Chapter – 3
Research Methodology
RESEARCH METHODOLOGY

OBJECTIVES OF THE STUDY

The prime objective of the study is to measure the impact of advertising on consumer behaviour with special reference to TV, refrigerator and room air-conditioner. The present study is mainly proposed to analyse the effectiveness of advertising in different age groups, different income level and sex under given environment in the post liberalisation era. In a nutshell the following objectives are set forth for the study.

1) To know about the prevailing situation with regard to durable product i.e. Television, refrigerator and room Air conditioner.

2) To know about the weakness of the present advertising for durable consumer goods with regard to television, refrigerator and room air-conditioner.

3) To see the significance of advertising in determining the behaviour pattern of customer with regard to durable products i.e. television, refrigerator and room Air-conditioner in respect of income level, age and sex.

4) To recommend some viable advertising strategies that could be more emphatic, the attitude and behaviour of the customer.

PROPOSITION

On the basis of review of the existing literature, the following propositions and the corresponding hypotheses were developed:

P₁ Television advertising is better throughout the year for the product television.

There is no significant association between the medium of advertisement and season of advertisement for the product television.
Accept/ Reject Criterion:

Then

\[ H_{0} = \chi^2_{0.05} \geq \chi^2 \text{ (calculated value)} \]
\[ H_{1} = \chi^2_{0.05} < \chi^2 \text{ (calculated value)} \]

If calculated value of \( \chi^2 \) is greater than table value of \( \chi^2 \) at 5% level of significance, then null hypothesis is rejected and proposition (P1) is accepted.

P2 Television advertising in summer season is better for the product refrigerator.

There is no significant association between the medium and season of advertisements for the product refrigerator.

Accept/Reject Criterion:

Then

\[ H_{20} = \chi^2_{0.05} \geq \chi^2 \text{ (calculated value)} \]
\[ H_{2a} = \chi^2_{0.05} < \chi^2 \text{ (calculated value)} \]

If calculated value of \( \chi^2 \) is greater than table value of \( \chi^2 \) at 5% level of significance, then null hypothesis is rejected and proposition (P2) is accepted (supported).

P3 Magazine advertising in summer season is better for the product room air-conditioner.

There is no significant association between the medium and season of advertisement for the product room air-conditioner.

Accept/Reject Criterion:

Then

\[ H_{30} = \chi^2_{0.05} \geq \chi^2 \text{ (calculated value)} \]
\[ H_{3a} = \chi^2_{0.05} < \chi^2 \text{ (calculated value)} \]

If calculated value of \( \chi^2 \) is greater than tables value of \( \chi^2 \) at 5% level of significance, then null hypothesis is rejected and proposition (P3) is accepted (supported).
P4  In case of all three products (television, refrigerator and room air-conditioner) colour advertisements is better than black & white advertisements. There is no significant association between colour of advertisement and impact of advertisement for three products i.e. television, refrigerator and room air-conditioner.

Accept/Reject Criterion:

Then

\[ H_{40} = \chi^2 0.05 \geq \chi^2 \text{ (calculated value)} \]
\[ H_{4A} = \chi^2 0.05 < \chi^2 \text{ (calculated value)} \]

If calculated value of \( \chi^2 \) is greater than table value of \( \chi^2 \) at 5% level of significance, then null hypothesis is rejected and proposition (P4) is accepted (supported).

P5  In case of all three durables product i.e. television, refrigerator and room air-conditioner, advertisement work much better for female than male. There is no significant association between sex and recall of advertisement.

Accept/Reject Criterion:

Then

\[ H_{50} = \chi^2 0.05 \geq \chi^2 \text{ (calculated value)} \]
\[ H_{5A} = \chi^2 0.05 < \chi^2 \text{ (calculated value)} \]

If calculated value of \( \chi^2 \) is greater than table value of \( \chi^2 \) at 5% level of significance, then null hypothesis is rejected and proposition (P5) is accepted (supported).

P6  Comparative advertisements in case of all three durable products i.e. television, refrigerator and room air-conditioner are more effective than non-comparative advertisements.
There is no significant association between type (comparative and non-comparative) of advertisements and impact of advertisements on consumer's attitude.

