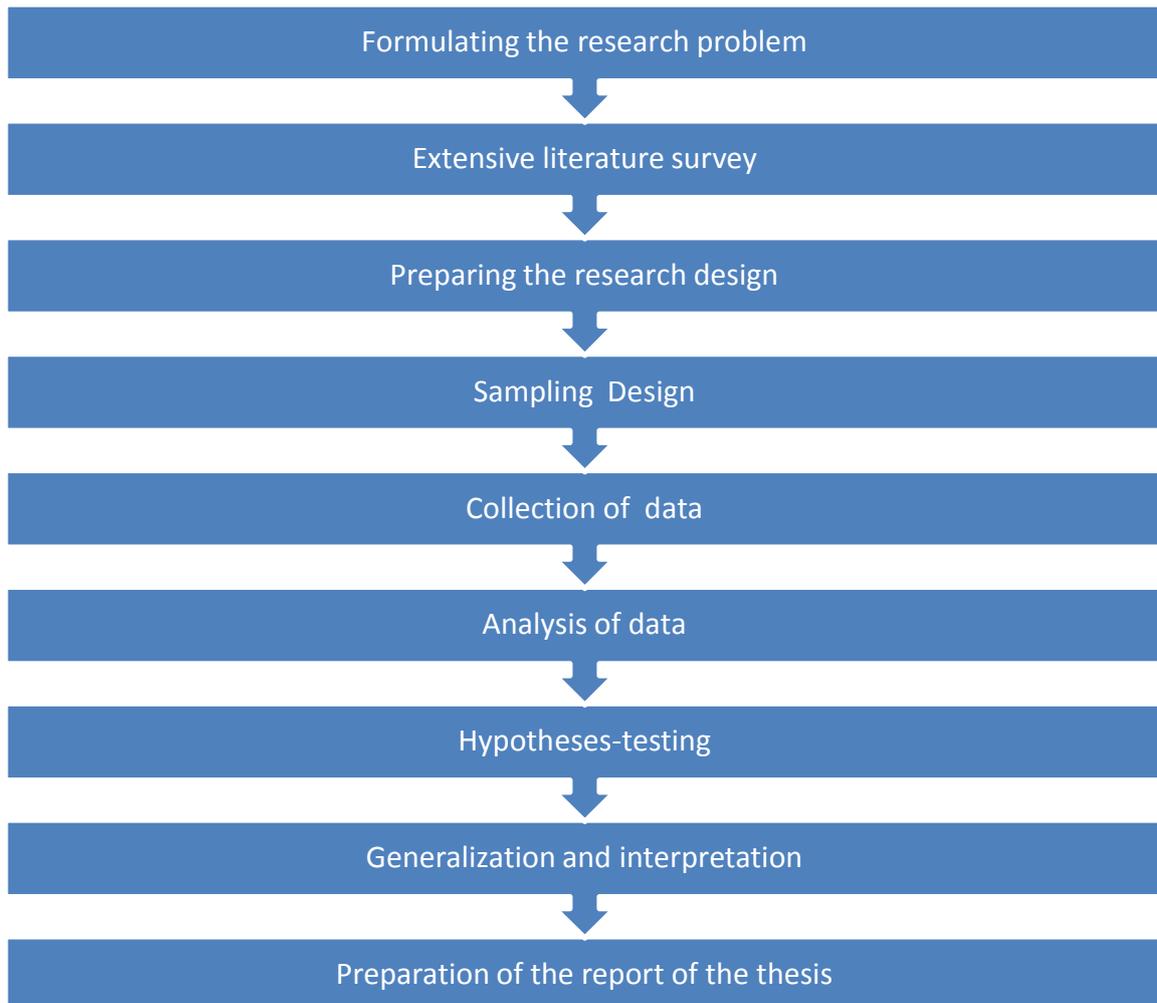# CHAPTER 2
RESEARCH METHODOLOGY

2.1   Research Process:

The steps followed in research process are given Chart No. 2.1

Chart No. 2.1: Research Process

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┌─────────────────────────────────────────────┐
│      Formulating the research problem         │
└─────────────────────────────────────────────┘
                       ↓
┌─────────────────────────────────────────────┐
│          Extensive literature survey          │
└─────────────────────────────────────────────┘
                       ↓
┌─────────────────────────────────────────────┐
│          Preparing the research design        │
└─────────────────────────────────────────────┘
                       ↓
┌─────────────────────────────────────────────┐
│               Sampling  Design                │
└─────────────────────────────────────────────┘
                       ↓
┌─────────────────────────────────────────────┐
│               Collection of  data             │
└─────────────────────────────────────────────┘
                       ↓
┌─────────────────────────────────────────────┐
│               Analysis of data                │
└─────────────────────────────────────────────┘
                       ↓
┌─────────────────────────────────────────────┐
│               Hypotheses-testing              │
└─────────────────────────────────────────────┘
                       ↓
┌─────────────────────────────────────────────┐
│         Generalization and interpretation     │
└─────────────────────────────────────────────┘
                       ↓
┌─────────────────────────────────────────────┐
│      Preparation of the report of the thesis  │
└─────────────────────────────────────────────┘
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Source: Kothari C.R., 2004

2.2   Formulating the Research Problem:

The researchers work experience with the dairy industry in sales and marketing function indicated that the marketers of ice cream have been focusing more on developing the retail network and cold chain and very little attention is given to understanding the customer. This gap was discussed with the Research Guide and a

