A COMPARATIVE STUDY OF MARKETING STRATEGIES OF SELECTED PHARMACEUTICAL COMPANIES: A PILOT STUDY

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ABSTRACT

This study was undertaken with the objectives of studying the concept of marketing strategy of Pharmaceutical companies and understanding the differences in marketing strategy of Pharmaceutical companies. Pharmaceutical companies with a turnover more than Rs.100 crores were chosen for the study. Primary data was collected from two sources: groups of experts comprising of Doctors, Chemists and Medical Representatives and from consumers. The sample size in either case was 400. Two major conclusions emerge in relation to the marketing strategies of the pharmaceutical companies. One is that there was a high level of agreement on an overall basis to the different elements of the marketing strategies of the pharmaceutical companies. Second important conclusion that emerged was that the marketing strategies have a sizable correlation with demographic variables of the companies like type, market and status. Before undertaking the main study, a pilot study was carried and this paper presents its report.

Keywords: *Marketing strategies, Pharmaceutical companies, Differences in strategies.*

1. Introduction

This study was undertaken with the objectives of studying the concept of marketing strategy of Pharmaceutical companies, understanding the differences in marketing strategy of Pharmaceutical companies, investigating impact of marketing strategies on sales of Pharmaceutical companies, analyzing the impact of marketing strategy and Branding of Pharmaceutical companies on consumer Perception, and, evaluating challenges and opportunities for Pharmaceutical companies.Pharmaceutical companies with a turnover more than Rs.100 crores were chosen for the study. Primary data was collected from two sources: groups of experts comprising of Doctors, Chemists and Medical Representatives and from consumers. The sample size in either case was 400. Two major conclusions emerge in relation to the marketing strategies of the pharmaceutical companies. One is that there was a high level of agreement on an overall basis to the different elements of the marketing strategies of the pharmaceutical companies. Second important conclusion that emerged was that the marketing strategies have a sizable correlation with demographic variables of the companies like type, market and status. Before undertaking the main study, a pilot study was carried and this paper presents its report. Following objectives were fixed for the pilot study:

a. To understand issues to be encountered in data collection
b. To test the usage of the questionnaire
c. To test the hypotheses as per research methodology
d. To test validity and reliability of questionnaire prepared for primary data collection

2. Literature Review

Pensap, S., et.al (2020) stated that marketing strategies have got much attention in the recent 2 decades both in domestic and international market. The growth and achievement of business firms are legitimately related to the marketing strategies. Crick, J. M., et.al (2020) stated that although competition (simultaneous cooperation and competition) should emphatically influence company performance, it is hazy how implementation of these business-to-business marketing strategies can occur during large-scale emergencies. Lin, F., et.al (2020) stated that the purpose of this paper was to empirically investigate how Chinese private manufacturers make strategic branding decisions. The researchers develop a conceptual framework to examine the branding decisions embraced by Chinese manufacturers.

Jain, A., et.al (2020) stated that the concept of green manufacturing has gained cognizance among manufacturers because of regulations imposed by the government and rising environmental consciousness of customers. Rana, S., et.al (2020) stated that the main objective of this study is to evolve the basis of beneficial impact assessment of International Marketing Strategy (IMS) for developing market multinationals by applying construct-measurement research methodology.Arrawatia, M. D. M. A. (2019) stated that in India, pharmaceutical industry developing quickly in all segments, henceforth it is needed to analyse the marketing and sales perceptions.

Most of the studies have a generalized approach towards studying the marketing strategies of organizations in general and also for the pharmaceutical companies. Comparative analytical studies based on company specific characteristics are not found much. If a pharmaceutical company is dealing in main product line while other is research and development oriented, does this factor affect the marketing strategy? This question has not been answered by researchers. And if the strategies are different what are its implications on sales, consumer perception etc. have not been studied.

3. Methodology

Sample– For the pilot study a sample size of 10% of the main study sample size was taken. 40 special group of respondents comprising of Doctors, Chemists and MRs and 40 customers were surveyed.