Accept/Reject Criterion:

Then

\[ H_{60} = \chi^2 \, 0.05 \geq \chi^2 \text{ (calculated value)} \]
\[ H_{6A} = \chi^2 \, 0.05 < \chi^2 \text{ (calculated value)} \]

If calculated value of \( \chi^2 \) is greater than table value of \( \chi^2 \) at 5% level of significance, then null hypothesis is rejected and proposition \( (P_6) \) is accepted (supported).

P7 Celebrity advertising is better than non-celebrity advertising in case of all durable products i.e. television, refrigerator and room air-conditioners.

There is no significant association between celebrity in advertisements/no celebrity in advertisements and impact of advertisements.

Accept/Reject Criterion:

Then

\[ H_{70} = \chi^2 \, 0.05 \geq \chi^2 \text{ (calculated value)} \]
\[ H_{7A} = \chi^2 \, 0.05 < \chi^2 \text{ (calculated value)} \]

If calculated value of \( \chi^2 \) is greater than table value of \( \chi^2 \) at 5% level of significance, then null hypothesis is rejected and proposition \( (P_7) \) is accepted.

There is no significant association between different impact of advertising (social impact, medium impact, psychological impact, economic impact, etc.) and sex, age and income level of respondents.

Accept/Reject Criterion:

Then

\[ H_{80} = \chi^2 \, 0.05 \geq \chi^2 \text{ (calculated value)} \]
\[ H_{8A} = \chi^2 \, 0.05 < \chi^2 \text{ (calculated value)} \]
If calculated value of $\chi^2$ is greater than table value of $\chi^2$ at 5% level of significance, then null hypothesis is rejected and proposition ($P_8$) is accepted (supported).

RESEARCH METHODOLOGY

This section of the chapter discusses the research design and the methodological procedures employed. Further, this chapter describes the data collection and sampling procedures and focuses on the sample characteristics and the sample size. The hypotheses developed in this research were tested with the help of a field survey which was conducted through structural questionnaire using household subject. Three independent variables, i.e. the sex, age and income levels were used in this research. Subject, after being presented with the advertisements, were asked to provide their reactions to various dependent variables i.e. medium impact, social impact, psychological impact, economic impact etc. Their responses on the dependent measures were used in testing the hypotheses.

RESEARCH DESIGN

A research design is a simple framework or plan for a study that is used as guide in collecting and analysing the data.

The present study, "Descriptive cum-diagnostic" in nature. This study is Descriptive because its measure the effect of advertising on a group of consumer on different age, sex, income, etc., whereas, this research provides help to producer/marketeers of durable products that what types of advertisement they aired at audio/audiovisual media and print media, what types of appeal they made to their target customer etc. that is why it is diagnostic. This study is based on the empirical survey of Haryana state.

STIMULUS

Between the choice of print and broadcast media, it was decided that the stimulus is a print advertisement rather than a television or radio commercial. The preference for a print advertisement over a commercial was justified with
several resources. Having a television or radio commercial used in the research involves considerable costs. Second, using a (television or radio) commercial as stimulus becomes very cumbersome for which considerable resources are needed. So making print advertisements as stimulus, is an attractive alternative. The print advertisement were used to stimulate the respondents are given in Appendix-C.

The next issue dealt with the type of products to be used in stimuli. To add realism to the study and make its findings more meaningful, it was decided that products relevant to the subject should be used in the research, equally relevant to both male and female member of the household.

SAMPLE DESIGN

All the items under consideration, in any field of inquiry, constitute a universe of population. In the present study “Impact of Advertising on Consumer Behaviour” the total population of state Haryana divided in five stratas. Strata 1st includes Rohtak, Sonipat, Jhajjar, Second strata includes Bhiwani, Hisar, Fatehabad and Sirsa, strata third includes Panipat, Karnal, Ambala and Panchkula, strata fourth includes Jind, Kaithal, Kurukshetra and Yamuna Nagar, and strata fifth includes Gurgaon, Faridabad, Rewari and Mahendergarh. Out of these five strata five cities were selected through probability sampling (lottery system) method, i.e., Rohtak, Bhiwani, Ambala, Jind and Gurgaon from first, second, third, fourth and fifth strata respectively. The user of electronic goods of state Haryana constitutes the universe. But only existing user of three products i.e., television, refrigerator and room air-conditioner were constitute the survey population for this study.