preliminary literature survey was done by referring to relevant newspaper articles and data on dairy consumption. The literature survey also indicated the vast gap of per capita consumption of ice cream between India and other developed and developing countries. The increase in per capita consumption over last decade was not significant as the base itself was very low. Also, the entry of new players merely replaced the old players rather than developing new markets. Therefore, a gap existed in the literature in understanding the Indian ice cream consumer's quality perception and the factors driving the consumption of ice cream.

2.3   Extensive Literature Survey:

An extensive literature survey was done to review research done so far in the areas of consumption and consumption pattern of dairy products and ice cream and factors driving the same. Although the researcher could find some literature available on consumption and consumption pattern of ice cream but not much has been explored as far as the factors driving the consumption is concerned. Also, the literature available is more on the Western consumer. The consumer from Asia, particularly Indian consumer, seems to remain unexplored. Experience Survey of executives from industry was done to obtain more insights relating to problem areas.

The literature survey helped in refining the research problem, defining the objectives and formulating the hypotheses of the research. A working hypothesis, that "The consumers of ice cream have certain preferences for quality parameters of ice cream and exhibit a particular buying behavior." was developed based on literature available on the western ice cream consumer.

2.4   Research Design:

The research is a Diagnostic Research Study. The diagnostic research design was used as the aim of the research is to analyze the relationships of different variables with consumption pattern of ice cream.

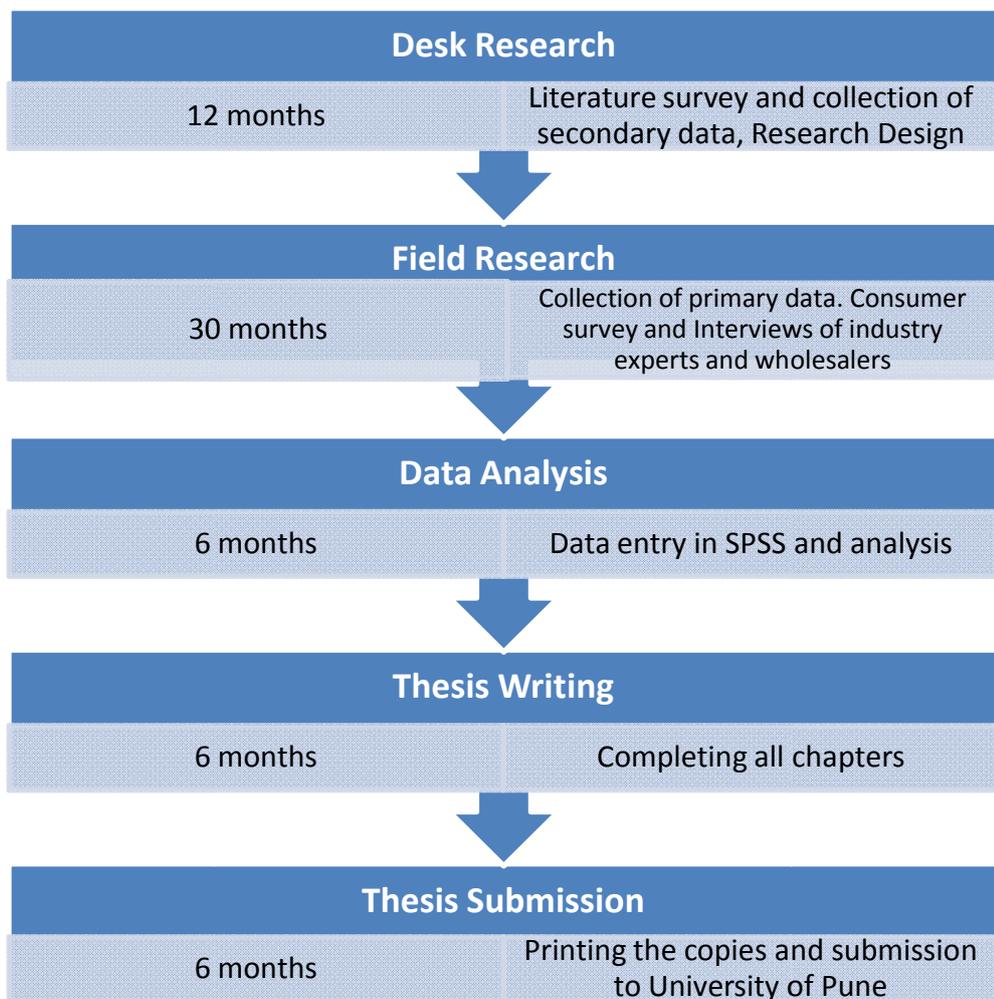The research was designed with following objectives:
1.   To Study consumer perception of ice cream
2.   To critically analyze consumer preferences for ice cream and identify factors driving the consumer preferences.

