PART V

DATA ANALYSIS

As suggested earlier, the data analysis was carried out in the following manner.

1. Data Validation
2. Micro-analysis
3. Macro-analysis

5.1 DATA VALIDATION

The internal consistency of the data was measured using the following two tools.

1. The median method
2. Cronbach's Alpha

5.1.1 Internal consistency through median method

The questionnaire for the physicians comprised 1. An introductory letter, 2. A demographic form to be filled in by the interviewer, and 3. The response form for the physician.

As part of their routine survey, the medical representatives are expected to find out for each of their listed physicians, the number of prescriptions they write per day and the number of patients they examine per day. The demographic form included these two questions to be answered by the interviewers (the medical representatives). In

the response form to be filled in by the physicians, the same questions were put up to the physicians. The average values (median values) for each of these responses are recorded below.

TABLE 3
MEDIAN VALUES

Demographic	Opined by prescribers	Opined by MRs
Average patients per Day	27.16	28.86
Average prescriptions per Day	21.34	20.90

The hypothesis for the median test is depicted below.

1. H_o: There is no difference between the median prescriptions/patients per day as reported by the prescribers and MRs.
2. H_1: There is a differenc

TABLE 4
DATA VALIDATION *

Assessing Group / Demographic	Prescribers	Medical Representatives	Data Validation by Median Test ($P \leq 0.01$)
Average Patients / Day (Median Value)	27.16	28.86	Test $X^2 = 5.85$ Critical $X^2 = 6.83$ (Not significant)
Average Prescriptions / Day (Median Value)	21.34	20.90	Test $X^2 = 4.48$ Critical $X^2 = 6.83$ (Not significant)

In case of average prescriptions per day, the calculated x^2 value is 4.48 at 99% confidence level, while the critical value at this confidence level is 6.83. Therefore, the H_o is accepted. Similarly, in case of average patients per day, the calculated x^2 value is 5.85, while the critical x^2 value at 99% confidence level is 6.83.

Thus the median test confirms the validity of the data, suggesting thereby that there does not exist any statistically significant difference between median values.[1]

5.1.2 Internal consistency through CRONBACH's alpha

Cronbach's alpha measures how well a set of items or variables correlate a single unidimensional latent construct. It is a coefficient of reliability of the data. When the respondents opine on various belief constructs, which essentially measure a single unidimensional belief construct, the data must correlate to prove that it is consistent. Thus Cronbach's alpha is a tool for validation of the collected data. It reflects the internal consistency of the data.

Cronbach's alpha is calculated using the following formula:

$$\alpha = \frac{N.\bar{r}}{1 + (N-1).\bar{r}}$$

Here N is equal to the number of items and r-bar is the average inter-item correlation among the items. The formula suggests that when number of items increases, Cronbach's alpha increases. Similarly, as the average inter-item correlation increases, Cronbach's alpha also increases.

This corroborates the intuition that when inter-item correlations are high, the items are measuring the same underlying construct. This evidences high or good reliability and relates to how well these items measure a single unidimensional latent construct. Generally an alpha value of 0.8 and above is considered to be suggestive of good reliability.[2]

The calculation of Cronbach's alpha for select belief constructs is depicted below

Measure of Internal consistency through Cronbach's alpha

TABLE 5

PHYSICIANS' MEAN RESPONSES TO BELIEF CONSTRUCTS.

Belief Construct	Items (N)	Mean $\bar{X}$	SD S	Cronbach's alpha
(1) Doctors prescribe medicines requested by their patients for the sake of their relationship with the patients.	2	1.10	1.42	0.97
(2) Doctors prescribe the products of the MRs who regularly meet them.	2	2.99	1.64	0.325
(3)Doctors consider MRs their important source of information	2	3.75	1.24	0.987
(4)Doctors are price conscious while prescribing drugs.	2	3.43	1.48	0.890
(5)Promotional efforts by pharma companies influence the prescription behaviour of doctors.	2	2.83	1.46	0.957
(6) Doctors like to avail information from Internet about their profession.	3	3.57	1.27	0.993

TABLE 6

STATEMENTS COMPRISING BELIEF CONSTRUCTS

	Belief Construct	Mean $\bar{X}$	SD S
1	Belief Construct: 1		
	(I) If a patient requests for a prescription of a drug and you believe it to be non-efficacious, you still prescribe it for the sake of your relationship with the patient.	1.02	1.45
	(II) If a patient requests for a prescription of a drug and you believe it to be unsafe you still prescribe it for the sake of your relationship with the patient.	1.18	1.34
2	Belief Construct: 2		
	(I) I do not necessarily prescribe the product of a MR even if he/she meets me regularly.	2.71	1.55
	(II) I do not prescribe a product of a company if the MR of that company does not meet me regularly.	3.27	1.68
3	Belief Construct: 3		
	(I) MRs are an important source of information who help me practice better medicine.	3.91	1.10
	(II) If I trust a MR, I am more inclined to prescribe his products.	3.58	1.36
4	Belief Construct: 4		
	(I) I am generally price conscious when I prescribe medicines to my patients	3.70	1.29
	(II) I do not mind prescribing a costly medicine to a patient if I believe that the patient can afford it.	3.16	1.62
5	Belief Construct: 5		
	(I) Without the support of the Pharma industry, there would be a lack of funding for important educational programmes for medical doctors.	2.92	1.34
	(II) I am inclined to prescribe more of a product, when I receive sufficient samples for trial of that product.	2 74	1.58
6	Belief Construct: 6		
	(I) I like to gather information, which is available on the Internet about medicines.	3.57	1.23
	(II) I like to read on line articles / new product information etc. on the Internet.	3.32	1.36
	(III) If I am faced with a difficult disease/condition, I would prefer to approach interactive sites on Internet, or consultation with experts who can help me to help my patients.	3.82	1.17

It can be readily observed that in case of five out of six belief constructs the alpha value is more than 0.8. This evidences high reliability of the data Only in one case the alpha value is low (0 325) This belief construct measures the impact of regularity of visits by the medical representatives. The low value can probably be explained by the phraseology of the statements. The question format, " I do not necessarily prescribe the products of a MR, even if he/she meets me regularly" does not match the connotation of the other statement, "I do not prescribe a product of a company if the MR of that company does not meet me regularly" The suggestion of compulsion of prescribing only because of regularity has not been liked by the prescribers. Hence, the impulsive response has negated the expected unidimensional movement of the variable, manifested by a low alpha value. If the earlier statement had the right connotation, the reliability coefficient would have reflected better correlation.

Nevertheless, the data above is suggestive of high consistency and reliability.

INFERENCE;

The primary data as assessed through the median test and Cronbach's alpha is found to be highly consistent and reliable.

5.2 SUMMARY STATISTICS

A total of 4966 valid responses were received from prescribers. The secondary data suggested that the prescribing behaviour of the physicians might be a function of demographic characteristics. The following demographic characteristics were recorded.

1. Practice segment (General Practitioner, Physician, Surgeon etc.)

2. Age group
3. Gender
4 Patient volume per day
5. Prescription volume per day
6. Owning/Running a dispensary or a nursing home
7 Whether attached to an academic institute or not
8. Practice area population
9. Length of practice

In case of the Medical Representatives, a total of 536 valid responses were received. Care was taken to ensure that a representative sample of the Medical Representatives was selected for research. This was evidenced by the following demographic characteristics recorded for the Medical Representatives.

1. Age group
2. Gender
3. Company size

The summary statistics, both for the prescribers and the medical representatives are depicted hereunder.

TABLE 7

Demographics of Prescribers
(Summary Statistics)

(1) Practice segment (n = 4966)

Segment	No. of Doctors	%
General Practice	3088	62.18
Gynaecologist	760	15.30
Physician	390	7 85
Paediatrician	280	5.64
General-Surgeon	140	2.82
Orthopaedic Surgeon	68	1.37
Dentist	14	0.28
Gastro-Enterologist	56	1.13
Cancer-Surgeon	8	0.16
Skin/VD Specialist	4	0.08
Cardiologist	46	0.93
Cardiac Surgeon	12	0.24
ENT Specialist	18	0.36
Others	82	1.65
	4966	100 %

(2) Age Group (n=4776)

Age Group	
Below 25 Years	148 (3.10%)
25-40 Years	2610 (54.65%)
41-55 Years	1792 (37.52%)
Over 55 Years	226 (4.73%)
Average (Median) Age: 37.87 Years.	

(3) Gender (n=4730)

Gender	
Male	3786(80%)
Female	944(20%)

(4) Patient Volume/day (n=4768)

Patient Volume	
Less than 25 per day	2055 (43.1%)
26-50 per day	2132(44.71%)
51-75 per day	515 (10.80%)
More than 75 per day	66 (1.39%)
Median Patient Volume: 28.86 Per Day.	

(5) Prescription Volume/day (n=4752)

Prescription Volume	
Less than 15 per day	1704(35.86%)
16-30 per day	1708(35.94%)
31-45 per day	924(19.44%)
More than 45 per day	416(8.76%)
Median Prescription Volume: 20.90 Per Day.	

(6) Owns / Runs a dispensary / Nursing home (n=4534)

A dispensary	2724 (60.08%)
A nursing home/hospital	1810(39.92%)

(7) Size of nursing home (n=1758)

With less than 5 beds	572(32.54%)
6 to 10 beds	820(46.64%)
More than 10 beds	366(20.82%)
Median Beds: 7.87	

(8) Attachment to Academic institute (n = 4348)

Yes	555 (12.76%)
No	3793 (87.24%)

(9) Practice area population (n=4766)

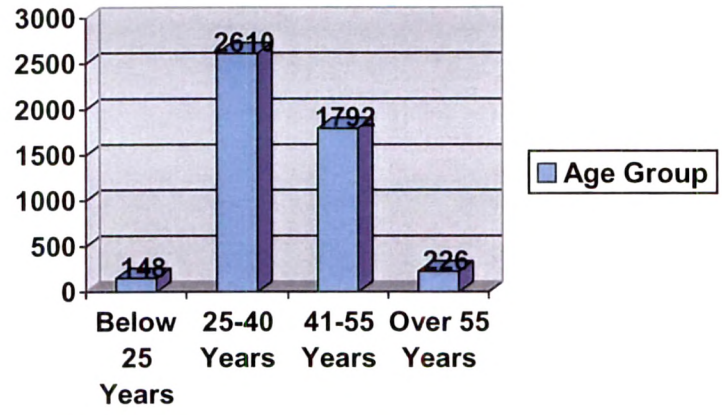
500000 or more	1872(39.28%)
100000 to 499999	776(16.28%)
50000 to 99999	588(12.34%)
20000 to 49999	664(13.93%)
10000 to 19999	615(12.90%)
5000 to 9999	146(3.06%)
Less than 5000	105 (2.20%)

(10) Length of Practice (n=4776)

Less than 5 Years	666(13.95%)
5 to 15 Years	2592(54.27%)
16 to 25 Years	1272(26.63%)
More than 25 Years	246(5.15%)
Median Length of practice: 11.64 Years.	

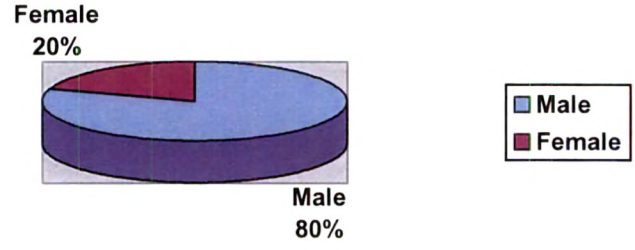
Demographics of Prescribers

CHART 2
AGE GROUP



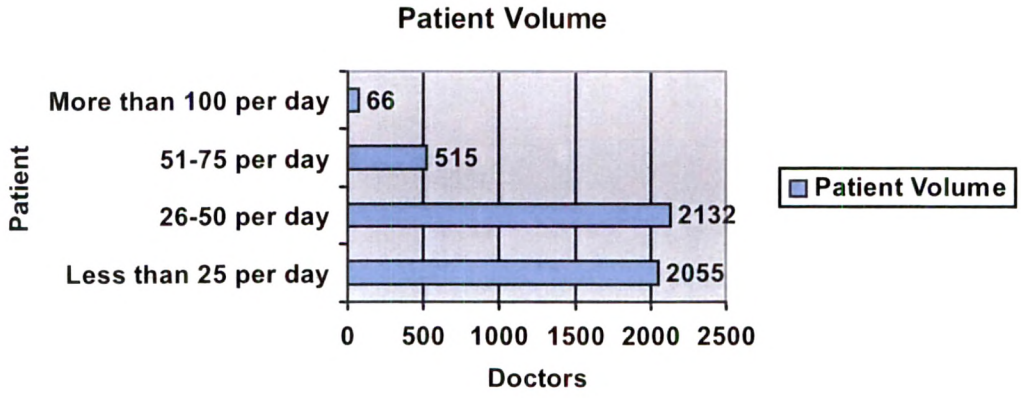
Age Group			
Below 25 Years	148 (3.10%)	25-40 Years	2610 (37.52%)
41-55 Years	1792 (54.65%)	Over 55 Years	226 (4.73%)
Median Age: 37.87 Years.			

CHART 3
GENDER



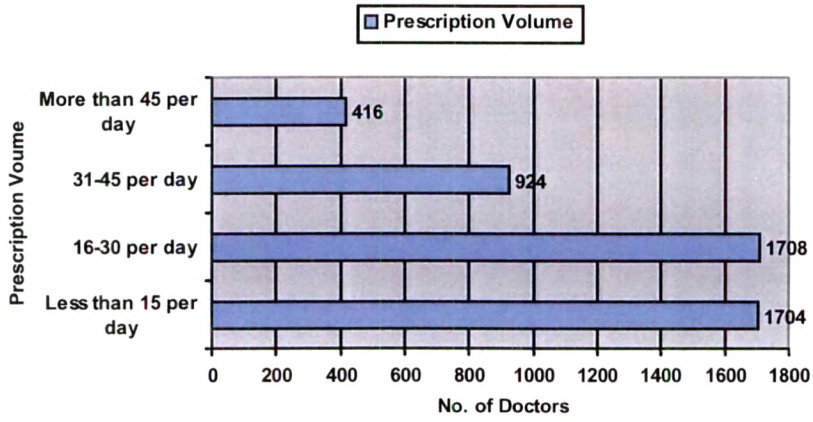
Gender			
Male	3786	Female	944

CHART 4
PATIENT VOLUME



Patient Volume			
Less than 25 per day	2055	26-50 per day	2132
51-75 per day	515	More than 100 per day	66
Median Patient Volume: 29.86 Per Day.			

CHART 5
PRESCRIPTION VOLUME

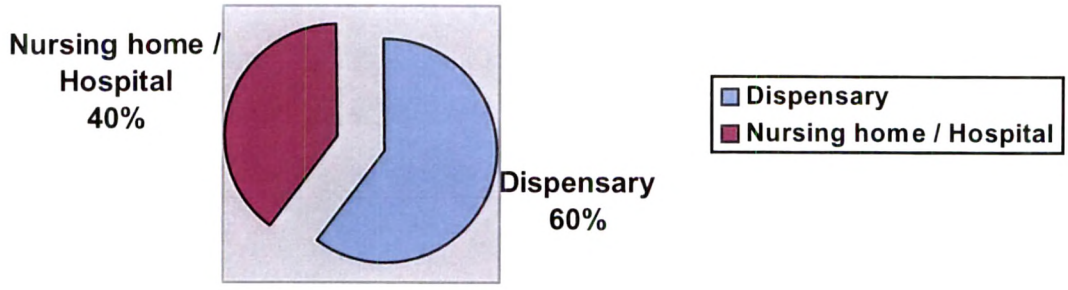


Prescription Volume			
less than 15 per day	1704	16-30 per day	1708
31-45 per day	924	More than 45 per day	416
Median Prescription Volume: 21.90 Per Day.			