Instrument for survey – A Questionnaire was designed for this purpose. It was modified as per suggestions given by the guide. The response to the key variable questions were taken on a Likert scale as under –

Table 1 Scales used and values assigned to responses for analysis

Section No.	Title	Scale	Values assigned for data analysis
Special Group I	Identification of Marketing Strategy	No response, Somewhat agree, Completely agree, Somewhat Disagree, Completely Disagree	0 1 2 -1 -2
II	Branding Effectiveness	No response, Somewhat effective, Highly effective, Somewhat ineffective, Highly ineffective	0 1 2 -1 -2
III	Sales Performance	No response, Somewhat High, Very High, Somewhat Low, Very Low	0 1 2 -1 -2
IV	Opportunities and Challenges	Not at all an opportunity/challenge, Somewhat an opportunity/challenge, Good opportunity/challenge, Very Good opportunity/challenge, \Excellent opportunity/challenge	1 2 3 4 5
Customers	Customer perception	No response, Somewhat positive, Highly positive, Somewhat Negative Highly Negative	0 1 2 -1 -2

The questionnaire was tested for validity and reliability as under –

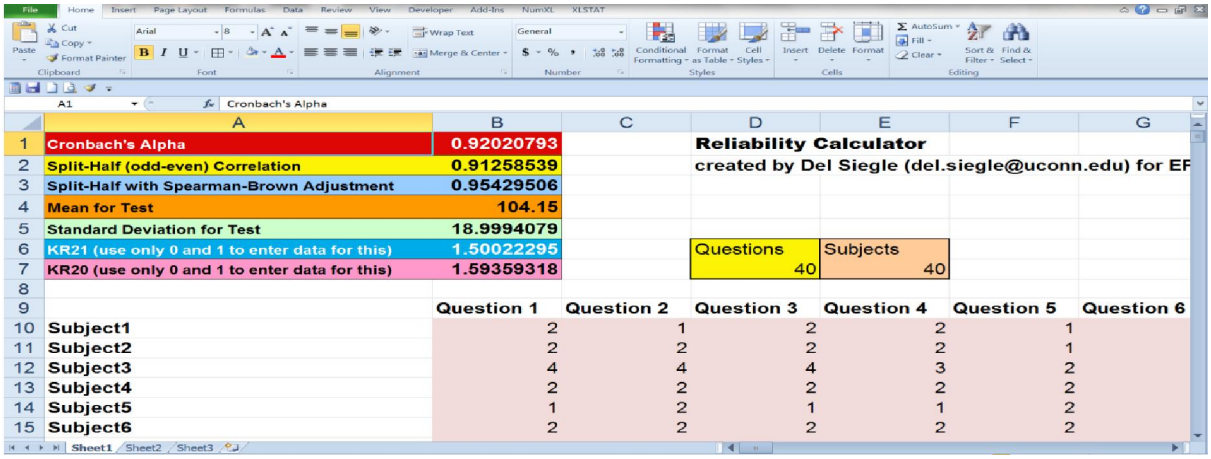
Test of validity –The hypotheses, hypotheses testing method, questionnaire etc. were validated by the Guide and other experts in the field so as to ensure that the measurement was adequate and accurate in terms of the desired direction.

A check-list as prescribed by Collingridge et. al (2015) was applied for validation as under –