3.   To study consumption pattern of ice cream

4.   To find out the critical factors governing consumption of ice cream

5.   To find out the factors leading to brand switching by consumers of ice cream

6.   To recommend strategies for increasing the consumption of ice cream

Three types of respondents namely ice cream consumer, ice cream wholesaler and experts from ice cream industry were decided to be the source of primary data.

The activity bar chart (Chart No. 2.2) indicates the time frame decided for completion of various stages of research.

Chart No. 2.2: Activity Chart

Desk Research	
12 months	Literature survey and collection of secondary data, Research Design

Field Research	
30 months	Collection of primary data. Consumer survey and Interviews of industry experts and wholesalers

Data Analysis	
6 months	Data entry in SPSS and analysis

Thesis Writing	
6 months	Completing all chapters

Thesis Submission	
6 months	Printing the copies and submission to University of Pune

2.5   Sampling Design:

2.5.1   Universe: The table No. 2.1 gives the details of universe for each of the sample chosen for study.

Table No.2.1: Respondent wise Universe

Sr. No.	Data Source	Universe
1	Consumer	Population of Pune City
2	Wholesaler	All wholesalers of ice cream in Pune city dealing with any brand
3	Industry Experts	Executives working in ice cream industry from Pune city

2.5.2   Sampling Unit, Sampling Technique and Sample Size: The table No 2.2 gives details of sampling unit, sampling technique and sample size chosen for each of the sampling unit:

Table No.2.2: Respondent wise sampling technique and sample size

Sr. No.	Data Source	Sampling Unit	Sampling Technique (Kothari, C.R.,2004)	Sample size
1	Consumer	Any individual of Pune city above 10 years of age	Non – probability Quota Sampling	1152
2	Wholesaler	Any wholesaler of ice cream in Pune city dealing with any brand	Non – probability Quota Sampling (one wholesaler of each major brand)	5
3	Industry Experts	Sales officers, Executives handling supply chain and branch and regional managers from ice cream industry from Pune city	Non – probability Quota Sampling (Experts from major brands were covered)	5
			TOTAL	1162

2.5.2(i) Sampling for Consumer Survey:

The data on details for wards and ward wise population of Pune city was collected from Pune Municipal Corporation's Census office at Ghole Road and Mandai area. The No. of respondents to be chosen from each ward was then calculated based on the population of that ward (Refer Appendix I). The 162 wards of Pune city were then divided into 15 geographical strata (areas) having similar characteristics like income, standard of living, etc. (Refer Appendix II). The samples were drawn from each of these areas proportionate to the population (Quota – Kothari, C.R., 2004) of that area. Although the samples from these areas were not drawn by random method; an effort was made to cover a representative sample of each of these areas. The male vs. female ratio was also maintained while drawing the samples. The male respondents contributed to about 55% and female respondents contributed to about 45% of the sample drawn (Table No. 2.3). Also, an effort was made to draw more number of samples from the young age group keeping in mind the young population of students and the IT employees (Table No. 2.4). Table No. 2.5 gives income wise sample spread. Care was taken to draw the samples of all income groups proportionate to the population eating ice cream. Therefore, the sample drawn can fairly be considered as a representative sample of Pune city.