SAMPLE SIZE

Out of the total population of state Haryana which is divided in five strata, 300 respondents (60 from each strata) were selected among the users of television, refrigerator and room air-conditioner, according to their age, sex, occupation, family size, and income level through purposive (non-probability)
sampling method. Household subjects were used because the product class investigated—television, refrigerator, and room air-conditioner—are salient to them. Sample designs were as follows:

Table: 3.1
Profile of Consumers

<table>
<thead>
<tr>
<th>Name of City</th>
<th>Total No. of Respondents from one city</th>
<th>Male/ Female (M/F)</th>
<th>M/F respondents from one city</th>
<th>Age group of Respondents (In Yrs)</th>
<th>Occupation of Respondents</th>
<th>Family size of Respondents</th>
<th>Income of Respondents (In ,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rohtak</td>
<td>60</td>
<td>M 30 F 30</td>
<td>10 10 10</td>
<td>15-30 31-50 Above 50</td>
<td>Business 10 Service 10</td>
<td>Nuclear (N) 2 Joint (J) 10</td>
<td>5-10 11-15 Above 15</td>
</tr>
<tr>
<td>Bhiwani</td>
<td>60</td>
<td>M 30 F 30</td>
<td>10 10 10</td>
<td>10 10 10</td>
<td>28 2</td>
<td>15 9</td>
<td>6</td>
</tr>
<tr>
<td>Ambala</td>
<td>60</td>
<td>M 30 F 30</td>
<td>10 10 10</td>
<td>10 10 10</td>
<td>20 10</td>
<td>11 12</td>
<td>7</td>
</tr>
<tr>
<td>Jind</td>
<td>60</td>
<td>M 30 F 30</td>
<td>10 10 10</td>
<td>10 10 10</td>
<td>25 5</td>
<td>8 13</td>
<td>9</td>
</tr>
<tr>
<td>Gurgaon</td>
<td>60</td>
<td>M 30 F 30</td>
<td>10 10 10</td>
<td>10 10 10</td>
<td>23 7</td>
<td>7 12</td>
<td>11</td>
</tr>
</tbody>
</table>

Table 3.2
Respondents According to Brand Used

<table>
<thead>
<tr>
<th>Brand Name</th>
<th>Number of Resp.</th>
<th>%</th>
<th>Brand Name</th>
<th>Number of Resp.</th>
<th>%</th>
<th>Brand Name</th>
<th>Number of Resp.</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>Television</td>
<td></td>
<td></td>
<td>Refrigerator</td>
<td></td>
<td></td>
<td>Room Air-Conditioner</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPL</td>
<td>60</td>
<td>20.00</td>
<td>Kelvinator</td>
<td>78</td>
<td>26.00</td>
<td>Voltas</td>
<td>6</td>
<td>20.00</td>
</tr>
<tr>
<td>Videocon</td>
<td>48</td>
<td>16.00</td>
<td>Godrej</td>
<td>69</td>
<td>23.00</td>
<td>Bluestar</td>
<td>4</td>
<td>13.33</td>
</tr>
<tr>
<td>LG</td>
<td>30</td>
<td>10.00</td>
<td>Voltas</td>
<td>36</td>
<td>12.00</td>
<td>Hitachi</td>
<td>2</td>
<td>6.67</td>
</tr>
<tr>
<td>Samsung</td>
<td>27</td>
<td>9.00</td>
<td>Allwine</td>
<td>33</td>
<td>11.00</td>
<td>National</td>
<td>2</td>
<td>6.67</td>
</tr>
<tr>
<td>Onida</td>
<td>36</td>
<td>12.00</td>
<td>Videocon</td>
<td>15</td>
<td>5.00</td>
<td>Samsung</td>
<td>1</td>
<td>3.33</td>
</tr>
<tr>
<td>Sony</td>
<td>9</td>
<td>3.00</td>
<td>Samsung</td>
<td>18</td>
<td>6.00</td>
<td>LG</td>
<td>1</td>
<td>3.34</td>
</tr>
<tr>
<td>Philips</td>
<td>12</td>
<td>4.00</td>
<td>LG</td>
<td>21</td>
<td>7.00</td>
<td>Local</td>
<td>14</td>
<td>46.67</td>
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<tr>
<td>Akai</td>
<td>12</td>
<td>4.00</td>
<td>BPL</td>
<td>12</td>
<td>4.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sharp</td>
<td>15</td>
<td>5.00</td>
<td>Wirlpool</td>
<td>18</td>
<td>6.00</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Telsa</td>
<td>18</td>
<td>6.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beltak</td>
<td>6</td>
<td>2.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Local</td>
<td>27</td>
<td>9.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>Brands</td>
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<td>100</td>
<td>300</td>
<td>100</td>
<td></td>
<td>30</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>
### Share of Television / Refrigerator/Room Air-Conditioner According to Size