CHART 6

WHETHER OWNS/ OPERATES A DISPENSARY OR A NURSING HOME/HOSPITAL

A dispensary	A nursing home/hospital
2724	1810



With less than 5 beds	572	**Median Beds: 7.87**
6 to 10 beds	820	
More than 10 beds	366	

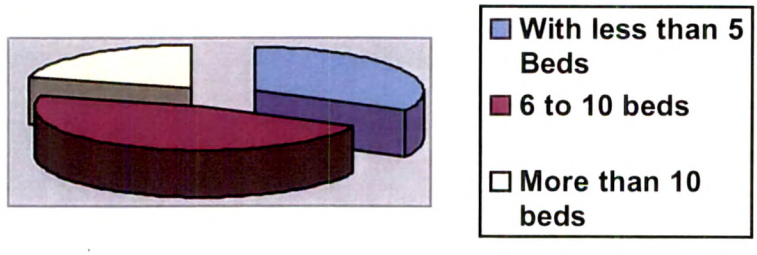


CHART 7
ACADEMIC ATTACHMENT

Academic attachment	Yes	555	No	3793

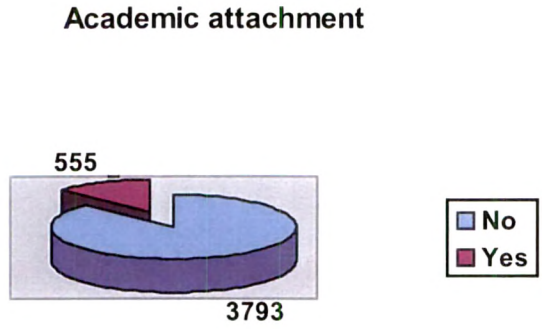


CHART 8
PRACTICE AREA POPULATION

500000 or more	1872	100000 to 499999	776
50000 to 99999	588	20000 to 49999	664
10000 to 19999	615	5000 to 9999	146
Less than 5000	105		

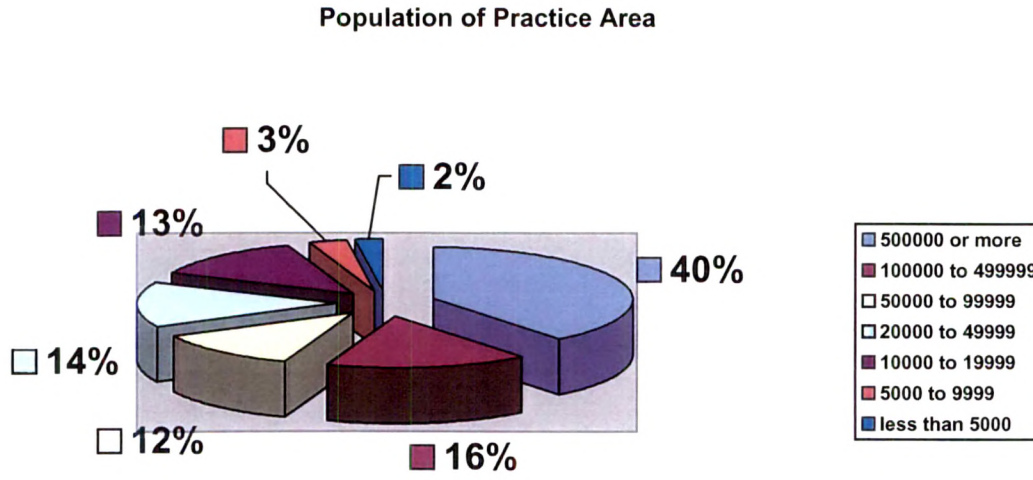


CHART 9
LENGTH OF PRACTICE

Less than 5 Years	666	5 to 15 Years	2592
16 to 25 Years	1272	More than 25 Years	246
Median Length of Practice : 11.64 Years			

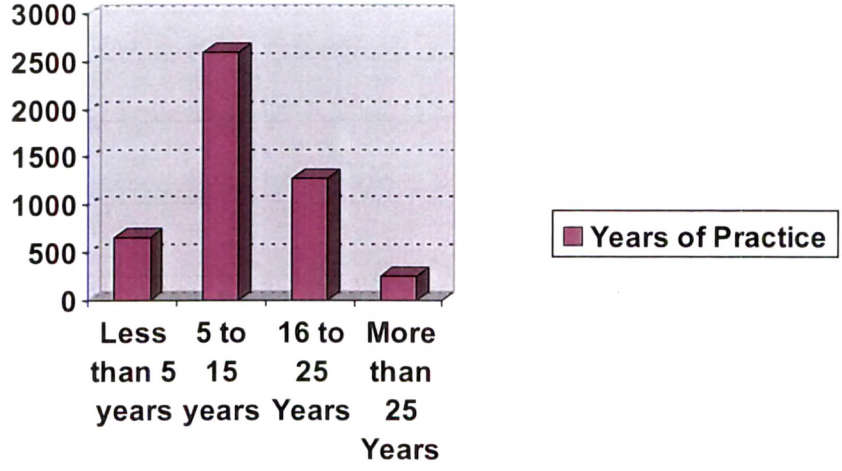


TABLE 8
DEMOGRAPHICS OF MEDICAL REPRESENTATIVES

(1) Age group (n=536)

Below 25 Years	262 (48.88%)
Between 25-40 Years	264 (49.25%)
Between 41-55 Years	10 (1.87%)
Over 55 Years	0 (0%)
Average (Median) age: 25.34 Years.	

(2) Gender (n=532)

Male	498(93.61%)
Female	34(6.39%)

(3) Company Size (n=528)

Small Scale	116 (21.97%)
Medium Scale	174 (32.95%)
Large Scale	170 (32.20%)
Multinational	68 (12.88%)

DEMOGRAPHICS OF MEDICAL REPRESENTATIVES

CHART 10
AGE GROUP

Below 25 Years	Between 25-40 Years	Below 41-55 Years	Over 55 Years
262	264	10	0

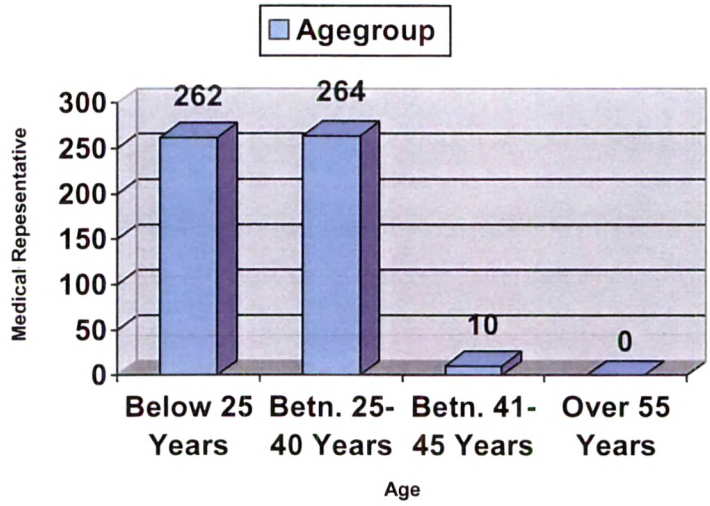


CHART 11
GENDER

Male	Female
498	34

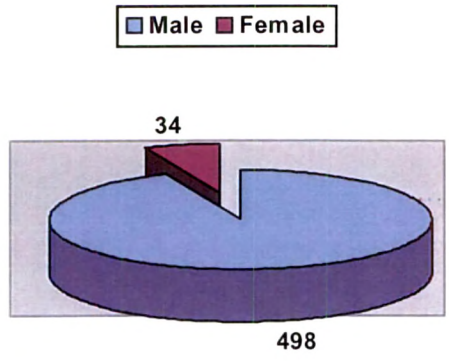


CHART 12
COMPANY SIZE

Small Scale	Medium Scale	Large Scale	Multinational
116	174	170	68

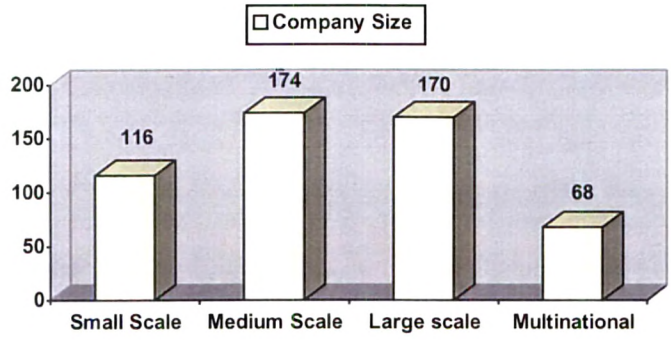
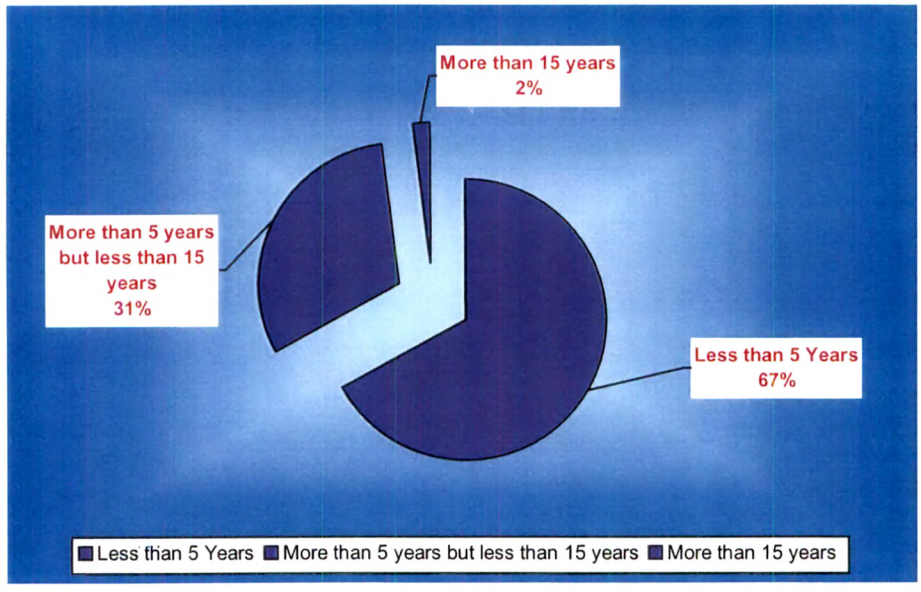


CHART 13
YEARS IN PROFESSION

Less than 5 Years	More than 5 years but less than 15 years	More than 15 Years
356	166	10



5.3 QUESTIONNAIRE ANALYSIS

5.3.1 Prescribers' response analysis

5.3.1.1 COST OF MEDICINES

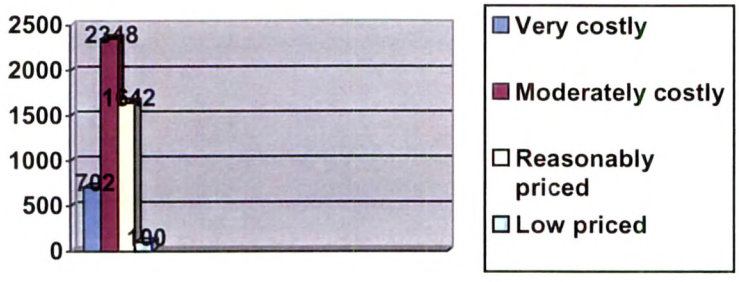
Question: "What do you think about the cost of medicines in our country?"

This question was designed to call for involvement of the respondents and warm up for the core questions that followed. The response outcome is summarized below.

CHART 14
PRESCRIBERS' PERCEPTION ABOUT "COST OF MEDICINES"

Sr.No	Perception	f	%	Cum. %
1	Very costly	702	14.65	14.65
2	Moderately costly	2348	49.00	63.65
3	Reasonably priced	1642	34.26	97.91
4	Low priced	100	2.09	100

PRESCRIBERS' PERCEPTION ABOUT "COST OF MEDICINES"



The differences in perception of cost of medicines were found statistically significant. (at $P \leq 0.05$ calculated $x^2 = 52.09$ as against critical value of 7.81) It can be observed that almost fifty percent of the prescribers believe that the medicines in India are moderately priced.

5.3.1.2 COST OF PROMOTION

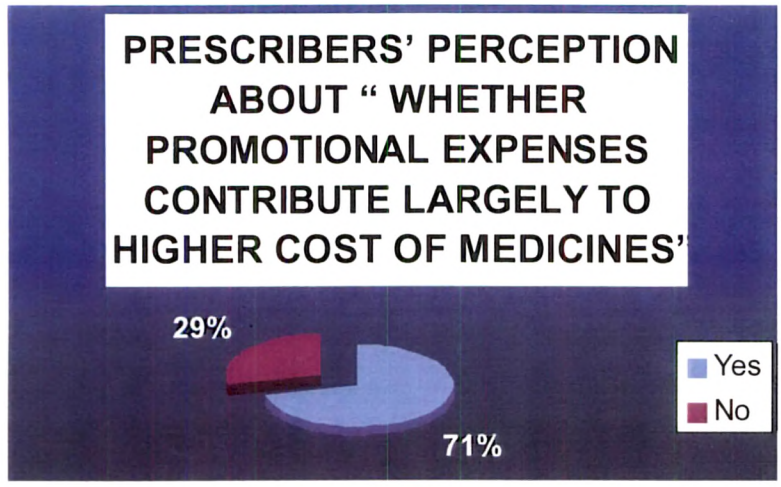
Question: *"Do you believe that the money spent by the pharmaceutical companies after promoting their drugs is a major factor contributing to the cost of medicines?"*

This was another introductory question, which would throw light on the issue whether they believed that the money spent on promotion by the pharmaceutical companies was the major factor, which contributed to the cost of medicines. As demonstrated below, there was overwhelming confirmation of this belief construct by the prescribers. Over 71% physicians believe that the promotional expenses are a major factor, which contributes to the cost of medicines. (The difference is statistically significant at $P \leq 0.05$, the calculated x^2 value, 18.44, is substantially higher than the critical value, 7.81)

CHART 15

PRESCRIBERS' PERCEPTION ABOUT PROMOTIONAL EXPENSES

Sr.No	Perception	f	%
1	Yes	3402	71.47
2	No	1358	28.53



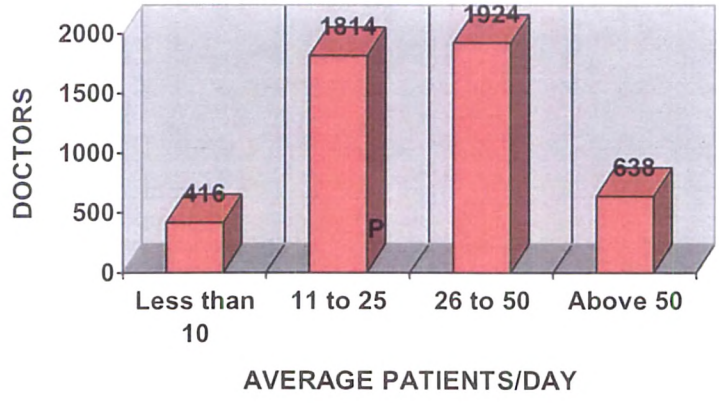
5.3.1.3 PATIENT VOLUME

Question: "How many patients, on average, do you see in a day?"

This was an important question, which would throw light on a very pertinent issue. It is interesting to know, on an average how many patients are examined by a clinician in India.

CHART 16
PATIENT VOLUME PER DAY

Less than 10	416	26 to 50	1924
11 to 25	1814	Above 50	638



The average (median) patient volume per day works out to 27.16 patients.

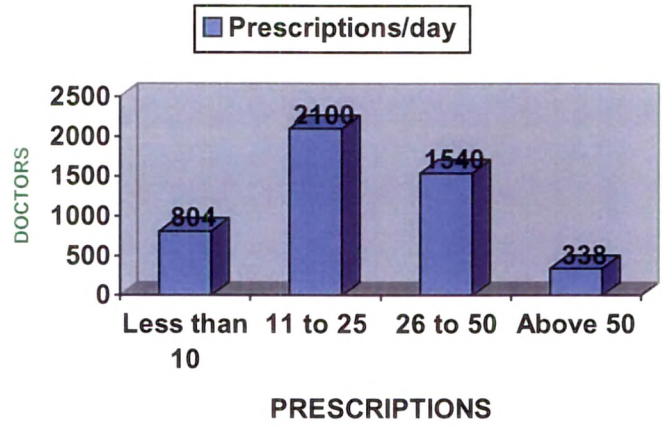
5.3.1.4 PRESCRIPTION VOLUME

Question: "How many prescriptions do you write, on average, in a day?"

This was another pertinent question, which would quantify average prescription output of Indian clinicians. The average (median) prescriptions per day work out to 21.34.

CHART 17
PRESCRIPTION VOLUME PER DAY

Less than 10	804	26 to 50	1540
11 to 25	2100	Above 50	338



5.3.1.5 PRESCRIBERS' RANKING OF "SOURCES OF INFORMATION"

Question: "Rank the following sources of information which help you choose a medicine for prescription in order of importance, i.e. the most important at the top and the least important at the bottom".

The pharmaceutical marketers allocate substantial amount of their budget for dissemination of information to the physicians. It is done with a justifiable belief that this information plays a predominant role in shaping the prescribers' attitudes towards the medicinal products. The relative weightage assigned by the prescribers to these factors may provide guidelines to the pharmaceutical marketers for proper expenditure allocation to each of the informational tools in order of its importance. For analyzing the data generated on this question, **Kendal's coefficient of concordance** method was employed.[3]The following rankings were obtained, which were subjected to significance test. The ranking was found significant. (W= 0.147 denotes agreement in ranking done by the respondents. At P≤ 0.01 the calculated

value of F. 748.96 is substantially higher than the critical value: 3.32, evidencing that the calculated W is statistically significant.) This suggests that the respondents are in accord for the ranking done by them.

TABLE 9

PRESCRIBERS' RANKING OF "SOURCES OF INFORMATION"

Rank No	Source of Information.
1	Medical Representatives
2	Medical Journal Articles
3	Seminars / Conferences
4	Medical Journal Advertisements
5	Doctor friends/ teachers/peers.

5.3.1.6 PRESCRIBERS' RANKING OF PRODUCT ATTRIBUTES

Question: "Rank the following attributes of a medicine in terms of their importance to you, i.e. the most important attribute at the top and the least important at the bottom".

The prescription choice of physicians generally depends on the perceived product attributes. These attributes, broadly speaking, are: Efficacy, safety, Cost and dosage convenience. This question probes the physicians to find out how they rank these attributes on a ranking scale. The following ranking was assigned by the physicians. The ranking was found to be statistically significant. (The calculated value of W=0.481 denotes significant agreement among rankings assigned by the clinicians. At $P \leq 0.01$, the calculated value of F is significantly higher than the critical value, 3.28.)