Table 2.3: Gender wise sample spread

	Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	641	55.6	56.3	56.3
	Female	498	43.2	43.7	100.0
	Total	1139	98.9	100.0	
Missing	No Response	13	1.1		
	Total	1152	100.0		

Table 2.4: Age wise sample spread

		Frequency	Percent		Cumulative Percent
Valid	6-10	220	19.1	19.6	19.6
	11-15	216	18.8	19.2	38.8
	16-20	326	28.3	29.0	67.9
	26-35	192	16.7	17.1	85.0
	36-45	77	6.7	6.9	91.8
	46-55	39	3.4	3.5	95.3
	> 55	53	4.6	4.7	100.0
	Total	1123	97.5	100.0	
Missing	No Response	29	2.5		
	Total	1152	100.0		

Table 2.5: Income wise sample spread

	Monthly family income	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-10000	92	8.0	12.4	12.4
	10001-20000	174	15.1	23.5	35.9
	20001-30000	163	14.1	22.0	58.0
	20001-25000	130	11.3	17.6	75.5
	40001-50000	100	8.7	13.5	89.1
	>50000	81	7.0	10.9	100.0
	Total	740	64.2	100.0	
Missing	No Response	412	35.8		
	Total	1152	100.0		

<u>Sample size:</u> The following formula was used for arriving at an estimate of sample size for consumer survey.

$$n = NZ^2 \text{ (pq)}/NT^2 + Z^2 \text{ (pq)}$$

(Mishra M.N., -----, pp 176; Kothari C.R., 2008, pp 179)

where,

n = adjusted sample size

Z = level of confidence = 1.96 (for 95% confidence level)

T = allowable tolerance of variation = 0.025

N = population size

p = probability of occurring the event = 75% or 0.75

q = probability of non-occurring the event = 25% or 0.25

z = confidence level = 1.96 (for 95% confidence level)

As per census data of 2001, the population of Pune city = 25, 38,473

As per census data of 2001, the population of Pune city with age > 6 years = 22, 355, 13

The population of Pune city as per Census 2001 is close to 25 lakhs with the decadal growth rate of about 50% (average growth rate per year = 5%). Amongst the dependent population (45%), around 37% consists of children and teenagers. (http://www.indiaurbanportal.in)

As the details of population with age >10 years is not available; with above details about Pune City's population, we can reasonably assume that the population of Pune city with age > 10 years in 2001 was = 20, 00,000

With average growth rate of 5%; the population with age > 10 years in 2005 was = 25,00,000 i.e. N = 25,00,000

Therefore,

n = 2500000 $(1.96)^2$ x (0.75 x 0.25) / 2500000 $(0.025)^2$ + $(1.96)^2$ x (0.75 x 0.25)

= 2500000 x 3.8416 x 0.1875 / 2500000 (0.000625) + 3.8416 x 0.1875

= 1800750/(1562.5 + 0.7203)

= 1800750/1563.2203

= 1151.9489

The sample size for consumer survey = 1152

2.6   Data Collection:

2.6.1   Secondary Data:

The following sources were used for collecting secondary data:

a.   Books on Consumer Behavior, Marketing Management, Research Methodology

b.   Research papers, research articles from Research Journals and Periodicals from PROQUEST database

c.   Research papers, research articles from Research Journals and Periodicals from EBSCO database

d.   Magazines like Dairyman and DARE

e.   Souvenir and conference proceedings

f.   Internet archival of leading newspapers

g.   Census data and Wards list from Census Office of Pune Muncipal Corporation for population details of Pune city

The library of Indira Institute of Management, Pune for online databases was used. The library of Vaikunth Mehta Institute of Management, Pune was also visited to refer to Dairyman magazine. The researcher also referred to Jaikar Library of University of Pune to browse Ph. Ds theses of University of Pune and databases and magazines.