Table 2 Application of Collingridge check-list for validation

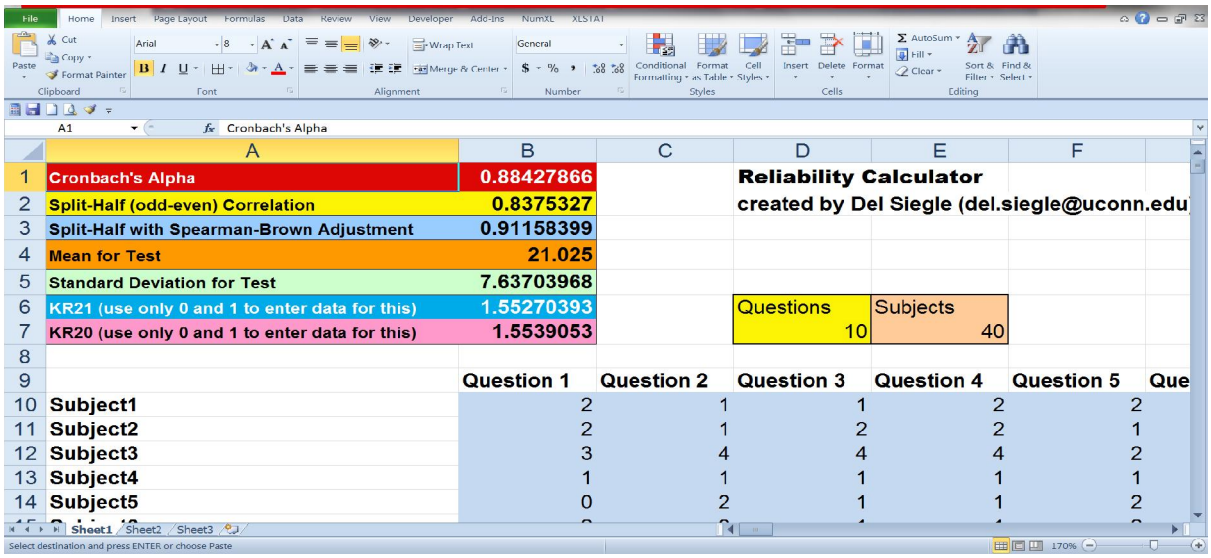
Step No.	Step	Action
1	Establish Face Validity	The questionnaire has been validated for face validity by guide and group of experts.
2	Clean Collected Data	Our mechanism of collecting data ensures that there is no invalid entry because there is no entry only. It is a selection for range of options.
3	Use Principal Components Analysis (PCA)	a. We don't have too many variables under consideration b. It is expected that the variables should be widely interpretable. Therefore PCA was not used.
4	Check Internal Consistency	This was done through Cronbach's Alpha

Test of reliability – Cronbach's Alpha and other tests were applied on the questionnaire using "Siegle Reliability Calculator" an excel program and the results are summarized as under –



	A	B	C	D	E	F	G
1	Cronbach's Alpha	0.92020793		Reliability Calculator			
2	Split-Half (odd-even) Correlation	0.91258539		created by Del Siegle (del.siegle@uconn.edu) for EF			
3	Split-Half with Spearman-Brown Adjustment	0.95429506					
4	Mean for Test	104.15					
5	Standard Deviation for Test	18.9994079					
6	KR21 (use only 0 and 1 to enter data for this)	1.50022295		Questions	Subjects		
7	KR20 (use only 0 and 1 to enter data for this)	1.59359318		40	40		
8							
9		Question 1	Question 2	Question 3	Question 4	Question 5	Question 6
10	Subject1	2	1	2	2	1	
11	Subject2	2	2	2	2	1	
12	Subject3	4	4	4	3	2	
13	Subject4	2	2	2	2	2	
14	Subject5	1	2	1	1	2	
15	Subject6	2	2	2	2	2	

Figure 1 Cronbach's Alpha score for entire questionnaire of special group



	A	B	C	D	E	F
1	Cronbach's Alpha	0.88427866		Reliability Calculator		
2	Split-Half (odd-even) Correlation	0.8375327		created by Del Siegle (del.siegle@uconn.edu		
3	Split-Half with Spearman-Brown Adjustment	0.91158399				
4	Mean for Test	21.025				
5	Standard Deviation for Test	7.63703968				
6	KR21 (use only 0 and 1 to enter data for this)	1.55270393		Questions	Subjects	
7	KR20 (use only 0 and 1 to enter data for this)	1.5539053		10	40	
8						
9		Question 1	Question 2	Question 3	Question 4	Question 5
10	Subject1	2	1	1	2	2
11	Subject2	2	1	2	2	1
12	Subject3	3	4	4	4	2
13	Subject4	1	1	1	1	1
14	Subject5	0	2	1	1	2

Figure 2 Cronbach's Alpha score for entire questionnaire of customers

As the Cronbach's alpha score was more than 0.70, the questionnaire was considered as reliable.