TABLE 10

PRESCRIBERS' RANKING OF PRODUCT ATTRIBUTES

Rank No	Product Attribute
1	Efficacy
2	Safety
3	Cost
4	Dosage Convenience

5.3 1.7 MEDICAL REPRESENTATIVE VOLUME PER DAY

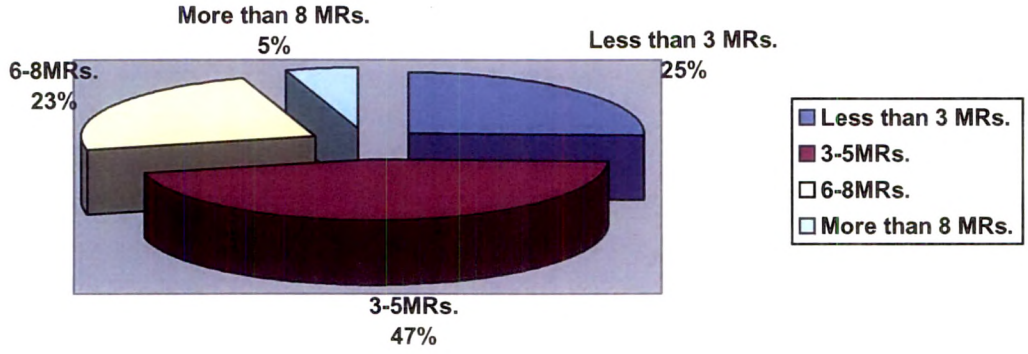
Question: "On an average how many Medical Representatives do you see in a day?"

It is interesting to find out, on average, how many medical representatives call on a physician everyday This question gently probes the clinicians on this aspect and evokes their interest in answering core questions, which follow.

The average (Median) call value works out to 4.05 medical representatives per day

CHART 18
MEDICAL REPRESENTATIVES SEEN IN A DAY

Less than 3 MRs.	3-5 MRs.	6-8 MRs.	More than 8 MRs.
1142	2068	1048	230
Average (Median) Medical Representatives seen in a day: 4.05			



5.3.1.8 PRESCRIBERS' RANKING OF FACTORS THAT MOTIVATE BRAND CHOICE

As described earlier, the choice of a drug molecule is the rational part of a physician's prescribing process, whereas the choice of brand is the emotional part of a physician's prescribing process. Prescribers have rated these factors as depicted hereunder. The ranking has been found to be statistically significant. (The value of calculated W works out to be 0.263, which signifies good agreement among the respondents about the ranking. At $P \leq 0.01$ the calculated value of F is substantially higher than the critical value: 3.32, evidencing that W is statistically significant.) This suggests that the ranks given by the respondents are in good agreement.

TABLE 11

PRESCRIBERS' RANKING OF BRAND CHOICE FACTORS

Rank No.	Brand choice factors
1	Authenticated Technical Information
2	Seminars / Conferences / CME Programmes.
3	Recommendation from friends / Teachers / Peers
4	Corporate Image.
5	Gifts from pharma companies

INFERENCE The prescribers have ranked the brand choice factors as listed in the table above, and the ranking is statistically significant The prescribers are in good agreement for the ranking.

5 3.1 9 WHAT PRESCRIBERS DO WITH THE PROMOTIONAL MATERIALS

The pharmaceutical companies distribute a plethora of promotional materials which are delivered to physicians, day in and day out. Many a physician has reported that they are not able to critically examine this material. The following table provides information on how the physicians deal with the promotional materials they receive. More than 66% of the physicians read the promotional materials at their convenience, while around 15% of the physicians preserve for future reference. About 17% of the physicians read the promotional materials promptly, while less than one percent of the physicians dump them to the wastebasket. The differences in the manner the promotional materials are dealt with, are statistically significant.

CHART 19
WHAT PRESCRIBERS DO WITH THE PROMOTIONAL MATERIALS

Sr.No	Action	Frequency	%
1	Go through immediately.	798	16.96
2	Read at convenience.	3146	66.88
3	Preserve for future reference.	724	15.39
4	Dump to wastebasket.	36	0.77
		N=4704	

WHAT PRESCRIBERS DO WITH THE PROMOTIONAL MATERIALS.

INFERENCE: Majority of the prescribers (over 66%) has stated that they read the promotional materials at their convenience. About 17% of the prescribers immediately go through the promotional materials; while just above 15% of the prescribers preserve them for future use. Less than 1% of the prescribers have claimed that they dump the promotional materials to wastebasket.

5.3.1.10 COPING WITH NEGATIVE FEEDBACK ABOUT PRODUCTS

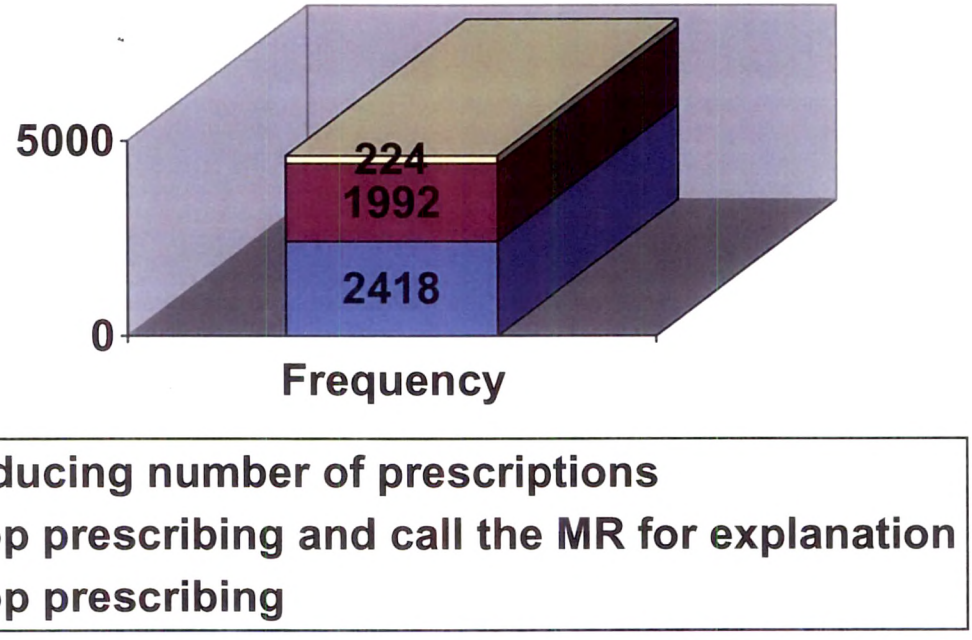
The feedback that the physicians receive from their patients about the medicines they prescribe shapes their prescribing habits. If a positive feedback is received the prescription decision is justified and the physicians continue prescribing the drug. If, however, a negative feedback is received the physicians react immediately. The responses to this question are tabulated below. Majority of the physicians would stop prescriptions (52.18%) or stop prescribing and call the medical representative of the

pharmaceutical company which promotes the product, for an explanation (42.99%). A very small number of physicians (4.83%) would reduce the number of prescriptions of such product. The differences in responses are statistically significant

CHART 20
COPING WITH NEGATIVE FEEDBACK

Sr. No.	Action	Frequency	%
1	Stop prescribing	2418	52.18
2	Stop prescribing and call the MR for explanation	1992	42.99
3	Reduce number of prescriptions	224	4.83

PRESCRIBERS' REACTION TO ADVERSE FEED BACK ABOUT MEDICINES



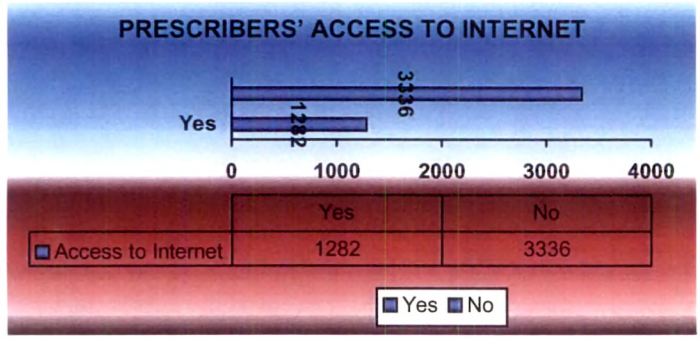
INFERENCE: When the physicians receive negative feedback about a pharmaceutical product, over 93% of them stop prescribing the product. Less than 7% physicians reduce the number of prescriptions of the product.

5.3.1.11 ACCESS TO INTERNET

Access to Internet enables the physicians to interact globally with professionals and seek help/advice on various disease conditions and new medicines. It is heartening to note that 27.76% of the clinicians in India have access to Internet, either at their residences or work places. This information provides an opportunity to pharmaceutical marketers for introducing Internet based promotional tools, which might be more cost-effective due to their wide reach at lower cost.

CHART 21
PRESCRIBERS' ACCESS TO INTERNET

Sr.No.	Access to Internet	Frequency	%
1	Yes	1282	27.76
2	No	3336	72.24
		N=4618	



INFERENCE More than one fourth of the physicians in India have an access to Internet, either at their clinic or at their residence.

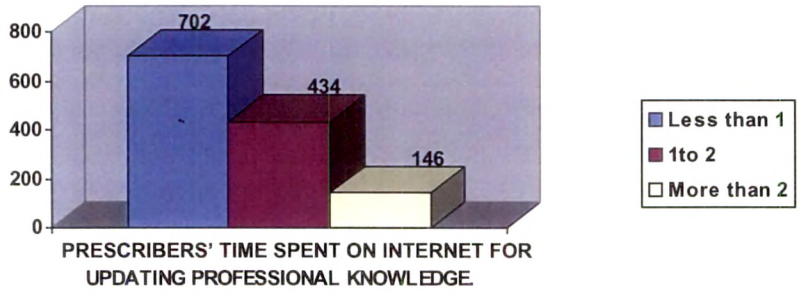
5.3.1.12 INTERNET USAGE

What is the present level of Internet usage by the physicians in India is an interesting question to be probed into. The generated data suggests that the average use of Internet by the physicians for updating their professional knowledge is about 0.91 hour (approximately 55 minutes) per day. It is by no way insignificant when

compared to such usage in the developed countries. It offers a sizeable opportunity to the pharmaceutical marketers to reach out to their target doctors by devising web based advertisement tools.

CHART 22
PRESCRIBERS' USAGE OF INTERNET.

Sr.No	Time(Hr.)	f	%
1	<1	702	54.76
2	1-2	434	33.85
3	> 2	146	11.39
		N=1282	
Average (Median) time spent on Internet		**0.91 hour.**	



PRESCRIBERS' TIME SPENT ON INTERNET FOR UPDATING PROFESSIONAL KNOWLEDGE.

INFERENCE The average daily usage of Internet by Indian doctors, for upgrading their professional knowledge is 0.91 hour or approximately 55 minutes.

5.3.2 Medical representatives' response analysis

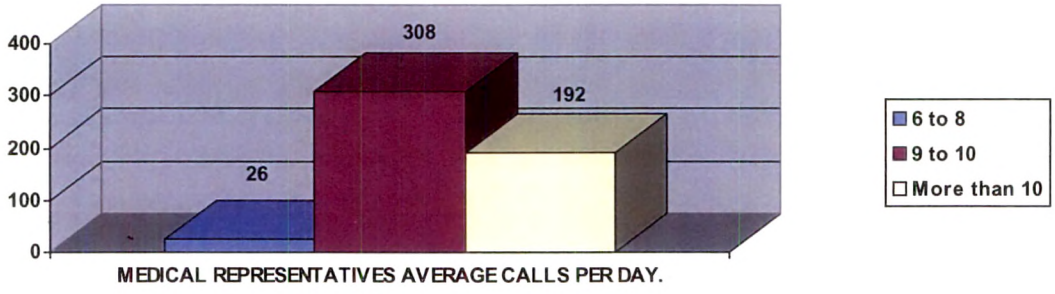
5.3.2.1 DOCTOR CALL AVERAGE

A medical representative is expected to call on 10-12 doctors a day. Most pharmaceutical companies direct their field force to prepare and periodically update a list of around 250-300 doctors, and arrange a monthly cycle of calls on these doctors. The data, presented hereunder, suggests that the doctor call average of the

medical representatives in India is 9.77. This is quite in confirmation with the industry average (refer to section 2.2).

CHART 23
MEDICAL REPRESENTATIVES' AVERAGE CALLS PER DAY.

Sr.No	Calls per day	f	%
1	6-8	26	4.94
2	9-10	308	58.56
3	>10	192	36.50
Average (Median) calls	***9.77 per day***	***N=526***	



MEDICAL REPRESENTATIVES AVERAGE CALLS PER DAY.

INFERENCE A medical representative, on an average, calls on approximately 10 doctors per day.

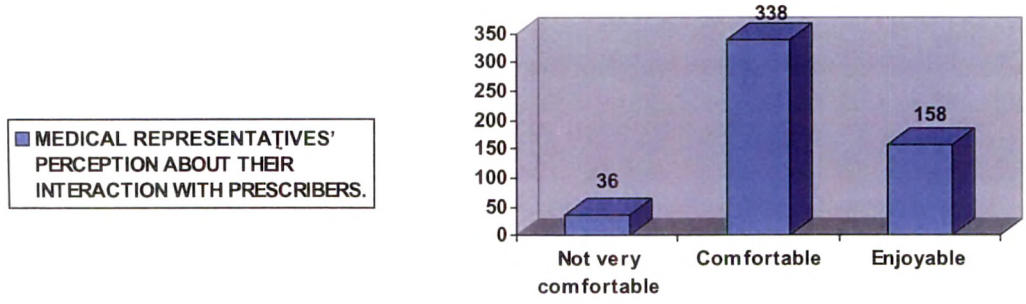
5.3.2.2 COMFORT OF INTERACTION WITH PHYSICIANS

The medical representatives' interaction with the physicians is not always comfortable. They are not always welcome at the physician's work place. The anterooms of physicians' clinics are often crowded with a large number of medical representatives pressing for time of the physicians. It is virtually unmanageable for the physicians to allocate sufficient time to each of them. This leads to stress in their inter-personal relationship, often resulting in a decreased comfort level between them. The data presented hereunder provides insight into this problem. An overwhelming majority of the medical representatives (63.53%) have defined their

interaction with the physicians as 'comfortable'. A very small number of respondents (6.77%) have reported their interaction with the physicians as 'not very comfortable', while 29.70% of the medical representatives have coined their interaction as 'enjoyable'. The differences are statistically significant.

CHART 24
MEDICAL REPRESENTATIVES' PERCEPTIONS ABOUT THEIR INTERACTION WITH PRESCRIBERS.

Sr. No.	Perception	F	%
1	Not very comfortable	36	6.77
2	Comfortable	338	63.53
3	Enjoyable	158	29.70



INFERENCE Medical representatives are not always comfortable with the physicians they call on. Although they meet them regularly, their comfort level with regard to their interaction with the physicians differs significantly. While over 63% of the medical representatives have labelled their interaction as comfortable, over 29% have claimed it to be enjoyable. A very small proportion of them (6.77%) have declared their interaction with the physicians as 'not very comfortable'

5.3.2.3 MRs' RANKING OF "FACTORS THAT MOTIVATE A BRAND CHOICE"

Medical representatives' ranking of the factors that motivate a brand choice as against the physicians' ranking of similar factors provides an insight into the thought

processes of these populations, who interact on daily basis. The ranking as listed hereunder differs from the ranking assigned by the physicians. The analysis of the differences is undertaken later on in this study. However Kendal's W calculated on this data is significant, evidencing agreement amongst respondents. (at $P \leq 0.01$, the calculated value of F is 48.18, which exceeds the critical value of F= 3.32)

TABLE 12
MEDICAL REPRESENTATIVES' RANKING OF BRAND CHOICE FACTORS

Rank No.	Brand Choice Factor
1	Authenticated Technical Information.
2	Corporate Image.
3	Seminars / Conferences / CME Programmes
4	Gifts from pharma companies.
5	Recommendation from friends / Teachers / Peers

INFERENCE The medical representatives have ranked the brand choice factors as listed above. The ranking is statistically significant and they are in good agreement in ranking these factors.

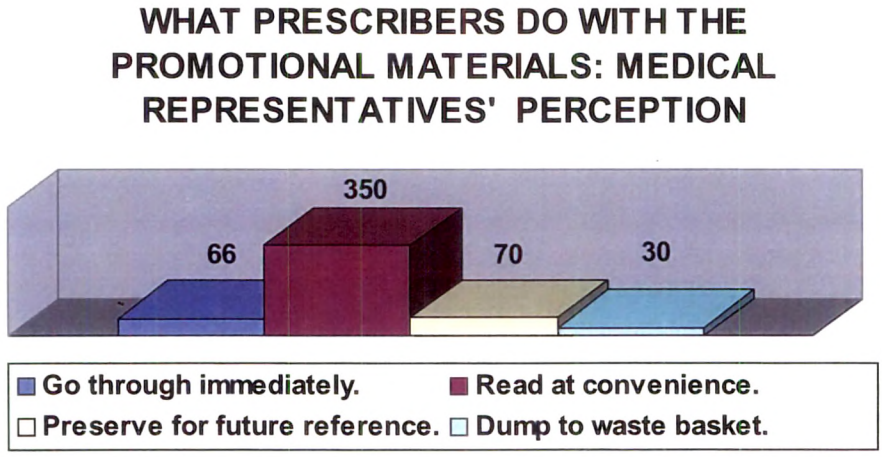
5.3.2.4 WHAT PRESCRIBERS DO WITH THE PROMOTIONAL MATERIALS· MRs' IMPRESSIONS

The medical representatives keep a close watch on what treatment is meted out to the promotional materials they distribute to the physicians. Their impressions are recorded below

CHART 25

WHAT PRESCRIBERS DO WITH THE PROMOTIONAL MATERIALS: MEDICAL REPRESENTATIVES' PERCEPTIONS

Sr.No	*Action*	*Frequency*	*%*
1	Go through immediately.	66	12.79
2	Read at convenience.	350	67.83
3	Preserve for future reference.	70	13.57
4	Dump to waste basket.	30	5.81
		N=516	



INFERENCE The medical representatives believe that over 67% of the doctors read the promotional materials at their convenience. According to them over 13% of the physicians preserve them for future use, while over 12% physicians read them as soon as the medical representatives deliver to them. The medical representatives believe that almost 6% of the doctors dump them to the wastebasket.