<table>
<thead>
<tr>
<th>Size (In inch)</th>
<th>Number of Resp.</th>
<th>%</th>
<th>Size (In liter)</th>
<th>Number of Resp.</th>
<th>%</th>
<th>Size (In tonne)</th>
<th>Number of Resp.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>20&quot;/21&quot;</td>
<td>243</td>
<td>81</td>
<td>Upto 165</td>
<td>225</td>
<td>75</td>
<td>1 Tone</td>
<td>6</td>
<td>20.00</td>
</tr>
<tr>
<td>14&quot;</td>
<td>30</td>
<td>10.00</td>
<td>165-300</td>
<td>30</td>
<td>10.00</td>
<td>1.5 Tones</td>
<td>18</td>
<td>60.00</td>
</tr>
<tr>
<td>29&quot; others</td>
<td>27</td>
<td>9</td>
<td>Above 300</td>
<td>45</td>
<td>15.00</td>
<td>2 Tones</td>
<td>6</td>
<td>20.00</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>100</td>
<td></td>
<td>300</td>
<td>100</td>
<td></td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>

It is rather impossible to examine the whole of the universe. So the only alternative left with the researcher is to take recourse to sampling and this is what has been done in the present study. The significance of sampling technique can by no means be over emphasized. Every care have to be taken to select a sample, so that it should not only be feasible in terms of size but also be representative of the whole universe. The present study sample fulfills all the requirements.

### DATA COLLECTION

The study is based on primary as well as secondary data. The secondary data were collected from various reports /bulletins etc. published by various agencies. Secondary data was also collected from published or unpublished company records, different books, journals. Some important information were also compiled from different newspapers and magazines.

**Primary** data has been collected through well structured comprehensive questionnaire. Various types of questions were written in view of the objectives of the study. They intended to elicit desired information /opinion of the respondent. The questionnaire contained easily understood questions and was...
carried to the respondents to be filled by them. In case, they were not educated to understand the questions, they were told the meaning to make them understand, what we wanted to say. In most of the cases, personal interview were conducted by the researcher to secure correct and necessary information.

DATA COLLECTION INSTRUMENT

Questionnaires were used to obtain desired primary data. Prior to constructing the actual questionnaire, the researcher conducts a pilot study to pretest the questionnaire. Only on rare occasions and for specific and explicit reasons should a questionnaire be administered without a thorough pretest. The questionnaire was sent for thorough pretest to the respondent. Who were as similar as possible to the target of respondents. The questionnaire was administered in the same manner as the final survey. In addition, some of the pretest respondents were interviewed after they have completed the questionnaire and all the complaints made by respondents were ratified before final survey.

The questionnaire is divided in three sections A, B, and C. First part of the questionnaire contain demographic related questions (See Appendix (A)). In section A of the questionnaire contained consumer behaviour related question (See Appendix A) about three product i.e. television, refrigerator and room air-conditioner. Section B of the questionnaire is related to different impact of advertising on consumer behaviour i.e. medium impact, social impact, psychological impact, economic impact and impact of advertising on consumer decision. The five point likert scale was used to judge the different type of impact of advertisements on consumer behaviour. The above stated impact on consumer behaviour related statements, are as follows:
Medium Impact of Advertising