Hypotheses formulation-

The hypotheses formulation is presented below –

Table 3 Hypotheses formulation

Sr. No.	Area of study	Null Hypotheses (Ho)	Alternate Hypotheses (Ha)
1	Difference in pharmaceutical marketing strategies	There is no significant difference between pharmaceutical marketing strategies of select pharmaceutical companies	There is a significant difference between pharmaceutical marketing strategies of select pharmaceutical companies
2	Impact of marketing strategies on sales	There is no significant impact of marketing strategies on sales of selected pharmaceutical companies.	There is a significant impact of marketing strategies on sales of selected pharmaceutical companies.
3	Impact of marketing strategy and branding of select pharmaceutical industries on consumer perception	There is no significant impact of marketing strategy and branding of select pharmaceutical industries on consumer perception.	There is a significant impact of marketing strategy and branding of select pharmaceutical industries on consumer perception.
4	Challenges and opportunities for select pharmaceutical companies	There are no significant challenges and opportunities for select pharmaceutical companies	There are significant challenges and opportunities for select pharmaceutical companies

Scheme formed for testing of hypotheses

- Two sets of questionnaires were designed to collect primary data in order to test the hypothesis as stated earlier.
- One was administered to a special group of three – Doctors, Chemists and MRs. Second was administered to customers.
- In line with the hypothesis the questionnaire for the special group was divided into four main parts –

➢ Identification of Marketing Strategy,
➢ Branding Effectiveness
➢ Sales Performance
➢ Opportunities and Challenges

- The questionnaire for customer had only one main section that of the perception.
- The structure of the questionnaire was kept simple by framing questions /statements/ factors as questions.
- Responses were measured on 5-point Likert scales such as Agree/Disagree, Effective/Ineffective, High/Low, etc.
- The hypotheses were tested as under –

Table 4 Scheme for testing of hypotheses

Sr. No.	Null Hypothesis (Ho)	Alternate Hypothesis (Ha)	Method of testing Hypo
1	There is no significant difference between pharmaceutical marketing strategies of select pharmaceutical companies	There is a significant difference between pharmaceutical marketing strategies of select pharmaceutical companies	Correlate the three company descriptive variables – Market, Type and Status with average of marketing strategy responses for all 400 respondents from the special group and find if the association is significant or not
2	There is no significant impact of marketing strategies on sales of selected pharmaceutical companies.	There is a significant impact of marketing strategies on sales of selected pharmaceutical companies.	Correlate average responses of marketing strategies and sales performance for all 400 respondents from the special group and find if the association is significant or not
3	There is no significant impact of marketing strategy and branding of select pharmaceutical industries on consumer perception.	There is no significant impact of marketing strategy and branding of select pharmaceutical industries on consumer perception.	Plot a multiple regression equation with consumer perception as the dependent variable and marketing strategy and branding effectiveness as the independent variables.

4	There are no significant challenges and opportunities for select pharmaceutical companies	There are significant challenges and opportunities for select pharmaceutical companies	Compare the average ranking with hypothesized mean ranking of 3 which is the mid-point of the scale and see if the difference is significant from the mid-point.