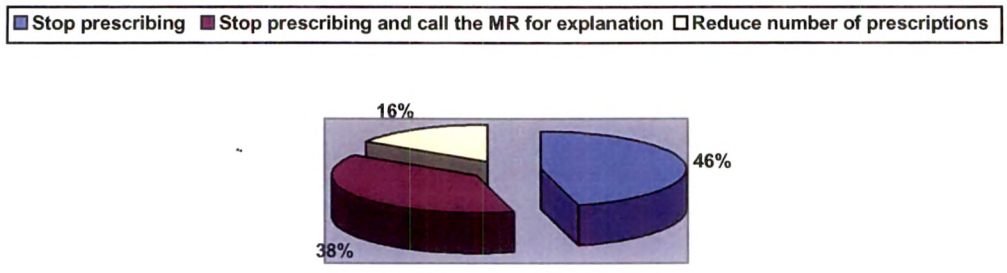
5.3.2.5 COPING WITH NEGATIVE FEEDBACK: MRs' IMPRESSIONS

A watchful medical representative observes the prescription trends of his patron physicians. When the flow of prescriptions slows down or stops, he immediately searches for clues that would let him know the reasons. He has definite ideas as to

how the physicians would react to negative feedback of his products. The impressions of the medical representatives are tabulated below.

CHART 26
PRESCRIBERS' REACTION TO ADVERSE FEEDBACK ABOUT MEDICINES: MEDICAL REPRESENTATIVES' PERCEPTIONS.

Sr.No	Action	Frequency	%
1	Stop prescribing	238	45.77
2	Stop prescribing and call the MR for explanation	200	38.46
3	Reduce number of prescriptions	82	15.77
		N= 520	



INFERENCE The medical representatives have opined that over 84% of the physicians stop prescribing a drug if they receive any negative feedback for the same from their patients or other sources. They believe that just over 15% of the physicians reduce number of prescriptions for the drug.

5.3.3 Comparative response analysis: Prescribers vs. MRs

5.3.3.1 BRAND CHOICE FACTORS

In the table hereunder, the rankings assigned by the prescribers and the medical representatives to the factors that motivate a brand choice, are presented.

TABLE 13

Comparison of Perceptions
Prescribers Vs Medical Representatives

(1) BRAND CHOICE FACTORS

Sr. No.	*Brand Choice Factor*	Rank by Prescribers'	Rank by MRs'
1	Authenticated Technical Information	1	1
2	Seminars / Conferences / CME Programmes	2	3
3	Recommendation from friends / Teachers / Peers	3	5
4	Corporate Image	4	2
5	Gifts from pharma companies.	5	4

The differences in ranking are significant. Rank correlation method has been employed to find out correlation amongst the respondents[4]. Coefficient of rank correlation is found to be 0.5. However this relationship is not found to be statistically significant. (At $P \leq 0.05$, Spearman's critical rank correlation value works out to be $\pm$ 0 9. As the coefficient of rank correlation falls within this limit, the null hypothesis is accepted, suggesting lack of relationship between rankings).

INFERENCE The physicians and the medical representatives have assigned different ranking to the brand choice factors, which lead to the selection of a brand for prescription. While they agree that authenticated technical information is the most important brand choice factor, their ranking of other factors differs significantly.

5.3.3.2 WHAT PRESCRIBERS DO WITH THE PROMOTIONAL MATERIALS

On one hand we have prescribers' opinion as to what they do with the promotional materials they receive, and on the other hand we have MRs' impressions about the

fate of the promotional materials in the hands of the prescribers. The data hereunder depicts the differences between prescribers' opinion and MRs' impressions

TABLE 14
COMPARATIVE ANALYSIS: THE FATE OF PROMOTIONAL MATERIALS

Sr. No	Action	Prescribers' Opinion		MRs' perception	
		f	%	f	%
1	Go through immediately.	798	16.96	66	12.79
2	Read at convenience.	3136.	66.88	350	67.83
3	Preserve for future reference.	724	15.39	70	13.57
4	Dump to waste basket.	36	0.77	30	5.81
		N= 4694		N=516	

In order to find out whether the differences are statistically significant, the Chi-square 'goodness of fit' test was employed. The calculated chi-square value (34.24) exceeded the critical chi-square value (7.81, at $P \leq 0.05$ with 3 df), disproving the null hypothesis that there is no difference between prescribers' opinion and MRs' perception.

INFERENCE: The physicians' opinion and the medical representatives' impression regarding treatment meted out to the promotional materials distributed by the pharmaceutical organizations differ significantly. While they seem to be in agreement as regards the proportion of physicians who read the promotional materials at their convenience, they are not in accord when they opine on what proportion of the physicians dump the promotional materials to wastebasket Less than 1% of doctors have agreed that they dump the promotional materials to waste basket; whereas the

medical representatives believe that this proportion is six times more than that of the prescribers

5.3.3.3 COPING WITH NEGATIVE FEEDBACK: PRESCRIBERS' OPINION vs. MRs' IMPRESSION

The comparative data on how the physicians cope up with negative feedback from their patients regarding the efficacy/safety of the medicines they prescribe is tabulated hereunder

TABLE 15
COMPARATIVE ANALYSIS:COPING WITH ADVERSE FEEDBACK

Sr. No	Action	Prescribers' Opinion		MRs' perception	
		f	%	f	%
1	Stop prescribing	2418	52.18	238	45.77
2	Stop prescribing and call the MR for explanation	1992	42.99	200	38.46
3	Reduce number of prescriptions	224	4.83	82	15.77
		N=4634		N=520	

Whether the differences were significant or not was tested using 'goodness of fit' test. The calculated chi-square value (26) was significantly higher than the critical value 5.971 (at $P \leq 0.05$ and 2 df). Thus it is evident that prescribers' opinion and medical representatives' impression significantly differ on this aspect.

INFERENCE The physicians' opinion and the medical representatives' impression with regard to the effect on physicians' prescription behaviour, in case of negative feed back on a drug, differ significantly. While they seem to agree as far as the proportion of physicians stopping the prescription of a drug on receiving negative

feedback is concerned, they significantly differ on the issue of the proportion of the physicians reducing the number of prescriptions of the drug.

5.3.4 Internet connection: Prescribers vs. their Attendants

5.3.4.1 HOW MANY DOCTORS OWN AN INTERNET CONNECTION

TABLE 16
COMPARATIVE ANALYSIS: INTERNET CONNECTION

Sr No	Response	Prescribers No.	%	Attendants No.	%
1	**Yes**	1282	27 76	27	32.14
2	**No**	3386	72.24	57	67.86
		N= **4618**		N=**84**	

Both the prescribers and their attendants were asked, whether the physicians owned an Internet connection or not. The data is plotted hereinabove. Whether the differences were significant or not was tested using chi-square test. The test statistic worked out to 0.96. The critical value of x^2 with 1 df is 3 84. The null hypothesis that there is no difference of opinion between the two groups therefore cannot be rejected.

INFERENCE: The opinions of the prescribers and their attendants, with regard to whether a prescriber owns an Internet connection or not, match well; as there is no significant difference in the percentage of prescribers and attendants opining in favour or against. Therefore it can be concluded that about one fourth of the physicians in India own an Internet connection, either at clinic or at residence.

5 3 4 2 TIME SPENT ON INTERNET BY PHYSICIANS

TABLE 17
COMPARATIVE ANALYSIS: TIME SPENT ON INTERNET

Sr. No.	Time (hour)	Prescribers No	Cum. %	Attendants No	Cum %
1	< 1 hour	702	54.76	11	40.74
2	1-2 hours	434	88.61	14	92 59
3	> 2 hours	146	100	2	100
		N=1282		N=27	
Average (Median time)		0 91 hour		1.20 hour	

Whether the differences in average time (median time) spent by the physicians as reported by the physicians themselves and their attendants were statistically significant or not, was tested using the Median method. The grand median worked out to 0.917 hour. The calculated chi-square test statistic, x^2= 1.27 was less than the critical value at $P \leq 0.05$, x^2= 3.84. Therefore the null hypothesis that there is no difference in the median time spent by the physicians on the Internet, as reported by the physicians themselves and their attendants cannot be rejected.

INFERENCE: The physicians have stated that they spend an average of 0.91 hour per day on Internet for updating their professional knowledge. Their attendants have reported this time to be 1.2 hour. However there is no statistical difference between what the physicians have stated and what their attendants have opined. In fact in statistical terms their opinions tally.

5.4 ANALYSIS OF PRESCRIBERS' BELIEF CONSTRUCTS

The secondary data suggested the following major factor groups, which could be responsible for affecting the prescription behaviour of physicians.

1. Patient-Doctor relationship
2 Medical Representatives
3 Promotion
4. Price
5. Miscellaneous factors

Several belief constructs were prepared for each of the groups based on various psychological parameters. Some of the belief constructs were purposefully devised to measure the same underlying parameter, which were later on used to check the consistency of the data. A six point Likert scale was used The responses were fed to a computer and frequency charts were generated. These frequencies were assigned weights as illustrated below.

Point on Likert Scale	Weight assigned
1	5
2	4
3	3
4	2
5	1
6	0

Weighted frequencies were calculated by applying weights as above to the observed frequencies. Treating the Likert scale as an interval scale, the Mean and Standard deviation for each of the belief constructs were calculated. The Mean was tested for significance The data compiled as above is appended hereto

TABLE 18

PRESCRIBERS' IMPRESSIONS

FACTOR: PATIENT DOCTOR RELATIONSHIP

Sr. No.	Scale Item	Mean — X	Std Dev S	1 n % Cum %	2 n % Cum %	3 n % Cum %	4 n % Cum %	5 n % Cum %	6 n % Cum %	Sig of $\bar{x}$
1.	If a patient has expressed a request for prescription, the doctor generally obliges. Strongly Agree |_____| Strongly Disagree	3.04	1.45	610 12.74% 12.74%	1596 33.33% 46.07%	1288 26.90% 72.97%	360 7.52% 80.49%	536 11.20% 91.69%	398 8.31% 100%	Yes
2	A doctor's relationship with patient will decide whether or not he will agree with patient's request. Strongly Agree |_____| Strongly Disagree	2.67	1.53	476 9.97% 9.97%	1220 25.54% 35.51%	1226 25.67% 61.18%	495 10.37% 71.55%	834 17.46% 89.01%	525 10.99% 100%	Yes
3	A doctor will agree if a patient requests for generic version of drug instead of a branded one. Strongly Agree |_____| Strongly Disagree	1.95	1.75	594 12.39% 12.39%	544 11.35% 23.74%	616 12.85% 36 59%	722 15.06% 51.65%	928 19.36% 71.01%	1390 28.99% 100%	Yes
4	If a patient requests for prescription of a drug which is non efficacious, the doctor will oblige for sake of his relationship with the patient. Strongly Agree |_____| Strongly Disagree	1.02	1.45	144 3% 3%	387 8.07% 11.07%	290 6.04% 17.11%	494 10.30% 27.41%	778 16.21% 43.62%	2705 56.38% 100%	Yes

Sr. No.	Scale Item	Mean $\bar{X}$	Std Dev S	1 n % Cum %	2 n % Cum %	3 n % Cum %	4 n % Cum %	5 n % Cum %	6 n % Cum %	Sig of $\bar{x}$
5	If a patient requests for prescription of a drug, which is unsafe, the doctor will still prescribe it for the sake of his relationship with the patient. Strongly Agree └┴┴┴┴┴┘ Strongly Disagree	1.18	1.34	104 2.17% 2.17%	530 8.88% 11.05%	236 4.92% 15.97%	806 16.79% 32.76%	1122 23.38% 56.12%	2106 43.88% 100%	Yes
6	If a patient does not like a drug, the doctor still prescribes it if he thinks it is necessary. Strongly Agree └┴┴┴┴┴┘ Strongly Disagree	3.49	1.53	1576 32.89% 32.89%	1292 26.96% 59.85%	854 17.82% 77.67%	430 8.97% 86.64%	276 5.76% 92.40%	364 7.60% 100%	Yes
7	If a patient is already on a medicine and is comfortable with it, the doctor will still change it by the medicine, which he generally prescribes. Strongly Agree └┴┴┴┴┴┘ Strongly Disagree	2.15	1.72	340 7.10% 7.10%	1232 25.70% 32.8%	562 11.73% 44.53%	574 11.98% 56.51%	838 17.49% 74%	1246 26% 100%	Yes

TABLE 19
PRESCRIBERS' IMPRESSIONS
FACTOR: MEDICAL REPRESENTATIVES

Sr. No.	Scale Item	Mean $\bar{x}$	Std Dev S	1 n % Cum %	2 n % Cum %	3 n % Cum %	4 n % Cum %	5 n % Cum %	6 n % Cum %	Sig of $\bar{x}$
1	MRs are important source of information. Strongly Agree |||||| Strongly Disagree	3.91	1.10	1712 35.92% 35.92%	1546 32.44% 68.36%	1151 24.15% 92.51%	143 3% 95.51%	150 3.15% 98.66%	64 1.34% 100%	Yes
2	If doctors trust MRs, they are more likely to prescribe their products. Strongly Agree |||||| Strongly Disagree	3.58	1.36	1358 28.48% 28.48%	1608 33.73% 62.21%	958 20.09% 82.30%	328 6.88% 89.18%	322 6.75% 95.93%	194 4.07% 100%	Yes
3	Doctors do not necessarily prescribe the products of MRs who regularly meet them. Strongly Agree |||||| Strongly Disagree	2.71	1.55	750 15.87% 15.87%	947 20.04% 35.91%	840 17.77% 53.68%	954 19.89% 73.57%	849 18.26% 91.83%	386 6.17% 100%	Yes
4	Doctors discourage MRs from making frequent visits to their clinics. Strongly Agree |||||| Strongly Disagree	2.36	1.58	580 12.26% 12.26%	732 15.48% 27.74%	778 16.45% 44.19%	988 20.88% 65.07%	1028 21.74% 86.81%	624 13.19% 100%	Yes

5	Doctors are inclined to prescribe the products of MRs who appeal for sympathy. Strongly Agree |_____| Strongly Disagree	2.49	1.58	368 7.76% 7.76%	1208 25.46% 33.22%	1070 22.56% 55.78%	586 12.35% 68.13%	750 13.91% 82.04%	762 17.96% 100%	No
6	When doctors accept gifts, they are obliged to prescribe the products of the company offering the gifts. Strongly Agree |_____| Strongly Disagree	1.44	1.72	370 7.81% 7.81%	655 13.81% 21.62%	950 20.05% 41.67%	749 15.80% 57.47%	850 17.93% 75.40%	1166 24.60% 100%	Yes
7	Doctors prescribe the products of MRs, who possess adequate product knowledge and communicate effectively. Strongly Agree |_____| Strongly Disagree	3.75	1.29	1710 35.91% 35.91%	1318 27.68% 63.59%	1050 21.97% 85.56%	292 6.21% 91.77%	280 5.88% 97.65%	112 2.35% 100%	Yes
8	Doctors do not generally get influenced by the name of a pharma company. Strongly Agree |_____| Strongly Disagree	2.72	1.56	790 16.04% 16.04%	903 18.33% 34.37%	1108 22.49% 56.86%	832 16.89% 73.75%	843 17.11% 90.86%	450 9.14% 100%	Yes
9	Doctors like MRs, who are honest about their sales talk and do not use misleading statements about their products. Strongly Agree |_____| Strongly Disagree	4.12	1.12	2254 47.39% 47.39%	1446 30.41% 77.80%	648 13.62% 91.42%	188 3.95% 95.37%	160 3.10% 98.47%	60 1.53% 100%	Yes

10	Doctors do not encourage the MRs to develop personal relationship with them as this generally leads to pressure for more prescriptions. Strongly Agree └─┴─┴─┴─┴─┘ Strongly Disagree	3.11	1.57	1162 24.45% 24.45%	1092 22.98% 47.43%	812 17.09% 64.52%	818 17.21% 81.73%	522 10.99% 92.72%	346 7.28% 100%	Yes
11	Doctors like to talk to MRs who are true to their commitments. Strongly Agree └─┴─┴─┴─┴─┘ Strongly Disagree	4.12	1.07	2238 47.18% 47.18%	1422 29.97% 77.15%	740 15.61% 92.75%	166 3.50% 96.25%	136 2.86% 99 11%	42 0.89% 100%	Yes
12	Doctors do not appreciate when the MRs pressurize them to prescribe their products. Strongly Agree └─┴─┴─┴─┴─┘ Strongly Disagree	3.06	1.53	1026 21.59% 21.59%	1134 23.86% 45.45%	944 19.87% 65.32%	666 14.02% 79.34%	724 15.23% 94.57%	258 5.43% 100%	Yes
13	Doctors are inclined to prescribe the products of MRs who possess overall pleasing personality. Strongly Agree └─┴─┴─┴─┴─┘ Strongly Disagree	2.50	1.55	482 10.19% 10.19%	1022 20.73% 31.78%	981 21.59% 52.51%	711 15.03% 67.54%	974 20.58% 88.12%	562 11.88% 100%	No
14	Doctors are more sympathetic to lady MRs. Strongly Agree └─┴─┴─┴─┴─┘ Strongly Disagree	1.62	1.47	204 4.32% 4.32%	354 7.50% 11.82%	781 16.54% 28.36%	926 19.61% 47.97%	998 21.13% 69.10%	1459 30.90% 100%	Yes

