CHAPTER 3

METHODOLOGY
The present study was conducted to assess the role of health food label and other factors affecting the buying pattern of health foods by Indian health food consumer.

3.1 FRAME OF THE STUDY

The study was an exploratory one using survey questionnaires where we wanted to know the role of health food labels and other factors affecting the selection criterion and buying behaviour of Indian consumers, which may culminate into actual purchase. A small pilot study was conducted to validate the questionnaire prepared. Two groups were created comprising of Health food consumers i.e. home respondents from residential colonies (150) and purchasers (169) from selected super markets, health food stores, stores selling the identified health food categories and were interviewed using the questionnaire along with 5 subset subjects from the same pool who were assessed using Eye-Tracking Technique to understand their product interaction.

3.2 LOCALE OF THE STUDY

Supermarket selling health foods and residential complex were the selected formats to gather data for the study.

Supermarket: Supermarkets represent the organized retail market which typically is multiple outlet chain run by professional management. (Michael and Barton 2004).

Exit interviews using structured questionnaire were carried out at the selected stores.

The respondents had finished their shopping which helped the researcher to identify the subjects as actual consumers of health foods and hence the responses were valid and complete and the sampling was purposive.

The survey was conducted on weekends owing to a higher footfall and in order to capture maximum actual consumer being an off day from work.

Out of 5 shortlisted consumers 2-3 usually agreed to spare 45 mins for the questionnaire.

Residential colony selected was Hiranandani Meadows in Thane. The apartment complex consists of 11 buildings with different floor sizes and family mix. Purposive sampling was done to screen respondents by initially asking if any health food was bought in the last 1 month,
and only those who respondent positively, were enrolled.

3.2.1 STUDY SAMPLE

1) Sampling Technique

Purposive sampling was done for housewives, residing in the colony, to facilitate addressing larger number of subjects from one place. It was noted that both working individuals and also homemakers were included.

Purposive sampling was done for the customers purchasing from the supermarkets from the identified health food categories though exit interview questionnaire.

The criterion for selection of sample was designed keeping in mind the requirement of the study.

➢ Inclusion Criteria
  • Working and non-working consumers purchasing from supermarket.
  • Willingness to participate.
  • Frequent purchaser of packaged food from supermarket, stores, market etc.
  • Home respondents with history of health food consumption
  • Permission from residential colony authorities and supermarkets.

➢ Exclusion Criteria
  • People coming for proxy buying.
  • People buying bulk Online.
  • Below 18 years of age.

Fig 3.1 Sample Selection
3.2.2 SAMPLE SIZE

We used the sample size calculation formula by Krejcie and Morgan, 1970 using the assumption that about 90% of the population read food labels as per Vemula et al. 2014. This reference was used as a proportion of population to calculate sample size. Therefore, sample size (n) was calculated as:

Step 1: Base Sample-size calculation

\[ n = \frac{t^2 \times p(1-p)}{m^2} \]

“Where: -

\( n \) = required sample size
\( t \) = \( t \) value; confidence level at 95% (standard value of 1.96)
\( p \) = percentage population representing characteristic (when unknown we use \( p = 0.5 \))
\( m \) = margin of error at 5% (standard value of 0.05)"

\[ n = 138.24 \approx 140 \]

Step 2: Design Effect
To correct for the difference in design, the sample size is multiplied by the design effect (D). The design effect is generally assumed to be 2 for nutrition surveys.

\[ n \times D = 140 \times 2 = 280 \]

Step 3: Contingency
The sample is further increased by 5% to account for contingencies such as non-response or recording error.

\[ n + (5\% \text{ of } n) = 280 + 14 = 294 \approx 300 \]

The total sample size selected for the above study is 319 including 169 health food purchasers from selected super markets, health food stores, stores selling the identified health food categories and 150 health food consumers interviewed from their homes in residential colonies.