4. Data analysis

a. Descriptive analysis (Table set 5)

i) Special group responses

	Doctor	Chemist	MR	Total
Category of respondent	27	1	12	40
	Mainstream	Research & Development	Generic	Total
Type of Company	29	1	10	40
	Domestic	Domestic and Exports	Only Exports	Total
Market	20	20	0	40
	Indian	MNC	Total	
Status of company	18	22	40	
	<Rs.100 crores	Rs.100-Rs.500 crores	>Rs.500 crores	Total
Average Turnover	0	19	21	40
	<10 years	10-20 years	>20 years	Total
Existence of company	1	20	19	40
	<5 years	5-10 years	>10 years	Total
Work experience of respondent	15	10	15	40
	Graduate	PG	Professional	Total
Educational qualification of respondent	14	10	16	40

ii) Customers

	Male	Female	Total		
Gender	29	11	40		
	<30 years	30-40 years	40-50 years	>50 years	Total
Age	17	8	10	5	40
	Service	Business	Homemaker	Total	
Occupation	17	19	4	40	
	Graduate	Post-graduate	Other	Total	
Educational qualifications	18	14	8	40	

b. Inferential analysis (Testing of hypotheses)

Summary of responses of special group to 3 sections of the questionnaire (Table set 6)

Qstn.	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	Average
Agree %	73%	76%	75%	75%	77%	84%	73%	79%	79%	74%	77%

Qstn.	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	2.10	Average
Effctve %	62%	70%	67%	66%	71%	75%	68%	72%	72%	62%	69%

Qstn.	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	3.10	Average
High %	77%	78%	70%	73%	68%	71%	72%	70%	74%	77%	73%

Summary of responses of customers

Qstn.	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	Average
Agree %	64%	71%	64%	69%	70%	74%	60%	72%	68%	65%	68%

Hypotheses testing

For the 1st hypothesis a regression analysis was performed correlating the three company descriptive variables – market, type and status (independent variables) with average of marketing strategy (dependent variable) responses for all 40 respondents from the special group. Results were as under -

Summary statistics:

Variable	Observations	Obs. with missing data	Obs. without missing data	Minimum	Maximum	Mean	Std. deviation
Avg. Str	40	0	40	-1.200	2.000	0.808	1.070
Type	40	0	40	1.000	3.000	1.625	0.925
Market	40	0	40	1.000	2.000	1.700	0.464
Status	40	0	40	1.000	2.000	1.675	0.474

Correlation matrix:

	Type	Market	Status	Avg. Str
Type	1.000	-0.567	-0.519	-0.867
Market	-0.567	**1**	0.478	0.732
Status	-0.519	0.478	**1**	0.576
Avg. Str	-0.867	0.732	0.576	**1**

Regression of variable Avg. Str: Avg. Str = 0.365159545224639-0.732841466364656*Type+0.762078596089988*Market+0.201596551799969*Status

Goodness of fit statistics (Avg. Str):

Observations	40
Sum of weights	40
DF	36
R^2	0.843
Adjusted R^2	0.829
MSE	0.195
RMSE	0.442
MAPE	48.754
DW	1.892
Cp	4.000
AIC	-61.519
SBC	-54.763
PC	0.192

Analysis of variance (Avg. Str):

Source	DF	Sum of squares	Mean squares	F	Pr> F
Model	3	37.653	12.551	64.225	**<0.0001**
Error	36	7.035	0.195		
Corrected Total	39	44.688			
Computed against model Y=Mean(Y)					

Model parameters (Avg. Str):

Source	Value	Standard error	t	Pr> |t|	Lower bound (95%)	Upper bound (95%)
Intercept	0.365	0.505	0.723	0.475	-0.660	1.390
Type	-0.733	0.099	-7.410	**<0.0001**	-0.933	-0.532
Market	0.762	0.192	3.972	**0.000**	0.373	1.151
Status	0.202	0.181	1.115	0.272	-0.165	0.568

Equation of the model (Avg. Str):

Summary statistics:

Standardized coefficients (Avg. Str):

Source	Value	Standard error	t	Pr> |t|	Lower bound (95%)	Upper bound (95%)
Type	-0.633	0.085	-7.410	**<0.0001**	-0.807	-0.460
Market	0.330	0.083	3.972	**0.000**	0.162	0.499
Status	0.089	0.080	1.115	0.272	-0.073	0.252

Interpretation (Avg. Str):

Given the R^2, 84% of the variability of the dependent variable Avg. Str is explained by the 3 explanatory variables. Given the p-value of the F statistic computed in the ANOVA table, and given the significance level of 5%, the information brought by the explanatory variables is significantly better than what a basic mean would bring.