15	Doctors do not like the MRs, who take more of their time for detailing their products. Strongly Agree ⌊_____⌋ Strongly Disagree	3.08	1.62	1264 26.63 % 26.63 %	888 18.71 % 45.34 %	858 18.08 % 63.42 %	860 18.12 % 81.54 %	430 9.06 % 90.60 %	446 9.40 % 100 %	Yes
16	Demanding MRs generally get more attention and prescriptions from doctors. Strongly Agree ⌊_____⌋ Strongly Disagree	2.70	1.59	636 13.46 % 13.46 %	1104 23.36 % 36.82 %	1049 22.19 % 59.01 %	706 14.94 % 73.95 %	619 13.10 % 87.05 %	612 12.90 % 100 %	Yes
17	Doctors believe that MRs are an asset to their practice and generally enjoy meeting them. Strongly Agree ⌊_____⌋ Strongly Disagree	3.59	1.27	1262 26.55 % 26.55 %	1562 32.85 % 59.40 %	1174 24.70 % 84.10 %	362 7.61% 91.70 %	248 5.23 % 96.93 %	146 3.07 % 100 %	Yes
18	Doctors feel that the MRs always try to manipulate them to prescribe their products. Strongly Agree ⌊_____⌋ Strongly Disagree	2.93	1.35	538 11.44 % 11.44 %	1262 26.84 % 38.28 %	1242 26.42 % 64.70 %	840 17.86 % 82.56 %	614 13.06 % 95.62 %	206 4.38 % 100 %	Yes
19	Doctors are more inclined to prescribe the products of MRs who possess better educational background. Strongly Agree ⌊_____⌋ Strongly Disagree	3.21	1.50	1112 23.58 % 23.58 %	1292 27.40 % 50.98 %	881 18.68 % 69.66 %	564 11.96 % 81.62 %	619 13.12 % 94.74 %	248 5.26 % 100 %	Yes

TABLE 20
PRESCRIBERS' IMPRESSIONS
FACTOR: PROMOTION

Sr. No.	Scale Item	Mean $\bar{x}$	Stad Dev S	1 n % Cum %	2 n % Cum %	3 n % Cum %	4 n % Cum %	5 n % Cum %	6 n % Cum %	Sig of $\bar{x}$
1	Doctors decide a drug molecule when they are briefed with its technical information. Strongly Agree |_____| Strongly Disagree	4.31	0.85	2384 50.25% 50.25%	1608 33.90% 84.15%	637 13.43 % 97.58 %	64 1.34 % 98.62 %	32 0.68 % 99.60 %	19 0.40 % 100 %	Yes
2	Doctors prescribe brands, which are at the top of their mind. Strongly Agree |_____| Strongly Disagree	4.00	1.01	1724 36.48 % 36.48 %	1776 37.58 % 74.06 %	870 18.41 % 92.47 %	240 5.08 % 97.55 %	80 1.69 % 99.24 %	36 0.76 % 100 %	Yes
3	Active promotion, advertisement and sales pressure from drug companies convince the doctors to prescribe a product. Strongly Agree |_____| Strongly Disagree	2.52	1.57	568 12.00 % 12.00 %	881 18.62 % 30.62 %	1014 21.43 % 52.05 %	920 19.44 % 71.49 %	695 14.69 % 86.18 %	654 13.82 % 100 %	No
4	Doctors do not prescribe a product of a company, if the MR of that company does not meet them regularly. Strongly Agree |_____| Strongly Disagree	3.27	1.68	1552 32.54 % 32.54 %	1054 22.09 % 54.63 %	682 14.30 % 68.93 %	534 11.20 % 80.13 %	506 10.60 % 90.73 %	442 9.27 % 100 %	Yes

5	Doctors believe that without the pharma industry's support, there would be a lack of funding for important educational programmes for the doctors. Strongly Agree └┴┴┴┴┴┘ Strongly Disagree	2.92	1.34	510 10.80 % 10.80 %	1235 26.14 % 36.94 %	1438 30.44 % 67.38 %	693 14.67 % 82.05 %	626 13.25 % 95.30 %	222 4.70 % 100 %	Yes
6	Doctors are inclined to prescribe more of a product when they receive more samples. Strongly Agree └┴┴┴┴┴┘ Strongly Disagree	2.74	1.58	618 13.02 % 13.02 %	1194 25.14 % 38.16 %	1082 22.79 % 60.95 %	652 13.73 % 74.68 %	610 12.85 % 87.53 %	592 12.42 % 100 %	Yes

TABLE 21
PRESCRIBERS' IMPRESSIONS
FACTORS: PRICE & MISCELLANEOUS

Sr. No.	Scale Item	Mean $\bar{x}$	Std Dev S	1 n % Cum %	2 n % Cum %	3 n % Cum %	4 n % Cum %	5 n % Cum %	6 n % Cum %	Sig of $\bar{x}$
1	Doctors are generally price conscious, when they prescribe products to their patients. Strongly Agree └||||||┘ Strongly Disagree	3.70	1.29	1562 32.93 % 32.93 %	1508 31.78 % 64.71 %	814 17.16 % 81.76 %	488 10.29 % 92.16 %	286 6.03 % 98.19 %	86 1.81 % 100 %	Yes
2	Doctors do not mind prescribing costly products to their patients if they believe the patients can afford. Strongly Agree └||||||┘ Strongly Disagree	3.16	1.62	1012 21.43 % 21.43 %	1528 32.36 % 53.79 %	866 18.34 % 72.13 %	356 7.54 % 79.67 %	430 9.11 % 88.78 %	530 11.22 % 100 %	Yes
3	Doctors are inclined to prescribe a product if their doctor friends or senior colleagues recommend it. Strongly Agree └||||||┘ Strongly Disagree	2.94	1.34	584 12.34 % 12.34 %	1106 23.36 35.70 %	1496 31.60 % 67.30 %	760 16.05 % 83.35 %	566 12.06 % 95.31 %	222 4.69 % 100 %	Yes
4	Doctors prescribe more of a product, when they receive positive feedback about it from their patients. Strongly Agree └||||||┘ Strongly Disagree	4.25	0.97	2418 51.01 % 51.01 %	1483 31.29 % 82.30 %	588 12.41 % 94.71 %	145 3.05 % 97.76 %	76 1.61 % 99.37 %	30 0.63 % 100 %	Yes

TABLE 22
PRESCRIBERS' IMPRESSIONS
ALTERNATIVE METHODS

Sr. No.	Scale Item	Mean $\bar{x}$	Std Dev S	1 n % Cum %	2 n % Cum %	3 n % Cum %	4 n % Cum %	5 n % Cum %	6 n % Cum %	Sig of $\bar{x}$
1	Doctors like to get information from other than regular sources if the same is authentic and saves their time & energy. Strongly Agree |_____| Strongly Disagree	3.86	1.12	1446 30.84 % 30.84 %	1936 41.30 % 72.14 %	850 18.13 % 90.27 %	208 4.44 % 94.71 %	162 3.46 % 98.17 %	86 1.83 % 100 %	Yes
2	Doctors prefer to get information from the Internet about prescription medicines. Strongly Agree |_____| Strongly Disagree	3.57	1.23	1126 24.16 % 24.16 %	1662 35.67 % 59.83 %	1034 22.19 % 82.02 %	500 10.73 % 92.75 %	242 5.19 % 97.94 %	96 2.06 % 100 %	Yes
3	Doctors like to read on-line journal articles /new product information on the Internet. Strongly Agree |_____| Strongly Disagree	3.32	1.36	972 20.96 % 20.96 %	1494 32.21 % 53.17 %	966 20.83 % 74.00 %	556 11.79 % 85.79 %	536 11.75 % 97.54 %	114 2.46 % 100 %	Yes
4	Doctors appreciate it more if company sends them the promotional materials by courier/post rather than MRs calling on them. Strongly Agree |_____| Strongly Disagree	2.86	1.48	638 13.63 % 13.63 %	1296 27.69 % 41.32 %	830 17.74 % 59.06 %	910 19.44 % 78.50 %	692 14.79 % 93.29 %	314 6.71 % 100 %	Yes

5	Direct to consumers advertisement (DTCA) can be useful in India. Strongly Agree |_____| Strongly Disagree	2.55	1.59	574 12.38 % 12.38 %	958 20.65 % 33.03 %	954 20.57 % 53.60 %	796 17.16 % 70.76 %	714 15.40 % 86.16 %	640 13.84 % 100 %	Yes
6	Doctors won't mind prescribing drugs, their patients have heard about from journals, Internet etc. Strongly Agree |_____| Strongly Disagree	3.21	1.31	756 16.15 % 16.15 %	1414 30.22 % 46.37 %	1340 28.63 % 75 %	632 13.00 % 88.50 %	326 17.20 % 95.70 %	212 4.30 % 100 %	Yes
7	Doctors believe that Internet is a powerful medium for keeping them update in their profession. Strongly Agree |_____| Strongly Disagree	3.43	1.28	1146 24.17 % 24.17 %	1218 26.76 % 50.93 %	1308 28.17 % 79.10 %	546 11.77 % 90.87 %	326 7.02 % 97.89 %	98 2.11 % 100 %	Yes
8	If doctors were faced with difficult disease situations/conditions they would prefer to approach interactive sites on the Internet for help. Strongly Agree |_____| Strongly Disagree	3.82	1.17	1544 33.30 % 33.30 %	1636 35.29 % 68.59 %	820 17.69 % 86.28 %	390 8.41 % 94.69 %	190 14.10 % 98.79 %	56 1.21 % 100 %	Yes

Significance level P≤ 0.05

INFERENCE:

The hypotheses posited in Part II, derived from the secondary data, were tested using the 'testing of means' method.[9] The mean and standard deviation for each of the perceptual constructs were calculated and it was found out whether the mean was significantly different from the average mean, i.e. 2.5. (As per the weight allocation, the maximum weight was 5 and the minimum was 0 Therefore if the mean of a perceptual construct did not significantly differ from the average, i.e 2.5, the physicians were believed to have a neutral opinion for that construct)

The hypothesis was stated as under:

H_0 $\mu = 2.5$

H_1 $\mu \neq 2.5$

The significance level was set at $P \leq 0.05$. Z distribution was used as the sample size was bigger than 30.

5.4.1 Patient demand for a prescription

1. *Patient's request for a prescription:* The hypothesis, that a doctor obliges a patient by a prescription if he perceives that the patient expects a prescription, is supported. (Mean 3.04 is significantly higher than 2.5).
2. *Patient-doctor relationship:* The hypothesis, that whether a doctor obliges a perceived request for prescription depends on the patient-doctor relationship, is supported. (Mean 2.67 is significantly higher than 2.5)
3. *Prescribing a Non-efficacious drug:* The hypothesis, that a doctor may prescribe a non-efficacious drug on patient's request does not get supported. (Mean 1.02 is significantly lower than 2.5)

4. *Prescribing an unsafe drug:* The hypothesis that a doctor will prescribe an unsafe drug on patient's request does not get supported. (Mean 1 18 is significantly lower than 2.5)

5.4.2 Patient demand for a generic prescription

The hypothesis that the doctor agrees to the request for making out a generic prescription instead of a branded drug prescription does not get supported. (Mean 1.95 is significantly lower than 2.5).

5.4.3 Influence of original prescriber

The hypothesis, that the influence of the original prescriber and the patient's dependence on the drug do not convince the prescribers from changing the prescription does not get supported. (Mean 2.15 is significantly lower than 2.5). It can be inferred that the influence of the original prescriber generally prevails.

5.4.4 Patient's favourable-unfavourable attitudes toward a drug

The hypothesis that, even if a patient has unfavourable attitude toward a drug, the clinician will still prescribe the drug gets supported. (Mean 3.49 is significantly higher than 2.5)

5.4.5 Medical representatives: a source of information

1. The hypothesis, that medical representatives are an important source of information and when they provide information and educational support to the clinicians, the physicians are inclined to be more favourably disposed to them gets supported. (Mean 3.91 is significantly higher than 2.5)

2. The hypothesis that doctors believe that a medical representative is an asset to their practice and they generally enjoy meeting him gets supported (Mean 3.59 is significantly higher than 2.5)

5.4.6 Trustworthiness of a medical representative

1. The hypothesis, that when physicians trust a medical representative they are more likely to prescribe his products, gets supported. (Mean 3.58 is significantly higher than 2.5)
2. The hypothesis, that medical representatives who are honest about their sales talk and do not make misleading statements in favour of their products are liked by the prescribers, gets supported. (Mean 4.12 is significantly higher than 2.5) Over 77% physicians generally or strongly agreed with the perceptual construct.
3 The hypothesis that doctors like to talk to and favour the medical representatives who are true to their commitment gets supported (Mean 4.12 is significantly higher than 2.5)

5.4.7 Selling techniques of medical representatives

1. The hypothesis that even if a medical representative regularly calls on the physicians, they do not necessarily prescribe his products gets supported. (Mean 2.71 is significantly higher than 2.5)
2. The hypothesis that the physicians do not appreciate sympathy appeals for prescription does not get supported. The physicians' opinion is neutral. (Mean 2.49 is not significant)

3 The hypothesis that when doctors accept gifts, they are obliged to prescribe the product of the company offering the gifts does not get supported. (Mean 1.44 is significantly lower than 2.5)

4. The hypothesis that the physicians do not appreciate when the medical representatives pressurize them for prescribing products gets supported. (Mean 3.06 is significantly higher than 2.5)
5. The hypothesis that the clinicians do not like the medical representatives who take more of their time for detailing their products gets supported. (Mean 3.08 is significantly higher than 2.5)
6. The hypothesis that demanding medical representatives generally get more attention and prescriptions from doctors gets supported. (Mean 2.70 is significantly higher than 2.5)
7. The hypothesis that the medical representatives try to manipulate the doctors to get prescriptions of their products is supported. (Mean 2.93 is significantly higher than 2.5)
8. The hypothesis that lady medical representatives are likely to get sympathy prescriptions from physicians is not supported. (Mean 1.62 is significantly lower than 2.5)

5.4.8 Educational background of medical representatives

1. The hypothesis that doctors prescribe the products of medical representatives who possess adequate product knowledge and communicate effectively gets supported. (Mean 3.75 is significantly higher than 2.5) Over 63% of the doctors have generally or strongly agreed with the perceptual construct.

2 The hypothesis that doctors are inclined to prescribe the products of medical representatives who possess overall pleasing personality gets neither supported not disproved. (Mean 2.50)

3. The hypothesis that better educational background of a medical representative helps him earn favour of the physicians, get supported. (Mean 3 21 is significantly higher than 2.5)

5.4.9 Personal relationship with physicians

1. The hypothesis that doctors discourage medical representatives from making frequent visits to their clinics does not get supported (Mean 2.36 is significantly lower than 2.5)
2. The hypothesis that clinicians do not generally get influenced by the name of a company gets supported. (Mean 2.72 is significantly higher than 2 5)
3 The hypothesis that doctors do not encourage the medical representatives to develop personal relationship with them as this generally leads to pressure for more prescriptions, gets supported. (Mean 3.11 is significantly higher than 2.5)

5.4.10 Samples

The hypothesis that sampling of drugs to physicians affects their prescription behaviour and leads to prescription generation for sampled products gets supported. (Mean 2.74 is significantly higher than 2.5)

5.4.11 Authenticated technical information

The hypothesis that product information from authentic sources positively affects the prescription behaviour of physicians and that they decide a drug molecule based on such information gets supported. (Mean 4.31 is significantly higher than 2.5). Over 84% physicians generally or strongly agreed with this perceptual construct.

5.4.12 CME programmes for physicians

The hypothesis that sponsoring CME programmes, seminars, workshops, conferences and offering hospitality to the medical profession is a factor that affects the prescription behaviour of the physicians, gets supported. (Mean 2.92 is significantly higher than 2.5)

5.4.13 Advertisement & publicity

The hypothesis that drug advertisement and publicity are the factors those motivate prescriptions from physicians neither gets supported nor is disproved. (Mean 2.52 is not significant)

5.4.14 Peer group influence

The hypothesis that peer group influence is a factor that affects the prescription behaviour of physicians gets supported. (Mean 2.94 is significantly higher than 2.5)

5.4.15 Top-of-mind brand

The hypothesis that the doctors choose the top-of-the mind brand for prescription gets supported (Mean 4 is significantly higher than 2 5) Over 74% physicians have generally or strongly agreed with this perceptual construct.

5.4.16 Price and affordability

1. The hypothesis that the price is a factor that affects the prescription behaviour of physicians and that the doctors are generally price conscious while prescribing medicines to their patients gets supported. (Mean 3.70 is significantly higher than 2 5)
2. The hypothesis that a doctor prescribes a costly drug to his patient if he knows that the patient can afford it gets supported (Mean 3 16 is significantly higher than 2.5)

5.4.17 Feedback from patients

The hypothesis that doctors prescribe more of a product when they receive positive feedback about it from their patients gets supported. (Mean 4.25 is significantly higher than 2.5) Over 80% of the physicians have generally or strongly agreed with this statement

5.4.18 Alternative methods of promotion

1 The hypothesis that physicians would like to get information about prescription medicines from sources other than conventional ones, if the sources are authentic and save their time and energy, gets supported. (Mean 3.86 is significantly higher than 2.5) Over 72% physicians have generally or strongly agreed with this perceptual construct.

2. The hypothesis that doctors prefer to get information from the Internet about prescription medicines gets supported. (Mean 3.57 is significantly higher than 2.5) Close to 60% of the physicians have generally or strongly agreed with this perceptual construct.