For eye tracking experiment, a subset sample size of 5 was enrolled.
3.2.3 ETHICAL CLEARANCE AND CONSENT OF SUBJECTS

The research proposal/study design was cleared by the Institution Ethical Committee. Informed consent of the participants was taken for participation in the study. The participation was voluntary and no monetary compensation was offered. They were free to opt out of the study at any stage of the study and were given free access to their research data. The following concerns were already undertaken in the said study:

1. The present research study didn’t involve any personal question or intervention.
2. There was no ethical consideration withs regards to the information provided on food labels as by law manufacturers needs to abide by the minimum guidelines suggested by the government and policy makers.
3. Informed consent of the consumers was taken before interviewing from both shop floor and home.
4. Informed consent of small subset of enrolled subjects were taken for eye tracking study where the subjects need to wear special eye movement tracker device. (Annexure No 3)

3.2.4 STUDY SCHEDULE

Data was collected and assessed in following stages:

<table>
<thead>
<tr>
<th>Stage I:</th>
<th>Review of Literature and Pilot Testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage II:</td>
<td>Data Collection</td>
</tr>
<tr>
<td>Stage III:</td>
<td>Assessment</td>
</tr>
</tbody>
</table>

3.2.5 RESEARCH DESIGN CATEGORIES

Observations were made in supermarkets and homes for the products in selected category of health foods.

The data collected was correlated with the buying pattern in following categories:

- Breakfast cereals
- Supplements: Fish Oil capsule, Vit C, Vit E. OTC supplements
- Health drinks
- Everyday Health: Millets, Multi grain atta, Healthy cooking oils, apple cider vinegar
- Ayurvedic Products
- Snacks
- Protein Supplements
- Baby and child health: Horlicks, Pediasure, Bornvita, nestum, Lactogen
• Weight loss/weight gain
• Milk and probiotics: Yakult, Dairy, Kombucha, soy milk, almond milk
• Whole grain and organic
• Nuts and oilseeds
• Energy bars

3.3 DATA COLLECTION PROCEDURES

3.3.1 Survey
An informed consent form [Annexure no.4] were given to the participants for the experimental procedures. The research was conducted using standardised and pretested questionnaires [Annexure no. 1]. Purposive sampling was used on consumers who made a purchase at the supermarket and home respondents in the aforesaid health and wellness categories.

Questionnaire:
The questionnaire consisted of multiple-choice questions with few open-ended questions which were helpful in knowing consumer perception towards buying pattern of health foods. It also included the information on health consciousness, concern over food safety, quality, ethical issues, values, price premium and trust in labelling & other factors which may affect the behavioural intentions of Health & Wellness food consumption among Indian consumers. Understanding and perception of health food labels was assessed using the standardized questionnaire of Mackison, Wrieden and Anderson 2010 with Indian specific modification. General nutrition knowledge questionnaire for adults was used to assess the understanding of nutritional label information, using the questionnaire designed by K Parmenter and J Wardle with suitable modification for Indian scenario.

The questionnaire for nutritional knowledge reached individual consumers in two ways viz. electronically distributed and as a hard copy.

A subset sample of about 5 subjects were enrolled for direct eye movement tracking for recording the sequence of information gathering. The procedure and the instrument used were procured from IIT Mumbai under the expert guidance from the researcher working in the area.
3.4 EYE TRACKING

Using ‘eye movement recorder’ for a subset sample size of about 5, recordings were made to scan the exact sequence of information gathered on the food labels.

![Tobii Pro Glasses 2](image)

**Fig 3.2: Tobii Pro Glasses 2**

Tobii Pro Glasses 2: A wearable gaze tracker that tracks the eye movements using Infra-Red cameras, while also recording the environment with a front facing video camera. This device enables the researcher to understand objective of buyer without any social bias.

a) Design

The study involved a simulated shopping exercise by providing 3 variants of breakfast cereal packaging i.e.:

- REGULAR
- FRONT OF PACK with an action to calorie expression
- TOP of Pack nutrition information for breakfast cereal.

Eye tracking helps to discover:

- How shoppers navigate through the pack.
- What attracts consumers attention at the point of purchase.
- Which visual elements are noticed.

The responses were assessed using the Eye tracker for time spent on specific target area followed by a post-task survey questionnaire to assess the readability (includes legibility and understanding) and feedback.
b) **Subject Selection criteria**

1. Should be able to read and understand English language.
2. Should adhere to the experimental requirement.
3. Should be a part of the survey consumer pool.

The respondents were briefed that this exercise is a simulation of the buying process and they are expected to choose a product out of the 3 options of breakfast cereal provided within the stipulated time frame of 1 minute.