Thus, the null hypotheses, there is no significant difference between pharmaceutical marketing strategies of the select pharmaceutical companies, was rejected.

For the 2nd hypothesis a regression analysis was performed correlating the average responses of marketing strategies (independent variables) with average of sales performance (dependent variable) responses for all 400 respondents from the special group. Results were as under -

Summary statistics:

Variable	Observations	Obs. with missing data	Obs. without missing data	Minimum	Maximum	Mean	Std. deviation
Avg. SP	40	0	40	-0.600	2.000	0.645	0.653
Avg. Str	40	0	40	-1.200	2.000	0.808	1.070

Correlation matrix:

	Avg. Str	Avg. SP
Avg. Str	1.000	0.441
Avg. SP	0.441	**1**

Analysis of variance (Avg. SP):

Source	DF	Sum of squares	Mean squares	F	Pr> F
Model	1	3.237	3.237	9.191	**0.004**
Error	38	13.382	0.352		
Corrected Total	39	16.619			
Computed against model Y=Mean(Y)					

Model parameters (Avg. SP):

Source	Value	Standard error	t	Pr> |t|	Lower bound (95%)	Upper bound (95%)
Intercept	0.428	0.118	3.622	**0.001**	0.189	0.667
Avg. Str	0.269	0.089	3.032	**0.004**	0.089	0.449

Equation of the model (Avg. SP):
Avg. SP = 0.427683201772298+0.269122969941427*Avg. Str
Standardized coefficients (Avg. SP):

Source	Value	Standard error	t	Pr> |t|	Lower bound (95%)	Upper bound (95%)
Avg. Str	0.441	0.146	3.032	**0.004**	0.147	0.736

Interpretation (Avg. SP)

Given the R^2, 19% of the variability of the dependent variable Avg. SP is explained by the explanatory variable. Given the p-value of the F statistic computed in the ANOVA table, and given the significance level of 5%, the information brought by the explanatory variables is significantly better than what a basic mean would bring.

Thus, the null hypotheses, **t**here is no significant impact of pharmaceutical marketing strategies and the sales performance, was rejected.

For testing the 3rd hypothesisa multiple regression equation was plotted with consumer perception as the dependent variable and marketing strategy and branding effectiveness as the independent variables. Results were as under –

Summary statistics

Variable	Observations	Obs. with missing data	Obs. without missing data	Minimum	Maximum	Mean	Std. deviation
Avg.CP	40	0	40	-1.600	1.800	0.533	1.111
Avg. Str	40	0	40	-1.200	2.000	0.808	1.070
Avg.Brnd	40	0	40	-1.600	1.900	0.563	1.152

Correlation matrix

	Avg. Str	Avg.Brnd	Avg.CP
Avg. Str	1.000	0.940	0.955
Avg.Brnd	0.940	**1**	0.976
Avg.CP	0.955	0.976	**1**

Regression of variable Avg.CP:
Goodness of fit statistics (Avg.CP):

Observations	40
Sum of weights	40
DF	37
R^2	0.965
Adjusted R^2	0.963
MSE	0.046
RMSE	0.214
MAPE	15.972
DW	1.827
Cp	3.000
AIC	-120.345
SBC	-115.278
PC	0.041

Analysis of variance (Avg.CP):

Source	DF	Sum of squares	Mean squares	F	Pr> F
Model	2	46.428	23.214	505.436	**<0.0001**
Error	37	1.699	0.046		
Corrected Total	39	48.128			
Computed against model Y=Mean(Y)					

Model parameters (Avg.CP):