3. The hypothesis that doctors like to read online journal articles/ new product information on the Internet gets supported (Mean 3.32 is significantly higher than 2 5) Over 53% of the physicians have generally or strongly agreed with this statement.
4. The hypothesis that Internet is a powerful medium for keeping them update in their profession gets supported (Mean 3.43 is significantly higher than 2.5) Over 50% physicians have generally or strongly agreed with this perceptual construct.
5 The hypothesis that when faced with difficult disease situation/condition the doctors would prefer to approach interactive sites on the Internet for help, gets supported. (Mean 3.82 is significantly higher than 2.5) Over 68% physicians have generally or strongly supported this statement.
6. The hypothesis that direct to consumer advertisement (DTCA) can be useful in India has not been wholeheartedly endorsed by the physicians. Although the Mean 2.55 is significant at 95% confidence level, it is not very far from 2 5, the average value, suggesting neutral opinion on this belief construct.
7. The hypothesis that the physicians would not mind if their patients discussed with them about some medicines about which they have got the information from journals, Internet etc , and would like to prescribe these medicines to their patients, gets supported. (Mean 3.21 is significantly higher than 2.5) 75% physicians have agreed that they would not mind prescribing under such circumstances.
8. The hypothesis that if pharmaceutical companies send them promotional materials by courier/postal services rather than their medical representatives

calling on the physicians and consuming their time and energy, gets supported (Mean 2 86 is significantly higher than 2 5)

5.5 ANALYSIS OF MRs' BELIEF CONSTRUCTS

The medical representatives were also required to respond to belief constructs, which were similar to those used in the questionnaire for the prescribers. A similar Likert scale with six points was used Similar data treatment was given to the responses

The frequency data together with Mean, Standard deviation and significance of Mean is tabulated in the following pages.

It may be appreciated that comparison between the responses of the prescribers and the medical representatives would let us know whether or not the pharmaceutical industry has the correct estimate of the expectations of the physicians. If the promotional efforts of the pharmaceutical marketers are not in consonance with the expectations of the physicians, it is quite likely that their spending would not be in the right direction.

It is therefore expedient and necessary to compare this data For this purpose, the medical representatives were asked to respond to belief constructs, which were designed on similar lines.

TABLE 23
MEDICAL REPRESENTATIVES' IMPRESSIONS
FACTOR: MEDICAL REPRESENTATIVES

Sr. No.	Scale Item	Mean $\bar{x}$	Std Dev S	1 n % Cum %	2 n % Cum %	3 n % Cum %	4 n % Cum %	5 n % Cum %	6 n % Cum %	Sig of $\bar{x}$
1	MRs are an important source of information. Strongly Agree ⌊_____⌋ Strongly Disagree	4.11	0.82	188 35.21 % 35.21 %	236 44.19 % 79.40 %	94 17.60 % 97.00 %	12 2.25 % 99.25 %	4 0.75 % 100 %	0 0.0 % 100 %	Yes
2	If doctors trust MRs, they are more likely to prescribe their products. Strongly Agree ⌊_____⌋ Strongly Disagree	3.96	0.97	158 29.59 % 29.59 %	252 47.19 % 76.78 %	90 52.79 % 93.63 %	16 3 % 96.63 %	14 2.62 % 99.25 %	4 0.75 % 100 %	Yes
3	Doctors do not necessarily prescribe the products of MRs who regularly meet them. Strongly Agree ⌊_____⌋ Strongly Disagree	2.86	1.50	68 12.98% 12.98 %	140 27.86 % 40.84 %	116 22.14 % 62.98 %	82 15.65 % 78.63 %	64 12.21 % 90.84 %	48 9.16 % 100 %	Yes
4	Doctors discourage MRs from making frequent visits to their clinics. Strongly Agree ⌊_____⌋ Strongly Disagree	2.31	1.48	36 6.82 % 6.82 %	100 18.94 % 25.76 %	110 20.83 % 46.59 %	90 17.05 % 63.64 %	132 23.86 % 87.50 %	60 12.50 % 100 %	Yes

5	When Doctors accept gifts, they are obliged to prescribe the products of the companies offering them the gifts. Strongly Agree |_____| Strongly Disagree	3.60	1.28	144 26.97 % 26.97 %	174 32.59 % 59.56 %	142 26.58 % 86.14 %	22 4.12 % 90.26 %	36 6.74 % 97.00 %	16 3.00 % 100 %	Yes
6	Doctors prescribe the products of MRs who possess adequate product knowledge and communicate effectively. Strongly Agree |_____| Strongly Disagree	4.06	1.10	228 42.70 % 42.70 %	184 34.45 % 77.15 %	76 14.24 % 91.39 %	18 3.37 % 94.76 %	26 4.87 % 99.63 %	2 0.37 % 100 %	Yes
7	Doctors are inclined to prescribe the products of MRs who appeal for sympathy. Strongly Agree |_____| Strongly Disagree	3.33	1.02	40 7.45 % 7.45 %	210 41.00 % 48.45 %	188 36.43 % 84.88 %	46 8.92 % 93.80 %	22 4.26 % 98.06 %	10 1.94 % 100 %	Yes
8	Doctors do not generally get influenced by the name of the pharma company. Strongly Agree |_____| Strongly Disagree	2.85	1.61	72 14 % 14 %	170 33.08 % 47.08 %	70 13.62 % 60.70 %	68 13.23 % 73.93 %	80 15.56 % 89.49 %	54 10.51 % 100 %	Yes
9	Doctors like MRs who are honest about their sales talk and do not use misleading statements about their products. Strongly Agree |_____| Strongly Disagree	4.15	1.10	260 50.58 % 50.58 %	138 26.85 % 77.43 %	72 14.01 % 91.44 %	28 5.45 % 96.89 %	10 1.64 % 98.53 %	6 1.47 % 100 %	Yes

10	Doctors do not encourage the MRs, to develop personal relationship with them as this generally leads to pressure for more prescription. Strongly Agree ⌊_____⌋ Strongly Disagree	2.57	1.54	50 10.89 % 10.89 %	132 24.52 % 35.41 %	94 18.29 % 53.70 %	78 15.70 % 68.87 %	106 20.62 % 89.49 %	54 10.51 % 100 %	No
11	Doctors like to talk to MRs who are true to their commitments. Strongly Agree ⌊_____⌋ Strongly Disagree	4.00	1.07	206 39.77 % 39.77 %	178 34.36 % 74.13 %	78 15.06 % 89.19 %	42 8.11 % 97.3 %	12 2.31 % 99.61 %	2 0.39 % 100 %	Yes
12	Doctors do not appreciate when the MRs pressurize them to prescribe their products. Strongly Agree ⌊_____⌋ Strongly Disagree	3.15	1.27	62 11.88 % 11.88 %	180 34.48 % 46.36 %	142 27.20 % 73.56 %	70 13.41 % 86.97 %	50 9.58 % 96.55 %	18 3.45 % 100 %	Yes
13	Doctors are inclined to prescribe the products of MRs who possess overall pleasing personality. Strongly Agree ⌊_____⌋ Strongly Disagree	3.25	1.39	110 21.07 % 21.07 %	138 26.43 % 47.51 %	140 26.82 % 74.33 %	54 10.34 % 84.67 %	64 12.26 % 96.93 %	16 3.07 % 100 %	Yes
14	Doctors are more sympathetic to lady MRs. Strongly Agree ⌊_____⌋ Strongly Disagree	2.29	1.77	66 12.69 % 12.69 %	96 18.46 % 31.15 %	92 17.70 % 48.85 %	68 13.07 % 61.92 %	66 12.69 % 74.61 %	132 25.39 % 100 %	Yes

15	Doctors do not like the MRs who take more of their time for detailing their products. Strongly Agree └┴┴┴┴┴┘ Strongly Disagree	3.14	1.52	112 21.54 % 21.54 %	148 28.46 % 50 %	98 18.85 % 68.85 %	48 9.23 % 78.08 %	92 17.69 % 95.77 %	22 4.23 % 100 %	Yes
16	Demanding MRs. generally get more attention and prescriptions from doctors. Strongly Agree └┴┴┴┴┴┘ Strongly Disagree	3.79	1.15	142 27.30 % 27.30 %	230 44.24 % 71.54 %	90 17.31 % 88.85 %	24 4.61 % 93.46 %	24 4.62 % 98.08 %	10 1.92 % 100 %	Yes
17	Doctors believe that MRs are an asset to their practice and generally enjoy meeting them. Strongly Agree └┴┴┴┴┴┘ Strongly Disagree	3.17	1.20	56 10.77% 10.77%	180 34.62 % 45.39 %	142 27.30 % 72.69 %	94 18.08 % 90.77 %	34 6.54 % 97.31 %	14 2.69 % 100 %	Yes
18	Doctors are more inclined to prescribe the products of MRs who possess better educational background. Strongly Agree └┴┴┴┴┴┘ Strongly Disagree	2.68	1.62	66 12.64 % 12.64 %	150 28.74 % 41.38 %	76 14.56 % 55.94 %	70 13.41 % 69.35 %	100 19.16 % 88.51 %	60 11.49 % 100 %	Yes

TABLE 24
MEDICAL REPRESENTATIVES' IMPRESSIONS
FACTOR: PROMOTION

Sr. No.	Scale Item	Mean $\bar{x}$	Std Dev S	1 n % Cum %	2 n % Cum %	3 n % Cum %	4 n % Cum %	5 n % Cum %	6 n % Cum %	Sig of $\bar{x}$
1	Active promotion, advertisement, and sales pressure from drug companies convince doctors to prescribe a product. Strongly Agree |_____| Strongly Disagree	3.69	1.40	168 31.82 % 31.82 %	196 37.12 % 68.94 %	84 15.91 % 84.85 %	24 4.54 % 89.39 %	22 4.17 % 93.56 %	34 6 44 % 100 %	Yes
2	Doctors do not prescribe a product of a company if the MR of that company does not regularly meet them. Strongly Agree |_____| Strongly Disagree	3.95	1.20	236 44.87 % 44.87 %	124 23.57 % 68.44 %	104 19.77 % 88.21 %	38 7.23 % 95.44 %	16 3 04 % 98.48 %	8 1.52 % 100 %	Yes
3	Doctors are inclined to prescribe more of a product when they receive more samples. Strongly Agree |_____| Strongly Disagree	2.77	1.44	64 12.12 % 12.12 %	106 20.08 % 32.20 %	162 30.68 % 62.88 %	78 14.77 % 77 65 %	76 14.40 % 92.05 %	42 7.95 % 100 %	Yes

TABLE 25
MEDICAL REPRESENTATIVES' IMPRESSIONS
FACTOR: PRICE

Sr. No.	Scale Item	Mean $\bar{X}$	Std Dev S	1 n % Cum %	2 n % Cum %	3 n % Cum %	4 n % Cum %	5 n % Cum %	6 n % Cum %	Sig of $\bar{x}$
1	Doctors are generally price conscious, when they prescribe products to their patients. Strongly Agree ⌊|||||⌋ Strongly Disagree	3.83	1.16	166 31.56 % 31.56 %	206 39.16 % 70.72 %	92 17.49 % 88.21 %	28 5.33 % 93.54 %	28 5.32 % 98.86 %	6 1.14 % 100 %	Yes
2	Doctors do not mind prescribing costly products to their patients if they believe the patients can afford. Strongly Agree ⌊|||||⌋ Strongly Disagree	3.77	1.27	174 32.95 % 32.95 %	194 36.75 % 69.70 %	82 15.53 % 85.23 %	30 15.68 % 90.91 %	38 7.20 % 98.11 %	10 1.89 % 100 %	Yes

Significance level P≤ 0.05

5.6 COMPARISON OF BELIEF CONSTRUCTS: PRESCRIBERS vs. MRs

As stated earlier, the comparison between the prescribers' opinions and the medical representatives' impressions on similar belief constructs was considered important for the purpose of this study

The comparison was performed using the Kolmogorov-Smirnov Test (K-S Test) as applied to rating scale data.[10]

In case, where the differences were found to be statistically significant, further testing was done by altering the hypothesis statement and converting the test into a one-tail test. This helped to find the direction of disagreement. An illustration below will explain the importance of this test.

Belief construct: The doctors are likely to prescribe the products of MRs who make an appeal for sympathy

The K-S Test yielded a max D value of 29.1. This exceeded the critical value at 5% significance level, which worked out to 6 30. Therefore the null hypothesis that there is no difference between the prescribers' opinion and MRs' impression on this aspect was rejected. Thus it is evident that there was a difference between the opinion of the prescribers and the impression of the medical representatives.

In order to find out the direction of difference, the hypothesis was restated as under.:

H_0: The MRs did not rate this belief construct more importantly than the prescribers.

H_1 The MRs rated this belief construct more importantly than the prescribers

For this test the D max is expressed as proportion instead of percentage Thus D max is calculated as 0.291. The test chi-square value then works out to 157 64, which exceeds the critical value of 5.99. Hence the null hypothesis is rejected The alternative hypothesis that the medical representatives rated this belief construct more importantly than the prescribers, is accepted.

The outcome of this comparative analysis is presented in the following pages.

TABLE 26

COMPARISON OF PRESCRIBERS' OPINION AND MRS' IMPRESSIONS ABOUT VARIOUS BELIEF CONSTRUCTS.

Sr. No.	Belief construct	Prescribers' Opinion		MRs' Impression		Whether difference is statistically significant. $P \leq 0.05$
		Mean $\bar{X}$	Standard Deviation S	Mean $\bar{X}$	Standard Deviation S	
1	MRs are an important source of information who help doctors practice better medicine. Strongly Agree |_____| Strongly Disagree	3.91	1.10	4.11	0.82	Yes
2	If prescribers trust MRs they are more likely to prescribe their products. Strongly Agree |_____| Strongly Disagree	3.58	1.36	3.96	0.97	Yes
3	Doctors do not necessarily prescribe the products of MRs who regularly meet them. Strongly Agree |_____| Strongly Disagree	2.71	1.55	2.86	1.50	Yes
4	Doctors discourage MRs from making frequent visits to their clinics. Strongly Agree |_____| Strongly Disagree	2.36	1.58	2.31	1.48	No *
5	Doctors are inclined to prescribe the products of MRs who appeal for sympathy. Strongly Agree |_____| Strongly Disagree	2.49	1.58	3.33	1.02	Yes
6	When Doctors accept gifts, they are obliged to prescribe the products of the companies offering them the gifts. Strongly Agree |_____| Strongly Disagree	1.44	1.72	3.60	1.28	Yes

Sr. No.	Belief construct	Prescribers' Opinion		MRs' Impressions		Whether difference is statistically significant.
		Mean $\bar{X}$	Standard Deviation S	Mean $\bar{X}$	Standard Deviation S	
7	Doctors prescribe the products of MRs who possess adequate product knowledge and communicate effectively. Strongly Agree |_____| Strongly Disagree	3.75	1.29	4.06	1.10	Yes
8	Doctors do not generally get influenced by the name of a company. Strongly Agree |_____| Strongly Disagree	2.72	1.56	2.85	1.61	Yes
9	Doctors like MRs who are honest about their sales talk and do not use misleading statements about their products. Strongly Agree |_____| Strongly Disagree	4.12	1.12	4.15	1.10	No *
10	Doctors do not encourage the MRs to develop personal relationship with them as this generally leads to pressure for more prescriptions. Strongly Agree |_____| Strongly Disagree	3.11	1.57	2.57	1.54	Yes
11	Doctors like to talk to MRs who are true to their commitments. Strongly Agree |_____| Strongly Disagree	4.12	1.07	4.00	1.07	Yes (Marginally)
12	Doctors do not appreciate when the MRs pressurize them to prescribe their products. Strongly Agree |_____| Strongly Disagree	3.06	1.53	3.15	1.27	Yes

Sr. No.	Belief construct	Prescribers' Opinion		MRs' Impression		Whether difference is statistically significant.
		Mean $\bar{X}$	Standard Deviation S	Mean $\bar{X}$	Standard Deviation S	
13	Doctors are inclined to prescribe the products of MRs who possess an overall pleasing personality. Strongly Agree |_____| Strongly Disagree	2.50	1.55	3.25	1.39	Yes
14	Doctors are more sympathetic to lady MRs Strongly Agree |_____| Strongly Disagree	1.62	1.47	2.29	1.77	Yes
15	Doctors do not like the MRs who take more of their time for detailing their products. Strongly Agree |_____| Strongly Disagree	3.08	1.62	3.14	1.52	No *
16	Demanding MRs generally get more attention and prescriptions from doctors. Strongly Agree |_____| Strongly Disagree	2.70	1.59	3.79	1.15	Yes
17	Doctors believe that MRs are an asset to their practice and generally enjoy meeting them. Strongly Agree |_____| Strongly Disagree	3.59	1.27	3.17	1.20	Yes
18	Doctors are more inclined to prescribe the products of MRs who possess better educational background. Strongly Agree |_____| Strongly Disagree	3.21	1.50	2.68	1.62	Yes

Sr. No.	Belief construct	Prescribers' Opinion		MRs' Impression		Whether difference is statistically significant.
		Mean $\bar{X}$	Standard Deviation S	Mean $\bar{X}$	Standard Deviation S	
19	Doctors are generally price conscious, when they prescribe products to their patients. Strongly Agree |_|_|_|_|_| Strongly Disagree	3.70	1.29	3.83	1.16	No *
20	Doctors do not mind prescribing costly products to their patients if they believe the patients can afford. Strongly Agree |_|_|_|_|_| Strongly Disagree	3.16	1.62	3.77	1.27	Yes
21	Active promotion, advertisement and sales pressure from drug companies convince the doctors to prescribe a product. Strongly Agree |_|_|_|_|_| Strongly Disagree	2.52	1.57	3.69	1.40	Yes
22	Doctors do not prescribe a product of a company, if the MR of that company does not meet them regularly. Strongly Agree |_|_|_|_|_| Strongly Disagree	3.27	1.68	3.95	1.20	Yes
23	Doctors are inclined to prescribe more of a product when they receive more samples. Strongly Agree |_|_|_|_|_| Strongly Disagree	2.74	1.58	2.77	1.44	No *

TABLE 27

DIFFERENCE AMONG PHYSICIANS' BELIEFS: GENDER BIAS.