2.6.2   Primary Data:

2.6.2(i)Data Sources:

The data was collected from following respondents of Pune city:

1.   Consumers of ice cream

2.   Retailers of ice cream

3.   Wholesalers of ice cream

4.   Experts from ice cream industry

2.6.2(ii)Data Collection Method and Instruments:

The table No .2.6 shows the details of data collection plan for different respondents:

Table No. 2.6: Respondent wise data collection method and data instrument

Sr. No.	Respondent	Data collection instrument	Data collection method
1	Consumers of ice cream	Structured Questionnaire	Direct contact method
2	Wholesalers of ice cream	Schedule/Check list	Personal Interview
3	Experts from ice cream industry	Schedule/Check list	Personal Interview

a.   **Consumer Survey:**

Pilot Study: A pilot survey of about 100 consumers was conducted initially to test the relevance, suitability of the questionnaire. The questionnaire was refined and some questions were dropped and some added for the final survey. It was observed that the consumers are reluctant to answer the questions related to rating of the brands on different parameters as it takes time to think and rate the different brands. They also have to put strain on their brain to assign the relative scores to different brands. Therefore, such questions were removed for final survey. The options provide for close ended questions were also refined after the pilot study.

Final Survey: The data was collected from 1152 consumers of Pune city. The consumers were first explained the purpose of the study and then asked to fill up the questionnaires. They were guided wherever they needed clarification or explanation on questions. For those who did not understand English and also for the children below 10 years of age; the questionnaires were filled in by the researcher.

Instrument: A structured questionnaire (Appendix No. III) with maximum close ended questions was used. Few open ended questions were included to capture more qualitative data of the consumer buying behavior.

The questions were formulated for each of the objectives and then ordered in logical manner segmenting the questions into categories like brand and flavor preference, buying pattern (in terms of quantity, frequency, consumption location, time, packing, company etc. - Wright et al., 2001 Cartmell Connie, 2007; Koay Allan, 2005) and reasons for consuming ice cream (Benkouider C., 2004, Fuller et al., 2007). The demographic profile of the consumer was also included at the end of questionnaire. The

quality parameters such as taste, flavor, sweetness, creaminess, color, packaging, toppings, etc. of ice cream were included based on the (Bacon et al., 1996; Rothwell, 1985; Marshall and Arbuckle, 1996 as quoted in Udabage and Augustin, 2003, Pearson, 1979, Bodyfelt, 1983 and Pick, 1990 as cited in Guinard et al., 1996).

b. **Wholesaler Interview:**

The objective of Wholesaler Survey was to understand the other side of the story. The objective was to identify the barriers in service to the market and to find out the responsiveness of the marketers to the market changes and market demands. Direct Contact method was used for interviewing the wholesalers.

Instrument: A check list (Appendix No. IV) was used for the wholesalers' interviews.

c. **Industry Experts' Interview:**

The experts included sales executives, executives handling supply chain and branch and regional managers from ice cream industry from Pune city. The survey was conducted to understand the marketers' approach towards the market and their understanding of the customer.

Instrument: A check list (Appendix No. V) was used for the industry experts' interviews.