1. All 3 samples of shortlisted food package were kept in-front of the consumer on a neutral background.
2. The subjects were briefed about the setup in the experiment room.
3. The consumer was expected to wear the eye tracking eye wear.
4. A viewing time of 1 minute was provided for the customer to assess the packages.
5. A quick questionnaire was administered to understand the food choice made and on what parameters. (Annexure No. 2)
6. The packs were shuffled randomly before each assessment.
7. During the process, the respondents were free to manipulate the packets the way they want

**c) Brands Selected:**

1. Bagrry’s Crunchy Muesli
2. Kellogg’s Muesli No Sugar Added
3. Bagrry’s Cornflakes

In the present study, consumers were asked to choose from pre-selected breakfast cereals amongst different brands using Tobii Technology. There are many food products available in the market, however the basis for selection of breakfast cereal is due to many variables like pricing, branding, flavour, images, claims, ingredients etc.

**d) Criteria for selection of the Brands**

2. The packs had multiple variables like flavour, offerings etc.
3. Commonly available in all shopping formats.
4. Highest brand recall.
5. Each with a unique design with reference to the health and nutrition claim display.
6. Weight simulation was kept constant
7. Pack design was kept constant
8. Bag in Box variants were selected.
9. Being a health food category the highest consumed and widely available category i.e. Breakfast cereal was selected.

e) Mobile eye-tracker operation:

The Eye movement tracker is the standard method where Tobii Glasses Eye Tracker (Tobii Technology, Stockholm, Sweden) is used to study the attentional capture of packaging features while assessing the similarities and dissimilarities among different food products. These Tobii Glasses have an infrared camera which records the gaze coordinates of the participant's right eye and a scene camera, which records the visual field. The instrument captures the Gaze plots at a rate of 30 Hz. The glasses are connected to a recording device. The recorder is attached to the participants' clothes or inserted inside their pockets during the test.

The participants in the present study were asked to put these glasses with following instructions;

1. Adjust the glasses with the strap to secure and comfortable fit.
2. Avoid device movement around the head while task performance.
3. Follow system-guided calibration procedure of Tobii Glasses with the aid of an infrared marker.
4. Participant should stand facing the white wall with 1m apart and follow IR marker as moved by experimenter, keeping head in still position during entire process.
5. After calibration the recording will start, the participant can normally move around the room to evaluate samples and do the projective mapping task.

Before running the actual experiments, pilot studies were conducted to identify potential issues with the test design or test environment, calibration procedure and the settings to ensure the eye tracker does not lose focus of the gaze. Tobii Studio Professional version 2.3 (Tobii Technology, Stockholm, Sweden) was used to download the recordings.
The data was analyzed using heat maps determined by fixation time for multiple variables in fix points covering area of interest. Emphasis on maximum and minimum time on fix points on package was done.

The data was analyzed using the heat maps generated because of a higher fix time at a particular area of interest.

### 3.5 TOOLS AND TECHNIQUES

**Table 3.1: Tools and techniques**

<table>
<thead>
<tr>
<th>DATA</th>
<th>TOOLS/ TECHNIQUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background information</td>
<td>Questionnaire cum interview schedule.</td>
</tr>
<tr>
<td></td>
<td>Both electronic and hard copy mode</td>
</tr>
<tr>
<td>Direct eye movement tracking</td>
<td>Tobii Glasses Eye Tracker (Tobii Technology, Stockholm, Sweden)</td>
</tr>
<tr>
<td>In store interview and In home interview</td>
<td>Questionnaire</td>
</tr>
</tbody>
</table>

### 3.6 DATA PROCESSING AND STATISTICAL ANALYSIS

SPSS 20.0.0 was used as a tool for statistical analysis. Frequency analysis was done to quantify the demographic data and the factors responsible for affecting the selection of health food. Pearson’s Correlation analysis were used to measure the strength of the association between two variables.

1. The data obtained using the questionnaires was coded and added to Microsoft excel sheets and imported into SPSS.
2. SPSS and MS Excel software were used for statistical analysis.
3. The level of statistical significance was set at $p < 0.05$.  

48
Phase-wise study plan

Phase I
- Review of literature
- Drafting of questionnaire

Phase II
- Administration of questionnaires,
- Assessment of familiarity and use of food labels, understanding and knowledge of food labels.
- Assessment of knowledge and daily lifestyle in relation to health and healthy eating

Phase III
- Identification of lacunae in awareness, use and understanding of food labels.
- Assessment of gaps in knowledge of healthy eating and lifestyle.

Phase IV
- Use of Tobii Glasses Eye Tracker (Tobii Technology, Stockholm, Sweden)

Phase V
- Data analysis and interpretation
- Analysis of understanding of food labels among population

Fig 3.3 Phase wise study plan