Sr. No	Belief construct	MALE DOCTORS		FEMALE DOCTORS		Whether difference is statistically significant.
		Mean $\bar{X}$	Standard Deviation S	Mean $\bar{X}$	Standard Deviation S	
1	I am inclined to be more sympathetic to a lady Medical Representative.	2.66	1.57	2.87	1.61	Yes *

* Statistically significant at $P \leq 0.05$

5.6.1 Comparison of prescribers' opinions and MRs' impressions

The medical representatives were requested to respond to perceptual measures, which were identical in terms of the belief construct and their responses were then compared to those of the prescribers Significant differences were observed in case of most of the perceptual constructs. This logically formed the basis of the differences between the prescribers and the pharmaceutical promoters with respect to the expectations of physicians from the pharma companies in terms of professional support. These differences are of special importance because the medical representatives are the interface between the prescribers and the pharmaceutical industry. The impressions of the medical representatives are definitely coloured by the thought processes of the pharma marketers who incessantly train them and mould their beliefs on these aspects.

1. The medical representatives have rated the value of information significantly higher than what is perceived by the physicians. (Mean 3.91 and 4.11, respectively for prescribers and medical representatives)
2. The medical representatives have rated the value of trust factor significantly higher than what is perceived by the physicians (Mean 3.58 and 3 96 respectively for prescribers and medical representatives)
3. The medical representatives have rated the importance of regularity of calls significantly higher than what is perceived by the prescribers. (Mean 2.71 and 2,86 for prescribers and medical representatives respectively)
4. The medical representatives and the prescribers agree that the prescribers discourage medical representatives from making frequent visits to their clinics

5 The medical representatives have rated the importance of sympathy appeal for prescription significantly higher than what the prescribers consider worthwhile (Mean 2.49 and 3.33 for prescribers and medical representatives respectively)

6. The medical representatives very strongly believe in the gifts as motivator for increased prescriptions, while the doctors do not agree with this belief. The difference is statistically significant. (Mean 1.44 and 3 60 for prescribers and medical representatives respectively)

7. The medical representatives have rated the importance of product knowledge and communication expertise significantly higher than the prescribers. (Mean 3 75 and 4 06 for prescribers and medical representatives respectively)

8 The medical representatives assign significantly higher importance to the company image when compared to the weight assigned by the physicians (Mean 2 72 and 2.85 for prescribers and medical representatives respectively)

9 The medical representatives and the prescribers agree on the importance of honesty in sales talk and avoiding use of misleading statements about the products.

10. The prescribers have expressed significantly higher affirmation to the belief construct that they generally discourage the advances of the medical representatives to build up personal relationship, as they apprehend that this may lead to pressure for more prescriptions. (Mean 3.11 and 2 57 for prescribers and medical representatives respectively. It may be noted that the mean value 2.57 is not statistically significant)

11. The medical representatives and the prescribers have very close agreement on the belief construct that prescribers like to talk to medical representatives

who are true to their commitment. Although the difference in the means is marginally significant (Mean 4.12 and 4 for prescribers and medical representatives respectively), they have similar opinions on this perceptual construct

12. The medical representatives are more conscious that if they pressurize the doctors for prescribing their products, they may lose their favour (Mean 3.06 and 3.15 for prescribers and medical representatives respectively)
13. The medical representatives have assigned more weight to their overall personality, whereas the prescribers have maintained a neutral opinion on this aspect. (Mean 2.50 and 3.25 for prescribers and medical representatives respectively)
14. While neither the prescribers nor the medical representatives have agreed to the belief construct that the prescribers are more sympathetic to the lady medical representatives, the medical representatives have assigned higher importance than what the prescribers opine on this aspect. (Mean 1.62 and 2.29 for prescribers and medical representatives respectively)
15. The medical representatives and the prescribers agree that the prescribers do not like if the medical representatives take more of their time in detailing their products.
16. The medical representatives have rated the importance of prescription demand significantly higher than the prescribers. The medical representatives more emphatically believe that if they demand prescriptions they are more likely to get them. (Mean 2.70 and 3.79 for prescribers and medical representatives respectively)

17 The prescribers have rated the importance of medical representatives as an asset to their medical practice significantly higher than what the medical representatives themselves believe. (Mean 3.59 and 3.17 for prescribers and medical representatives respectively)

18. The prescribers have rated the importance of the educational background of the medical representatives significantly higher than what the medical representatives themselves believe. (Mean 3.21 and 2.68 for prescribers and medical representatives respectively)

19. The prescribers and the medical representatives agree that price is an important factor in making a prescription decision.

20. The medical representatives have assigned significantly higher weight to affordability by a patient being a motivator for prescribing costlier medicines than what the prescribers agree to. The prescribers appear to be more conscious about the price factor than what the medical representatives believe them to be. (Mean 3.16 and 3.77 for prescribers and medical representatives)

21. The medical representatives have rated active promotion, advertisement and sales pressure significantly higher than the prescribers as a factor leading to more prescriptions. (Mean 2.52 and 3.69 for prescribers and medical representatives respectively)

22. The medical representatives have rated the importance of regularity of calls significantly higher than what the doctors believe. (Mean 3.27 and 3.95 for prescribers and medical representatives respectively)

23 The prescribers and the medical representatives are in agreement as far as the use of samples as a motivational factor for prescription behaviour is concerned.

5.7 CORRELATION ANALYSIS

Pearson's product moment correlation analysis was used to find out correlation between select belief constructs and prescribers' practice variables. The following practice variables were considered for this analysis.

1. Patient volume
2 Prescription volume
3 Length of practice
4 Academic attachment.

The above practice variables were selected because the secondary data suggested that these could be some of the practice variables, which affected the prescription behaviour of the physicians. An example in point is the study conducted by S. Madhavan et.al., which was reported in the *Journal of Clinical Pharmacy and Therapeutics.*[8]

The data available for the first three practice variables was on interval scales, while for the last variable, i.e 'academic attachment', the data was on nominal scale. Therefore product moment correlation analysis was used to analyze the data on the first three practice variables, while for the last practice variable, the test for differences between Means was employed

Pearson's product moment correlations were calculated between physicians' mean ratings for the belief constructs and the first three continuous practice variables. The output of the correlation analysis is presented in the following page. For the last practice variable, the correlation analysis is also reported on the subsequent page.

TABLE 28

STRENGTH OF ASSOCIATION BETWEEN PHYSICIANS' BELIEFS AND THEIR PRACTICE CHARACTERISTICS.

Sr. No.	Belief construct	PRACTICE CHARACTERISTICS		
		Patient Volume	Prescription Volume	Length of practice
1	MRs are an important source of information and help me practice better medicine.	R=(-)0.74	R=(-)0.83	r-(+)0.98 *
2	I discourage MRs from making frequent visits to my clinic (more than once a month)	R=(+)0.62	R=(+)0.49	R=(+)0.94*
3	I believe that when I accept gifts/obligations from a MR, I am obliged to prescribe his/her products.	R=(-)0.98 *	R=(-)0.99*	R=(-)0.008
4	I like to prescribe the products of a MR who possesses adequate product knowledge & communicates effectively.	R=(-)0.87	R=(-)0.94 *	R=(+)0.08
5	I am inclined to be more sympathetic to a lady Medical Representative.	R=(-)0.88	R=(-)0.05	R=(-)0.98 *
6	I am inclined to prescribe a product if my doctor friends or senior colleagues recommend it.	R=(-)0.77	R=(-)0.69	R=(-)0.07
7	I am generally price conscious when I prescribe medicines to my patients.	R=(+)0.61	R=(+)0.80	R=(+)0.7[illegible]
8	I do not prescribe the product of a company if the MR of that company does not meet regularly.	R=(+)0.69	R=(+)0.64	R=(+)0.3[illegible]
9	Without the Pharma industry's support, there would be a lack of funding for important educational programmes for medical doctors.	R=(-)0.79	R=(-)0.48	R=(-)0.2[illegible]
10	I am inclined to prescribe more of a product when I receive sufficient samples for trial of that product.	R=(-)0.75	R=(-)0.78	R=(+)0.6[illegible]
11	I like to gather information, which is available on the Internet about medicines.	R=(-)0 93	R=(-)0.51	R=(-)0.8[illegible]
12	I would appreciate if a company sends me promotional materials by courier / postal service rather than a MR calling on me and consuming my time and energy.	R=(-)0 54	R=(-)0 39	R=(-)0 97 *
13	I believe that Internet is a powerful medium for keeping me update is my profession.	R=(+)0.97*	R(+)0.98 *	R=(+)0.95*

* Statistically significant at P≤0.05

(Pearson's product moment correlation test employed)

TABLE 29
DIFFERENCES BETWEEN PHYSICIANS' BELIEFS: ATTACHEMENT TO ACADEMIC INSTITUTES

Sr. No.	Belief construct	Attachment to Academic institute				Whether difference is Statistically Significant *
		Attached		Not Attached		
		Mean $\bar{X}$	**Standard deviation (S)**	**Mean $\bar{X}$**	**Standard deviation (S)**	
1	MRs are an important source of information and help me practice better medicine.	4.17	1.08	3.86	1.11	Yes
2	I discourage MRs from making frequent visits to my clinic (more than once a month)	2 56	1.70	2.32	1.57	Yes
3	I believe that when I accept gifts/obligations from a MR, I am obliged to prescribe his/her products.	1.66	1.74	2.51	1.57	Yes
4	I like to prescribe the products of a MR who possesses adequate product knowledge & communicates effectively.	3.58	1.57	3.73	1.26	Yes
5	I am inclined to be more sympathetic to a lady Medical Representative.	3.06	1.62	2.41	1.58	Yes
6	I am inclined to prescribe a product if my doctor friends or senior colleagues recommend it.	3.09	1.39	2.92	1.35	Yes
7	I am generally price conscious when I prescribe medicines to my patients.	3.55	1.39	3.76	1.27	Yes
8	I do not prescribe the product of a company if the MR of that company does not meet me regularly.	3.05	1.77	3.28	1.68	Yes
9	Without the Pharma industry's support, there would be a lack of funding for important educational programmes for medical doctors.	2.91	1.40	2.92	1.32	No *
10	I am inclined to prescribe more of a product when I receive sufficient samples for trial of that product.	2.44	1.56	2.77	1.59	Yes
11	I like to gather information, which is available on the Internet about medicines.	3.56	1.21	3.57	1.22	No *
12	I would appreciate if a company sends me promotional materials by courier / postal service rather than a MR calling on me and consuming my time and energy.	2.75	1.57	2.86	1.47	No *
13	I believe that Internet is a powerful medium for keeping me update in my profession.	3.43	1.31	3.46	1.29	No *

* Statistically significant at $P \leq 0.05$

5.7.1 Physicians' practice variables & prescription behaviour

INFERENCE

1. The longer the practice of a physician, the greater the likelihood of that physician considering the medical representatives an important source of information and perceive them as friends who help them practice better medicine.
2. The longer the practice of a physician, the greater the likelihood of that physician discouraging the frequent visits of the medical representatives to his clinic. (i.e. more than once a month)
3. The larger the patient volume or prescription volume of a physician, the greater the likelihood of that physician not agreeing that when he accepts gifts/obligations from a medical representative, he is obliged to prescribe his products.
4. The larger the prescription volume of a physician, the greater the likelihood of that physician not agreeing that he likes to prescribe the products of a medical representative who possesses adequate product knowledge and communicates effectively.
5. The longer the practice of a physician, the greater the likelihood of that physician disagreeing that he is inclined to be more sympathetic to a lady medical representative.
6. The longer the practice of a physician, the greater is the likelihood of that physician disagreeing that he would appreciate if a company sends him the promotional materials by courier/postal services rather than a medical representative calling on him and consuming his time and energy.

7 The larger the patient and prescription volume and longer the practice of a physician, the greater the likelihood of that physician believing that Internet is a powerful medium for keeping him update in his profession.

8 If a physician is attached to an academic institute, it is more likely that he considers the medical representatives an important source of information and holds them as friends who help him practice better medicine. (Mean 4 17 and 3.86, respectively for attached and non-attached physicians)

9. If a physician is attached to an academic institute, he is more likely to discourage medical representatives from making frequent visits to his clinic, i.e. more than once a week. (Mean 2.56 and 2.32, respectively for attached and non-attached physicians)

10. If a physician is attached to an academic institute, he is less likely to believe that when he accepts gifts/obligations from a medical representative, he is obliged to prescribe his products. (Mean 1.66 and 2.51, respectively for attached and non-attached physicians)

11. If a physician is attached to an academic institute, he is less likely to be inclined to prescribe the products of a medical representative who possesses adequate product knowledge and communicates effectively. (Mean 3 58 and 3 71, respectively for attached and non-attached physicians)

12. If a physician is attached to an academic institute, he is more likely to be sympathetic to a lady medical representative. (Mean 3.06 and 2.41, respectively for attached and non-attached physicians)

13. If a physician is attached to an academic institute, he is more likely to be inclined to prescribe a product if his doctor friends or senior colleagues

recommend it (Mean 3 09 and 2 92, respectively for attached and non-attached physicians)

14. If a physician is attached to an academic institute, he is less likely to be price conscious while prescribing medicines to his patients (Mean 3.55 and 3.76, respectively for attached and non-attached physicians)
15. If a physician is attached to an academic institute, he is less likely not to prescribe the products of a company if the medical representative of that company does not see him regularly. (Mean 3.05 and 3 28, respectively for attached and non-attached physicians)
16. If a physician is attached to an academic institute, he is less likely to prescribe more of a product when he receives sufficient samples for trial of that product.
17. Female doctors are more likely to be sympathetic to lady medical representatives than male doctors. (Mean 2 87 and 2.66 for female and male doctors respectively)

5.8 FACTOR ANALYSIS

As is evident, various factors have been demonstrated to be affecting the prescription process of the physicians The data is voluminous, and so is the number of factors that have qualitative and quantitative impact on the prescription behaviour of the physicians.

It was thought prudent to summarize the data and reduce it in terms of a few new categories that would, even after reduction, preserve the essential information. For this purpose, factor analysis was carried out using Principal Component method.

Factor analysis helped identify the underlying structure of the data and brought down the data to a manageable level. It also helped by facilitating further data analysis, as the number of variables to be studied were reduced. The factor analysis prepared the ground for Regression analysis

In all, 34 independent items were analyzed with factor analysis. The factor analysis assessed the factor structure and loadings of the individual items. Varimax Rotation was used to rotate the factor loadings. The dependent variables were also factor analyzed. Only one factor was recovered, supporting its unidimensional character.

Initially, all the independent items were subjected to factor analysis. Four factors were identified, but they were not found relevant; as they did not group similar characteristics under a factor. The secondary data and the experience of the researcher suggested that the data could be grouped under three major factors as under.

1 Patient-doctor relationship factor

2 Medical Representative factor

3. Promotion & Product attributes

Keeping the above facts in mind, the factor analysis was carried out for each of the above categories of belief constructs separately. Seven major factors were identified, which logically explained the basic data structure, and yet were not inter-related.

1. Patient-Doctor relationship
2. Patient's likes-dislikes
3 Doctor's professional judgment
4. Medical Representatives' professional attributes
5 Medical Representatives' selling styles
6 Medical Representatives' personal attributes
7. Promotion & Product attributes

The output of the factor analysis is summarized in the following pages.