Source	Value	Standard error	t	Pr> |t|	Lower bound (95%)	Upper bound (95%)
Intercept	-0.104	0.048	-2.165	**0.037**	-0.201	-0.007
Avg. Str	0.340	0.094	3.621	**0.001**	0.150	0.530
Avg.Brnd	0.644	0.087	7.396	**<0.0001**	0.468	0.821

Equation of the model (Avg.CP):

Avg.CP = -0.104063230476727+0.339534986678297*Avg. Str+0.644246628860448*Avg.Brnd

Standardized coefficients (Avg.CP):

Source	Value	Standard error	t	Pr> |t|	Lower bound (95%)	Upper bound (95%)
Avg. Str	0.327	0.090	3.621	**0.001**	0.144	0.510
Avg.Brnd	0.668	0.090	7.396	**<0.0001**	0.485	0.851

Interpretation (Avg.CP):

Given the R^2, 96% of the variability of the dependent variable Avg.CP is explained by the 2 explanatory variables. Given the p-value of the F statistic computed in the ANOVA table, and given the significance level of 5%, the information brought by the explanatory variables is significantly better than what a basic mean would bring.

The null hypothesis there is no significant impact of marketing strategy and branding of select pharmaceutical industries on consumer perception was rejected.

For testing the 4th hypothesis the average ranking for the 5 opportunities and 5 challenges was compared with hypothesized mean ranking of 3 which is the mid-point of the scale. The average rankings were as under (**Table Set 7**) –

Opportunities

Qstn.	4.1	4.2	4.3	4.4	4.5	Average
Average Rank	4.20	4.20	4.13	4.10	4.30	4.19

Challenges

Qstn.	4.6	4.7	4.8	4.9	4.10	Average
Average Rank	4.15	4.10	4.30	4.13	4.05	4.15

Table 8 Hypotheses testing @ 95% confidence level

Sr. No.	Parameter	H4-O	H4-C
1	Average	4.19	4.15
2	SD	0.95147	0.97917
3	H1	3.00	3.00
4	Ho	4.19	4.15
5	n	40	40
6	t-value	7.88	7.40
7	p-value	0.00000	0.00000
8	Decision	Reject Null	Reject Null

Going by the p-values the null hypothesis stands rejected. In other words there are significant challenges and opportunities for select pharmaceutical companies.

Summary of inferential analysis

Summary of the testing of all the four hypotheses along with their interpretation is given below –

Table 9 Summary of inferential analysis

Sr. No.	Null Hypotheses	p-value	Decision	Interpretation
1	There is no significant difference between pharmaceutical marketing strategies of select pharmaceutical companies	<0.0001	Reject Null	There is a significant difference between pharmaceutical marketing strategies of select pharmaceutical companies
2	There is no significant impact of marketing strategies on sales of selected pharmaceutical companies.	0.004	Reject Null	There is a significant impact of marketing strategies on sales of selected pharmaceutical companies.
3	There is no significant impact of marketing strategy and branding of select pharmaceutical industries on consumer perception.	<0.0001	Reject Null	There is a significant impact of marketing strategy and branding of select pharmaceutical industries on consumer perception.
4	There are no significant challenges and opportunities for select pharmaceutical companies	<0.0001	Reject Null	There are significant challenges and opportunities for select pharmaceutical companies

5. Conclusions

Two major conclusions emerge in relation to the marketing strategies of the pharmaceutical companies. One is that there was a high level of agreement on an overall basis to the different elements of the marketing strategies of the pharmaceutical companies. Second important conclusion that emerged was that the marketing strategies have a sizable correlation with demographic variables of the companies like type, market and status.

About the pilot study following conclusions were drawn:

a) Data collection is possible with reasonable comfort
b) Processing of the data into variables required for inferential data analysis can be done
c) The hypotheses can be duly tested as per research methodology
d) The questionnaire prepared for primary data collection tests well for validity and reliability. However, respondents demanded confidentiality.

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