17. Television advertisement effective than radio advertisement.
   -Strongly agree —Agree —Neutral —Disagree —Strongly disagree.
18. Audiovisual advertisement effective than print advertisement.
   -Strongly agree —Agree —Neutral —Disagree —Strongly disagree.
19. Newspaper advertisement effective than magazine advertisement.
   -Strongly agree —Agree —Neutral —Disagree —Strongly disagree.
20. Colour Ads effective than Black & White Ads.
   -Strongly agree —Agree —Neutral —Disagree —Strongly disagree.
21. Two colour Ads effective than three or more colour Ads.
   -Strongly agree —Agree —Neutral —Disagree —Strongly disagree.
22. Single item Ads effective than multiple item Ads.
   -Strongly agree —Agree —Neutral —Disagree —Strongly disagree.
23. Full page Ads effective than half page Ads.
   -Strongly agree —Agree —Neutral —Disagree —Strongly disagree.
24. Vertical Ads effective than horizontal Ads.
   -Strongly agree —Agree —Neutral —Disagree —Strongly disagree.
25. Cover page Ads effective than inner page Ads.
   -Strongly agree —Agree —Neutral —Disagree —Strongly disagree.
   (-Before programme —During programme —After programme).
   -Strongly agree —Agree —Neutral —Disagree —Strongly disagree.

Social Impact of Advertising

27. Emotional appeals makes Ads effective than rational appeals in Ads.
   -Strongly agree —Agree —Neutral —Disagree —Strongly disagree.
28. Comparative Ads effective than non comparative Ads.
   -Strongly agree —Agree —Neutral —Disagree —Strongly disagree.
29. Slogan & song make advertisement effective and memorable than annoying in Ads.
   -Strongly agree —Agree —Neutral —Disagree —Strongly disagree.
30. Jingle & fun in Ads effective than information and discussion in Ads.
   -Strongly agree —Agree —Neutral —Disagree —Strongly disagree.
31. Advertising affects your choice.
   -Strongly agree —Agree —Neutral —Disagree —Strongly disagree.
32. Advertising affect consumer preferences & tastes changes product attributes and differentiates the product from competitive brands
   -Strongly agree —Agree —Neutral —Disagree —Strongly disagree.
33. Company which advertise their products have batter image in your mind.
   -Strongly agree —Agree —Neutral —Disagree —Strongly disagree.
34. Advertised product have received a favourable opinion from your family/friends.
   -Strongly agree —Agree —Neutral —Disagree —Strongly disagree.
35. Ads affects standard of living of society.
   -Strongly agree —Agree —Neutral —Disagree —Strongly disagree.
36. Ads educate people to welcome new products and services.
   -Strongly agree —Agree —Neutral —Disagree —Strongly disagree.
37. Ads provides new horizon of Knowledge
   -Strongly agree —Agree —Neutral —Disagree —Strongly disagree.
38. Some time Ads make false claim.
   -Strongly agree --Agree --Neutral --Disagree -Strongly disagree.

39. Ads highlight only the brighter side of the products and hide the negative side of the products.
   -Strongly agree --Agree --Neutral --Disagree -Strongly disagree.

Psychological Impact of Advertising

40. Advertisement make you brand loyal.
   -Strongly agree --Agree --Neutral --Disagree -Strongly disagree.

41. Advertising affects your decision process.
   -Strongly agree --Agree --Neutral --Disagree -Strongly disagree.

42. Advertising helpful in forming favourable opinion.
   -Strongly agree --Agree --Neutral --Disagree -Strongly disagree.

43. Advertising help in associating brand with your personality and lifestyle.
   -Strongly agree --Agree --Neutral --Disagree -Strongly disagree.

44. Ads influence people to buy the products they really do not need.
   -Strongly agree --Agree --Neutral --Disagree -Strongly disagree.

45. Ads are persuasive
   -Strongly agree --Agree --Neutral --Disagree -Strongly disagree.

46. Celebrities in advertising effective than non-celebrity in advertising.
   -Strongly agree --Agree --Neutral --Disagree -Strongly disagree.

Impact of Advertising on Consumer Decision

47. Advertising encourage innovation new product development and reduce risk.
   -Strongly agree --Agree --Neutral --Disagree -Strongly disagree.

48. Advertisement helpful in gathering information.
   -Strongly agree --Agree --Neutral --Disagree -Strongly disagree.

49. Advertising help you in recalling the brand.
   -Strongly agree --Agree --Neutral --Disagree -Strongly disagree.

50. Ads create intense desire to buy the products.
   -Strongly agree --Agree --Neutral --Disagree -Strongly disagree.

51. Ads serve as best guide for wise decision making.
   -Strongly agree --Agree --Neutral --Disagree -Strongly disagree.