TABLE 30
FACTOR ANALYSIS: Patient-Doctor relationship

Communalities

	Initial	Extraction
Pat-request	1 000	733
Pat-relationship	1 000	.737
Generic	1 000	470
Drug-dislike	1 000	.697
Drug-discomfort	1.000	552
Drug-efficacy	1.000	.759
Drug-safety	1 000	804

Extraction Method Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.330	33.282	33 282	2.330	33.282	33.282	1.671	23.867	23 867
2	1 264	18.056	51.338	1.264	18 056	51.338	1.543	22 043	45.910
3	1.158	16.539	67.876	1.158	16.539	67.876	1.538	21.966	67.876

Extraction Method· Principal Component Analysis

Rotated Component Matrix

	Component		
	1	2	3
pat-request	5.958E-02	3.155E-02	**854**
pat-relationship	.106	.143	**.840**
generic	379	**.572**	1.477E-03
drug-dislike	-5 173E-02	**.833**	-5 721E-03
drug-discomfort	117	**.693**	.240
drug-efficacy	**841**	7.278E-02	.214
drug-safety	**888**	.122	-1 021E-02

Extraction Method. Principal Component Analysis Rotation Method· Varimax with Kaiser Normalization.
a Rotation converged in 4 iterations

TABLE 31
FACTOR ANALYSIS: Medical Representatives

Communalities

	Initial	Extraction
Trust	1 000	352
Regularity	1 000	.329
Prod-knowledge	1 000	479
Companyimage	1 000	556
Honesty	1 000	522
Encour-relationship	1 000	511
Commitment	1 000	500
Presc-pressure	1 000	430
Detailtime	1 000	448
Mreducation	1 000	411
Freq-visit	1 000	.455
Sympathyappeal	1 000	461
Gifts	1 000	.449
Personality	1 000	545
Ladymr	1 000	.620
Demandingmr	1 000	571
Mrmanipulation	1 000	.503

Extraction Method Principal Component Analysis

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5 486	32.273	32.273	5.486	32 273	32 273	3 140	18.468	18.468
2	1 487	8.745	41 018	1 487	8 745	41 018	2 959	17 406	35 875
3	1 167	6 866	47 884	1.167	6 866	47 884	2 042	12 009	47.884

Extraction Method Principal Component Analysis

Rotated Component Matrix

	Component		
	1	2	3
Trust	**.510**	.151	.263
Regularity	**.394**	321	-.265
Prod-knowledge	**.685**	9.481E-02	2 575E-02
Companyimage	.431	**.596**	-.123
Honesty	**.610**	.196	.333
Encour-relationship	367	**.604**	.111
Commitment	**581**	203	.347
Presc-pressure	.325	**.563**	9 189E-02
Detailtime	295	**.597**	6 711E-02
Mreducation	328	**.442**	329
Freq-visit	**.649**	184	6 998E-03
Sympathyappeal	171	.396	**.524**
Gifts	**.640**	107	.166
Personality	.197	.335	**.627**
Ladymr	.142	-3.505E-03	**.774**
Demandingmr	-3.950E-02	**.647**	.389
Mrmanipulation	-6 264E-02	**.651**	.274

Extraction Method. Principal Component Analysis. Rotation Method Varimax with Kaiser Normalization
a Rotation converged in 12 iterations

TABLE 32
FACTOR ANALYSIS: Promotion & Product attributes

Communalities

	Initial	Extraction
Tech-information	1 000	.473
Top-of-mind	1 000	.348
Price	1.000	.441
Affordability	1.000	.454
Callregularity	1.000	.497
Pat-feedback	1 000	583
Peers	1.000	430
Prom-ads-salcamp	1 000	.453
Cme	1 000	402
Samples	1 000	387

Extraction Method Principal Component Analysis

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4 468	44 683	44 683	4 468	44 683	44.683

Extraction Method· Principal Component Analysis

Component Matrix

	Component
	1
Tech-information	687
Top-of-mind	.590
Price	664
Affordability	.674
Callregularity	.705
Pat-feedback	.764
Peers	.656
Prom-ads-salcamp	.673
Cme	634
Samples	.622

Extraction Method: Principal Component Analysis.
a 1 components extracted.

Rotated Component Matrix
a Only one component was extracted. The solution cannot be rotated

TABLE 33
FACTOR ANALYSIS: Alternative methods of promotion

Communalities

	Initial	Extraction
Info-search	1.000	.217
Info-Internet	1 000	.653
Online-Internet	1.000	.679
Prom-mat-post	1 000	.720
DTCA	1.000	.577
Pat-info-Net	1.000	298
Net-power	1 000	.595

Extraction Method· Principal Component Analysis.

Total Variance Explained

	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2 364	33 765	33 765	2 364	33 765	33 765	2 231	31 869	31 869
2	1 374	19 625	53 390	1 374	19.625	53 390	1 506	21 521	53 390

Extraction Method Principal Component Analysis

Rotated Component Matrix

	Component	
	1	2
Info-search	306	**.351**
Info-Internet	**.761**	272
Online-Internet	**818**	9 978E-02
Prom-mat-post	1 810E-02	**.848**
DTCA	-2 699E-02	**.759**
Pat-info-Net	**.544**	-4 416E-02
Net-power	**.770**	-3 826E-02

Extraction Method· Principal Component Analysis Rotation Method Varimax with Kaiser Normalization
a Rotation converged in 3 iterations

TABLE 34-
FACTOR ANALYSIS: DEPENDENT VARIABLE

Communalities

	Initial	Extraction
Info-source	1 000	695
MR-asset	1 000	695

Extraction Method Principal Component Analysis

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1 390	69 523	69 523	1 390	69 523	69 523

Extraction Method Principal Component Analysis

Component Matrix

	Component
	1
info-source	834
MR-asset	834

Extraction Method Principal Component Analysis
a 1 components extracted

Rotated Component Matrix
a Only one component was extracted The solution cannot be rotated

INFERENCE:

In each of the three major groups, the extent of the variance explained is as under.

1 Patient-Doctor relationship 67.88%

2 Medical Representatives 47.88%

3. Promotion & Product attributes 44.68%

5.8.1 Patient-doctor relationship

Out of the original seven perceptual constructs, three factors were extracted, which were named as:

1. Patient-Doctor relationship
2. Patient's likes-dislikes
3 Doctor's professional judgment

A patient's request for a particular drug motivates the physicians to prescribe as per the patient's request. The relationship between the physician and the patient prevails and the physician obliges the patient. However, the doctor's professional judgment prevails in events when a patient requests for a prescription of a non-efficacious or unsafe drug. A patient's likes or dislikes affect the prescription behaviour of a physician. Patient's request for a generic drug or his dislike for a product or his feeling uncomfortable with a particular product demotivates the physician from enforcing his will.

5.8.2 Medical Representatives

There were originally 19 perceptual constructs for this group Out of these two variables were identified as independent variables Three factors were extracted from the remaining 17 perceptual constructs. They were labelled as

1. Medical Representatives' professional attributes
2. Medical Representatives' selling styles
3 Medical Representatives' personal attributes

The professional attributes like trustworthiness, regularity of calls, product knowledge, honesty, commitment to profession, frequent call setting and gift relationship with the doctors had heavy loading on factor 1 While selling styles exhibited by projecting company image, developing personal relationship with the physicians, exerting pressure for prescription, taking more time for detailing, prescription demand and manipulative techniques had heavy loading on the other factor, which was named as 'MR-selling styles'. A medical representative's personal attributes like overall personality and ability to use gender and personal appeal for earning sympathy from physicians loaded heavily on the third factor. As suggested by the mean ratings of these variables related with personal attributes of MRs, it was evident that they have a negative impact on the prescription behaviour of the physicians.

5.8.3 Promotion & product attributes

Out of a total of ten perceptual constructs, only one factor was extracted. This evidenced the unidimensional nature of the belief constructs under this factor group.

Product attributes like technical information, positioning of the brand as top-of-mind brand, price, affordability and positive feedback about the efficacy and safety of the product strongly correlated with promotional tools like regular promotion, creating peer group pressure, promotional and advertisement campaigns, sponsoring CME (Continuing Medical Education) programmes and heavy sampling, to evolve as a single principal component.

In the final analysis, it was evident that these seven principal components explained majority of the variation in the motivational factors, which were represented by 34 perceptual constructs. Thus the data was substantially reduced, while the essence of the data still remained intact.

5.8.4 Alternative methods of promotion

Out of a total of seven perceptual constructs, two factors were extracted, which were named as under.

1. Information search through Internet
2. Information search through other sources

All the belief constructs pertaining to Internet heavily loaded on factor 1. While other sources of information search like Direct to Consumer Advertisement and distributing technical information through post/courier by pharmaceutical companies loaded on factor 2. The two factors explained 53.39%variance in the data.

5.8.5 Dependent variable

The dependent variable comprising two perceptual concepts was also subjected to factor analysis Only one factor was extracted, suggesting its unidimensional nature This factor, named as Prescription favour explained 69.52% variance

5.9 REGRESSION ANALYSIS

Multiple regression analysis was performed next. Based on the factor analysis and the secondary data, the following regression model was evolved for testing through regression analysis.

$Y = \alpha + \beta 1$ doc-prof-judgment + $\beta 2$ doc-pat-relationship - $\beta 3$ Pat-like-dislike + $\beta 4$ MR-prof-attributes + $\beta 5$ MR-sellingstyles - $\beta 6$ MR-personal attributes + $\beta 7$ Prod-promn factor + ε,

Where:

Doc-prof-judgment	Doctor's professional judgment
Doc-pat-relationship	Doctor-patient relationship
Pat-like-dislike	Patient's likes and dislikes
MR-prof-attributes	Medical representatives' professional attributes
MR-sellingstyles	Medical representatives' selling styles
MR-personal attributes	Medical representatives' personal attributes
Prod-promn factor	Product attributes and promotional tools

Various measures of the belief constructs are depicted below.

MEASURES OF BELIEF CONSTRUCTS:

DEPENDENT VARIABLE

1. MRs are an important source of information which helps me practice better medicine.
2 I believe that MRs are an asset to my practice and I generally enjoy meeting them.

INDEPENDENT VARIABLES

DOCTOR'S PROFESSIONAL JUDGMENT

1. If a patient requests for a prescription of a drug and you believe it to be non-efficacious, you still prescribe it for the sake of your relationship with the patient
2. If a patient requests for a prescription of a drug and you believe it to be unsafe, you still prescribe it for the sake of your relationship with the patient.

PATIENT'S LIKES AND DISLIKES

1. If a patient will insist for a generic version of a drug instead of branded drug, you will accept the request
2. If a patient does not like a particular medicine you will still prescribe it if you think it is necessary.
3. If a patient is already on a medicine prescribed by other doctor and is comfortable with it, you will still consider replacing it with the medicine you generally prescribe.

PATIENT DOCTOR RELATIONSHIP

1. While you see a patient if you think that the patient has expressed a request for prescription, you generally oblige.
2 Your relationship with a particular patient will decide whether you agree with the request of a patient for prescribing a medicine

MEDICAL REPRESENTATIVES' PROFESSIONAL ATTRIBUTES

1. If I trust a MR, I am more inclined to prescribe his/her products.
2. I do not necessarily prescribe the products of a MR, even if he/she meets me regularly.
3. I like to prescribe the products of a MR who possesses adequate product knowledge & communicates effectively.
4. I like a MR, when he/she is honest about his/her sales talk & does not use misleading statements about products.
5. I love to talk to a MR who is true to his/her commitment.
6. I discourage MRs from making frequent visits to my clinic (more than once a month)
7. I believe that when I accept gifts/obligations from a MR, I am obliged to prescribe his/her products.

MEDICAL REPRESENTATIVES' SELLING STYLES

1. I do not generally get influenced by the name of the company a MR represents.

2. I do not encourage the MRs to develop relationship with me as it generally leads to pressure for more prescriptions
3. I do not appreciate when a MR pressurizes me to prescribe his/her products
4. I do not like a MR who tries to take more of my time to detail his/her products
5. I am more inclined to prescribe the products of a MR when I find him/her to possess a better educational background.
6. A demanding MR generally gets my favourable attention and prescriptions.
7. I feel MRs are always trying to manipulate me to prescribe their products

MEDICAL REPRESENTATIVES' PERSONAL ATTRIBUTES

1. I am inclined to prescribe the products of a MR if he/she makes an appeal for sympathy.
2. When I find a MR to have overall pleasing personality, I am inclined to prescribe his/her products.
3. I am inclined to be more sympathetic to a lady medical representative.

PRODUCT ATTRIBUTES & PROMOTIONAL TOOLS

1. I generally choose a drug molecule for prescription when I am briefed about its authentic technical information.
2. I decide on a brand of medicine for prescription, which is at the top of my mind
3. I am generally price conscious when I prescribe medicines to my patients.
4. I do not mind prescribing a costly medicine to a patient, if I believe that my patient can afford it.

5 I do not prescribe a product of a company if the MR of that company does not meet me regularly.

6. I prescribe more of a product when I receive positive feedback about it from my patients.

7. I am inclined to prescribe a product if my doctor friends or senior colleagues recommend it

8. Active promotion, advertisement and sales pressure from drug companies may convince me to prescribe a product.

9 Without the pharma industry's support, there would be a lack of funding for important educational programmes for medical doctors

10. I am inclined to prescribe more of a product when I receive sufficient samples for trial of that product.

The regression analysis yielded the following results.

TABLE 35
REGRESSION ANALYSIS

Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	Prod-promn factor, doc-prof-judgment, pat-like-dislike, doc-pat relationship, MR-personal attributes, MR-prof-attributes, MR-sellingstyles	.	Enter

a All requested variables entered
b Dependent Variable presc-favour

Model Summary

Model	R	R Square	Adjusted R Square	Std Error of the Estimate
1	617	381	380	1 124

a Predictors: (Constant), Prod-promn factor, doc-prof-judgment, pat-like-dislike, doc-pat relationship, MR-personal attributes, MR-prof-attributes, MR-sellingstyles

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig
1	Regression	3855.673	7	550 810	436.165	000
	Residual	6259.939	4957	1 263		
	Total	10115.612	4964			

a Predictors: (Constant), Prod-promn factor, doc-prof-judgment, pat-like-dislike, doc-pat relationship, MR-personal attributes, MR-prof-attributes, MR-sellingstyles
b Dependent Variable: presc-favour

Coefficients

		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
Model		B	Std Error	Beta			Zero-order	Partial	Part
1	(Constant)	743	062		12 020	.000			
	doc-prof-judgment	1 222E-02	011	.014	1 159	246	124	.016	013
	doc-pat relationship	2 445E-02	.013	026	1 845	065	348	.026	021
	pat-like-dislike	-9.813E-02	.008	- 154	- 12.255	.000	.057	-.171	- 137
	MR-prof-attributes	133	.006	.366	22.554	000	.554	.305	252
	MR-sellingstyles	5.507E-02	.006	.155	9.194	000	.470	.129	103
	MR-personal attributes	-4 636E-02	.009	-.075	-5.332	.000	.236	- 076	- .060
	Prod-promn factor	6.595E-02	.005	.235	13.192	.000	.519	.184	.147

a Dependent Variable: presc-favour

INFERENCE: The correlation matrix suggested that four out of the seven principal factor components were significantly correlated. Medical representatives' professional attributes, product attributes & promotional tools, Medical representatives' selling styles and patients' likes & dislikes significantly affected the

prescription behaviour of the physicians Patient-doctor relationship, doctor's professional judgment and medical representatives' personal attributes did not have significant effect on the prescribing habits of the physicians The signs of the coefficients were in the expected directions.

The full regression model was significant (F= 436.17, P ≤ 0.000), and explained 38% of the variance in the dependent variable (adjusted R^2 = 0.38)

Out of the seven independent variables, four had significant effect on the dependent variable. The other three factors affected the prescription behaviour less significantly. They are enumerated hereunder in order of their impact on the independent variable.

1. Medical representatives' professional attributes std. β = 0 366 P≤ .000
2. Product attributes & promotional tools std. β = 0 235 P≤ .000
3. Medical representatives' selling styles std. β = 0 155 P≤ .000
4. Patients' likes & dislikes std. β = -0.154 P≤ .000
5. Medical representatives' personal attributes std β = -0.075 P≤ .000
6. Doctor-patient relationship std β = 0.026 P≤ .065
7. Doctors' professional judgment std. β = 0.014 P≤ .246

In case of the factor 'Doctors' professional judgment', the P value is too high, suggesting that it is not a good predictor of the dependent variable. Another factor, 'Doctor-patient relationship' is significant at P≤ 0.1, but has a low predictor value of β =0.026. 'Medical representatives' personal attributes', though significant at P≤ .000, does not have much impact on the dependent variable, as it has a low β value.

Medical representatives' professional attributes shine out as the best predictor of the prescription favour availed from the physicians. Such attributes are trust, regularity of work, product knowledge, honesty in sales talk, commitment to the profession, frequent call setting and developing gift relationship with the physicians.

The next best predictor of prescription behaviour is 'Product attributes and promotional tools'. Combined in a synergistic manner they significantly affect the prescription behaviour of physicians.

The selling styles of medical representatives also significantly influence the prescription behaviour of the physicians. The likes and dislikes of the patients toward a particular drug may persuade/dissuade the physicians to prescribe such a product to their patients. The personal attributes of medical representatives have a low and negative impact on the prescribing behaviour of physicians. The effect of patient-doctor relationship is less significant (significant at $P \leq 0.1$). Doctor's professional judgment is not a good predictor of the model, and it can be excluded from the model.

The F test, an overall test of the model was conducted as under.

$H_o : \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = 0$

H_1 : At least one of the β values is not equal to zero

The test statistic F was calculated using the following formula:

$$F = \frac{R^2 / (K-1)}{(1-R^2) / (n-k)}$$

where, *n* is the number of observations and *k* is the total number of variables, with (k-1) degrees of freedom for the numerator and (n – k) degrees of freedom for the denominator The critical F value with 99% confidence level is 2 80. The calculated F value 436 17 exceeds the critical value and hence there is no evidence for accepting the null hypothesis Therefore, it can be inferred that some or all of the independent variables are useful in predicting the prescription decision of the physicians; that is, the model is useful for predicting 'Y' or the prescription decision.

References:

5. David J. Luck and Ronald S. Rubin, Marketing Research,(1999) seventh edition, Prentice-Hall Publication, p. 442
6. SPSS FAQ: What does Cronbach's alpha mean, UCLA Academic Technology Services, www ats.ucla edu/stat/spss/modules/default.htm
7. Pati Debashish, Marketing Research, Universities Press (India) Pvt. Ltd.(2002) p. 121-22
8. Levin Richard I. & Rubin David S.(2002) Statistics for management, seventh edition, p 821-23
9. Pati Debashish, op. cit p.123-25
10. Madhavan S., Amonkar M.M., Elliot D , Burke K and Gore P, (1997) Journal of Clinical Pharmacy and Therapeutics, 22, p 207-215
11. Pati Debashish, op. cit., p.123-25
12. Madhavan, S., Amonkar M.M., Elliot D., Burker K and Gore P., op.cit., p.213
13 Levin Richard I. & Rubin David S., op. cit. p 407
14. Pati Debashish, op.cit., p.123-25