99			

Table No: 4 ANOVA Result

* Dependent Variable: Pen Brand Selection

** Predictor Variables: (Constant), Brand Image, Smooth writing with standard ink quality, Price, Comfortable grip, Availability (Place Utility), Availability in different ink colours, Variety, Ink Leakage Proofness, Refilling scope and Multi occasion use.

Inference from Table 4: The 34.93 value of F-ratio in the above ANOVA table demonstrates statistically significant predictability of the 10 independent predictor variables for the dependent variable, Pen Brand Selection at 10 and 89 d.o.f, $p < .05$ (i.e., the regression model is a good fit of the data). Now in order to categorize the 10 pen brand selection parameters/factors into components (utility and non-utility) with a view to identify & weed out less significant ones, Factor Analysis were undergone.

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variation	Cumulative %	Total	% of Variation	Cumulative %	Total	% of Variation	Cumulative %
1	4.63	42.05	42.05	4.63	42.05	42.05	2.499	23.64	23.64
2	1.14	10.39	52.44	1.14	10.39	52.44	2.212	20.15	43.79
3	1.03	9.43	61.87	1.03	9.43	61.87	1.991	18.08	61.87
4	0.91	8.29	70.16						
5	0.76	6.90	77.06						
6	0.67	6.16	82.22						
7	0.48	4.49	86.71						
8	0.43	4.16	90.87						
9	3.29	5.87	97.24						
10	0.24	2.75	100.00						

Table No 5: Total Variance Explained

Method of Extraction: Principal Component Analysis

Inference from Table 5: As per above table 5, the first three components together explains 61.87% of total variance out of which 1st one shares 42.05%, 2nd one 10.4% and 3rd one contributes 9.4%. Again since, these

first three components are only having Eigen value more than unity, other seven are ignored and each of these 3 principal components comprises of those factors whose values are more than 0.6 in that respective component.

SI No	Pen Brand Selection Factors	Component I	Component II	Component III
1	Price (Value for Money)	0.099	0.699	0.113
2	Brand Image	0.102	0.692	0.210
3	Availability (Place Utility)	0.407	0.515	0.004
4	Comfortable grip	0.745	0.073	0.179
5	Smooth writing with standard ink quality	0.898	0.041	0.072
6	Availability in different ink colours	0.581	0.374	0.499
7	Refilling scope (Use & throw)	0.671	0.062	0.215
8	Variety (both in Gel & Ball-point in terms of shape, look, colour etc)	0.554	0.007	0.103
9	Ink Leakage Proofness	0.625	0.225	0.041
10	Multi occasion use	0.593	0.497	0.607

Table No 6: Rotated Component Matrix

Method of Extraction: Principal Component Analysis with Varimax Rotation with Kaiser Normalization.

Rotation converged in 5 iterations

Inference from Table 6: As per Table 6 above, under Component I only Smooth writing with standard ink quality & Comfortable grip are having values more than 0.6 and therefore these two factors define the 1st component of pen brand selection. Similarly, Price (Value for Money) & Brand Image for Component II and Multi occasion use for Component III are the defining variables for the other 2 components with values more than 0.6. Factor analysis interestingly reveals that while selecting a pen brand, customers prefer to evaluate brands on utility related features.

Research Query II: Determining whether any linkage exists between Pen brand preference & Job profile of the end users or not. In this study, as per Job profile total respondents/end-users are classified into 3 groups (a) Salaried Professionals (Doctors, Engineers, and Lawyers etc), (b) Salaried Job holders other than Professionals (Govt, Private job holders & Business men), (c) Students of Colleges & Universities.

H_0^1 : Pen Brand selection is independent of Job profile of respondents.

H_1^1 : Pen Brand selection is influenced by the nature of the Job profile of respondents.

Nature of Job Profile	Job profile influences on Pen Brand selection				
	Strongly Agree	Agree	Not sure or No comments	Disagree	Strongly Disagree
Salaried Professionals (Doctors, Engineers, Lawyers)	12	8	2	3	0
Salaried Job holders other than Professionals (Govt, Private job holders & Business men)	16	11	8	7	9
Students of Colleges & Universities.	6	7	0	6	5

Source: Field Survey Table No 7: Cross Tabulation For H_0^1

Particulars	Value	d.o.f	Asymp Sig (2 sided)
Pearson Chi-Square value	8.438	4	0.053
Likelihood Ratio	8.664	4	0.043
Linear by linear association	0.461	1	0.489
N value (Valid cases)	100		

Table no 8: chi-square test results for data in table no 7

Inference from Table 8: At 5% significance level, Chi-square cut-off value is 9.488 but our calculated Chi-square value (8.438) is less than that cut-off and moreover the p value (0.51) is more than 0.05. Thus H_0^1 is accepted and hence it can be inferred that Job profile of respondents does not put significant influence on selection of Pen brand in study area.

Research Query III: Identification of any relational aspect between a pen Brand and top 3 utility factor guiding pen selections.

H_0^i : No major significant relation exists between Smoothness of writing & Brand of a pen.

H_0^{ii} : No major significant relation exists between Comfortable Grip & Brand of a pen.

H_0^{iii} : No major significant relation exists between Refilling scope & Brand of a pen.

Sl No	Comparison between top 3 Utility factors & Pen Brand	Chi square Value	d.o.f	Asymp Sig (2 sided)
i	Smoothness of writing & Brand of a pen	18.445	6	0.003
ii	Comfortable Grip & Brand of a pen	6.510	4	0.092
iii	Refilling scope & Brand of a pen	4.989	2	0.082

Table No 9: Chi-Square Test Results For Between A Pen Brand And Top 3 Utility Factors

Inference from Table 9: The above Table 9 shows that, p value of less than 0.05 is only found in case of comparison between Smoothness of writing & Brand of a pen (0.003) and for other two comparisons of pen brand with Comfortable Grip & Refilling scope, p value are found more than 0.05. In terms of Chi-Square cut-off value, except comparison between Smoothness of writing & Brand of a pen, the other two comparative cases result Chi-Square value less than cut-off value for corresponding degrees of freedom & significance level of 5%. All these lead to rejection of H_0^i and acceptance of H_0^{ii} & H_0^{iii} . Therefore in Pen Brand choice, Brand name is closely associated with Smoothness of writing factor only whereas Comfortable Grip & Refilling scopes have no major linkages with Brand name.

V. CONCLUSION

This research study on Pen brand selection has analysed the parameters behind buying a pen and its preference of brand in the growing market of Siliguri city of North Bengal. The study identified ten variables governing pen brand choice by the three groups of users and finally ended with determining the top 3 brand selection factors & their level of association with brand names. The ANOVA & Regression model demonstrates statistically significant predictability of the 10 independent predictor variables for the dependent variable, Pen Brand Selection. Factor analysis interestingly gives a mandate that utility related features of any pen play dominant role in choosing a brand in case of city Siliguri. So far as linkage between Pens brand preference & Job profile of the end users is concerned, the study does not recognize any significant bearing of Job profile upon Pen Brand selection. The study finally concluded by establishing a strong association of Brand name of a pen only with Smoothness of writing factor out of the top 3 utility factors considered by the respondents.

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