2.7 Data Analysis:

Chart No. 2.3 delineates the structure of data analysis. The data collected through questionnaires of consumer survey was entered in SPSS (version 17.0) and data was analyzed using statistical tools in SPSS.
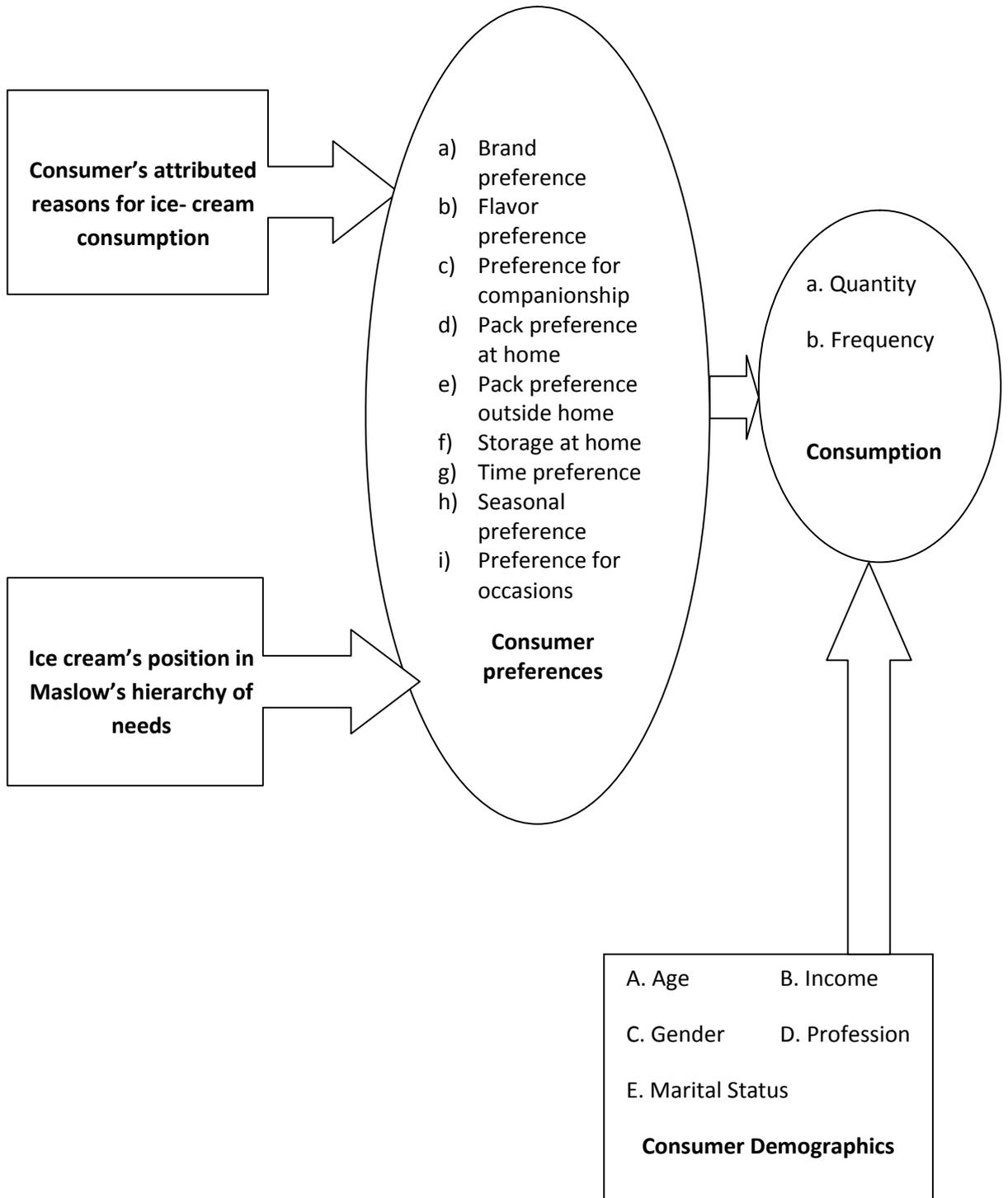
2.7.1 Data Analysis Tools:

The Chi Square tests, Spearman's correlations and ANOVA were used to find out the relationships between the dependent and independent variables.

2.7.2 Hypotheses testing:

The Chi Square tests were use to test the hypotheses as the variables to be tested are categorical/nominal.

Chart No. 2.3 Hypotheses

Consumer's attributed reasons for ice- cream consumption

Ice cream's position in Maslow's hierarchy of needs

Consumer preferences

a) Brand preference
b) Flavor preference
c) Preference for companionship
d) Pack preference at home
e) Pack preference outside home
f) Storage at home
g) Time preference
h) Seasonal preference
i) Preference for occasions

a. Quantity

b. Frequency

Consumption

A. Age   B. Income

C. Gender   D. Profession

E. Marital Status

Consumer Demographics

2.8   Scope and Limitations

2.8.1   Scope of the study:

The geographical scope of the study is limited to Pune City. Although ice cream is consurned by the children of even one year age; they may not have their own preferences. The parents mostly influence their consumption up to the age of 4 – 5 years. The children with 5 – 10 years of age have their own preference but seeking responses from the children of age group less than 10 years would be very difficult. Therefore, consumers above 10 years of age only were considered as the respondents for consumer survey.

The study covers aspects related to consumption preferences and consumption pattern (Quantity and frequency of consumption) of ice cream.

2.8.2   Limitations:

1.   The research study is basically perceptual survey. The consumers' perceptions could be influenced more by their consumption pattern and preferences in summer season as ice cream is a seasonal item.

2.   The sampling method used for consumer survey is non-probability quota sampling. The limitations of quota sampling are applicable to this study also. (Cooper Donald R. & Schindler Pamela S., 2009)

3.   The findings of the study can be applied to metropolitan cities of India; but the findings need to be validated before its application.