Economic Impact of Advertising

52. Advertising build consumer demand that place company in strong position in relation to its distribution.
   -Strongly agree --Agree --Neutral --Disagree -Strongly disagree.

53. Ads increase the cost of product.
   -Strongly agree --Agree --Neutral --Disagree -Strongly disagree.

Questionnaire that included five point Likert-type item response ranging from 1 = strongly disagree, to 5 = strongly agree.

Section C of the questionnaire designed to know the consumer reaction about the advertising and design & style of different brands of television,
refrigerator and room air-conditioner, on the 'Semantic Differential Scale' (7-point bipolar scale). There are nine pairs of positive and negative attribute like “Believable – unbelievable, “impressive-unimpressive” so on, to measure attitude towards the advertising of different brand of television, refrigerator and room air-conditioners. But there are twelve pairs of positive and negatives, to measure attitude of respondents about the style, design, range of prices etc. of different brand of television, refrigerator and room air-conditioner. The respondents have to mark (X) the blank that best indicate how accurately one or the other term describes or fits the attitude. The end position indicate “Extremely”, the next pair indicate “Very”, the middle most pair indicate “Somewhat” and the middle position indicate “Neither-Nor”

**Measurement of Attitude Toward Advertisements**
(Of different brand of Television, Refrigerator and Room Air-conditioner)

<table>
<thead>
<tr>
<th></th>
<th>7</th>
<th>6</th>
<th>5</th>
<th>4</th>
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<tbody>
<tr>
<td>Believable</td>
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<td>Unbelievable*</td>
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<td>Unattractive*</td>
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<td>. . . . . . . . .</td>
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<tr>
<td>Clear</td>
<td>. . . . . . . . .</td>
<td>Unclear*</td>
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<td>. . . . . . . . .</td>
<td>Unconvincing*</td>
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<td>Overall liking</td>
<td>. . . . . . . . .</td>
<td>Overall disliking*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(*Indicated item is reverse scored)
**Research Methodology**

**Measurement of Attitude Towards Design, Style etc.**
(OF different brand of Television, Refrigerator and Room Air-conditioner)

<table>
<thead>
<tr>
<th>Large choice of size &amp; model</th>
<th>7 6 5 4 3 2 1</th>
<th>Limited choice of size &amp; model*</th>
</tr>
</thead>
<tbody>
<tr>
<td>More concerned with aesthetics</td>
<td>7 6 5 4 3 2 1</td>
<td>More concerned with performance</td>
</tr>
<tr>
<td>Styles brand</td>
<td>7 6 5 4 3 2 1</td>
<td>Not styles brand*</td>
</tr>
<tr>
<td>High rang of prices</td>
<td>7 6 5 4 3 2 1</td>
<td>Limited range of prices*</td>
</tr>
<tr>
<td>Easy memorable brand name</td>
<td>7 6 5 4 3 2 1</td>
<td>Not easy memorable brand name*</td>
</tr>
<tr>
<td>Large Variety of colour</td>
<td>7 6 5 4 3 2 1</td>
<td>Limited variety of colour*</td>
</tr>
<tr>
<td>Reflect life style</td>
<td>7 6 5 4 3 2 1</td>
<td>Not necessarily reflect life style*</td>
</tr>
<tr>
<td>Add to your glamour</td>
<td>7 6 5 4 3 2 1</td>
<td>Not add to your glamour*</td>
</tr>
<tr>
<td>Has a poor reputation</td>
<td>7 6 5 4 3 2 1</td>
<td>Has a very good reputation*</td>
</tr>
<tr>
<td>Delicate</td>
<td>7 6 5 4 3 2 1</td>
<td>Rugged*</td>
</tr>
<tr>
<td>Cheap looking</td>
<td>7 6 5 4 3 2 1</td>
<td>Very expensive looking*</td>
</tr>
<tr>
<td>Lesser known brand</td>
<td>7 6 5 4 3 2 1</td>
<td>Well-known brand*</td>
</tr>
</tbody>
</table>

(*Indicated item is reverse scored)

**DATA ANALYSIS**

Data analysis usually involves reducing accumulated data to a manageable size, developing summaries, looking for patterns, and applying statistical techniques. Scaled responses on questionnaires often require the analyst to derive various functions, as well as to explore relationship among variable.

In this study, after collection of needed data, it was first tabulated and then analyzed. Methods used for analysis were Mean, Standard Deviation, Correlation of Grouping Data and, Chi-Square Test. The detail of statistical instrument used are as follows:

**MEAN**

The most popular and widely used measure for representing the entire data by one value is what most lay-men call an “average” and what the
statisticians call the arithmetic mean. Its value is obtained by adding together all the items and by dividing this total by the number of items.

Formula:

\[ \bar{X} = \frac{\Sigma fx}{N} \]

Mean used in the present study to assign the rank in question No. 3, 14, 15 and 16 in section A of the questionnaire and wherever is necessary.

STANDARD DEVIATION

Standard deviation is by far the most important and widely used measure for studying dispersion. Standard deviation is denoted by the small Greek letter \( \sigma \) (read as sigma).

The standard deviation measures the absolute dispersion or variability of a distribution; greater the amount of dispersion or variability, greater the standard deviation. A smaller standard deviation means a high degree of uniformity of the observations as well as homogeneity of a series. Thus, if we have two or more comparable series with identical or nearly identical means, it is the distribution with the smallest standard deviation that has the most representative mean. Hence the standard deviation is extremely useful in judging the representativeness of the mean. In present study Standard Deviation was used wherever necessary.

The formula used in this study is:

\[ \sigma = \frac{1}{N} \sqrt{\Sigma f dx^2 N - (\Sigma f dx)^2} \]

CORRELATION

In this study Karl Pearson’s coefficient of correlation of grouping data have been used. When the number of observations is large, the data are often classified into two-way frequency distribution called correlation table. The class intervals for Y are listed in the captions or column heading, and those for
X are listed in the stubs at the left of the table, the order can also be reversed. The frequency for each cell of the table are determined by either tallying or card sorting:

The formula for calculating the coefficient of correlations is:

\[ r = \frac{\Sigma f_{dx} dy \cdot N - (\Sigma f_{dx}) (\Sigma f_{dy})}{\sqrt{\Sigma f_{dx}^2 \cdot N - (\Sigma f_{dx})^2} \cdot \sqrt{\Sigma f_{dy}^2 \cdot N - (\Sigma f_{dy})^2}} \]

In the present study grouping correlation is calculated between technological soundness (X) and brand loyalty (Y). The question related to this were No. 5 and 6 in section A of the questionnaire.

\( \chi^2 \)- TEST

Probably the most widely used non-parametric test of significance is Chi-square (\( \chi^2 \)) test. It is particularly useful in tests involving nominal data but can be used for higher scales. Typical are cases where persons, events, or objects are grouped in two or more nominal categories such as “yes-no”, “favour-undecided-against” or class ‘A,B,C, or D’.

Using this technique, we test for significant difference between the observed distribution of data among categories and the expected distribution based on the null hypothesis. It must be calculated with actual counts rather than percentage.

In this study Chi-square (\( \chi^2 \)) test used to test the null hypothesis which was related to “season of advertisement and medium of advertisement”; “sex and impact of advertisement”, “income and impact (medium, social, psychological economic) of advertisement”, “age and impact (medium, social, psychological, economic) of an advertisement” etc.

Formula used in this study are as follows:

\[ \chi^2 = \sum \frac{(O_{ij} - E_{ij})^2}{E_{ij}} \]
Degree of freedom \((v) = (R-1) (C-1)\)

Expected frequencies were calculated as follow:

\[
\frac{\text{Row total of corresponding} \times \text{Column total of corresponding}}{N} \text{ frequency cell} \quad \text{frequency cell}
\]

LIMITATIONS OF THE STUDY

We believe that a sincere attempt should be made to gather information from the subjects other than households.

- The sample size of this study was small. With larger sample sizes in various groups, the empirical findings of this study would have been more significant and would have provided a feel for an increase in advertising effectiveness not treating the consumers as homogeneous.
- The advertisement in English has some difficulties that respondents were not properly understood.
- The survey is based on purposive sampling.
- The survey is conducted only in Haryana state.

Although, there are some limitations of the research, yet it has paramount significance to the advertiser as well as to the society. The fact that the individual researcher has limited physical energy, time and money cannot be obliterated.