

# **4. Research Methodology**

## RESEARCH METHODOLOGY - **INDEX**

In the above study, Chapter 4 of the thesis titled “AN EMPIRICAL STUDY OF CONSUMER BEHAVIOR TOWARDS GREEN COSMETICS IN SELECTED CITIES OF GUJARAT” is the Research Methodology. The chapter outlines the topic of the study, research study, objectives of the study, scope of the study, hypothesis, research design, data collection methods and tools, the population of the study, sampling frame, sample size, sampling method, sampling media, limitations of the study for the data collected.

- a) Rationale of the Research Study
- b) Objectives of the study
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## **Rationale of the Research Study**

The study mainly focuses on understanding consumer behavior when purchasing green cosmetic products. The main factors considered were whether they were satisfied with the product, the consumers' expectations, and their perception of using green cosmetic products.

The study will be helpful to stakeholders such as researchers, consumers, companies, and the government, as it will help understand the consumers' needs and how they affect the cosmetic market. The research will help with consumer satisfaction, modify the product need, and benefit all parties involved in helping and understanding the market at a broader level.

The research will help compare the two types of cosmetics, enabling the researchers to determine the type of cosmetics consumers would prefer.

The research will also investigate how companies' marketing strategies will help them advertise, market, brand loyalty, promotions, and price affect. The research will help explore how environmental sustainability affects consumer buying behavior and how it influences the decision to adopt green consumer behavior.

The research will also help in knowing the green cosmetics for providing better, sustainable products and also the gender influences (men and women) that affect buying behavior.

### **Research Question:**

What factors influence consumer behavior towards purchasing green cosmetics in selected cities of Gujarat State, and how do demographic characteristics, environmental awareness, and perceived product benefits impact consumers' willingness to choose green cosmetics?

### **Objectives of the study**

1. To assess the level of awareness among consumers regarding green cosmetics.
2. To analyze the consumer buying behavior and the factors influencing their purchasing decisions, including 4P's- Price, Product, Place and Promotion alongwith motivation and barriers to adopting green cosmetic products.

3. To examine the consumer expectations, satisfaction levels and the quality perceptions regarding green cosmetic products.
4. To study the influence of demographic factors, including gender on consumer attitudes, intentions, and behavior of consumer towards green cosmetic products.
5. To explore consumer opinions on the use and non-use of green cosmetic products and its associations between environmental behaviour and demographics.
6. To recommend strategies measures to encourage the adoption of green cosmetic products.

### **Scope of the study**

The primary data is collected through a non-disguised structured questionnaire. The primary data can then be analyzed to get accurate data. The study will also help examine the consumer behavioral patterns of whether they are willing to switch from traditional cosmetics to green cosmetics in Gujarat's three cities (Ahmedabad, Vadodara, and Surat).

The demographic insights include age, gender, occupation, monthly income of the respondents, and region (the city they live). The study also focuses on the market changes or dynamics for understanding the capability or potential of green cosmetic products among consumers, and the same analysis can be interpreted by secondary research that includes market analysis, overview, industrial research, pricing, and the influence of gender. At the same time, they purchase cosmetic products and green cosmetic products.

It also helps understand why or how they will switch from cosmetic to green or natural cosmetic products. The study will help focus on promotional and marketing tactics while implementing green marketing. The overall scope of the study will also help analyze the trend and understand the demand and supply of green or natural cosmetic products in the three cities of Gujarat.

The study will help evaluate the challenges faced regarding awareness of green cosmetics, brand loyalty, and the effect of pricing. It can also determine whether consumers are satisfied when purchasing new green or natural cosmetic products. The research study also explores the impact of social media and the kind of advertising influencing green cosmetic products among the respondents.

The study will help the government, companies, researchers, and marketers take green initiatives and understand the potential of green or natural cosmetic products in Ahmedabad, Vadodara, and Surat of Gujarat state. However, the scope of the study is limited to only three cities in Gujarat.

## Hypothesis

<b>H0<sub>1</sub></b>	<i>Gender has no direct relation with usage of Cosmetic Products</i>
<b>H0<sub>2</sub></b>	<i>Purchase of green cosmetic products does not have a direct relation with the income of the consumers.</i>
<b>H0<sub>3</sub></b>	<i>Impact of the promotional method of green cosmetics has no relationship on switching of the brands by the consumers.</i>
<b>H0<sub>4</sub></b>	<i>Female don't believe gender impact purchase Behavior of Green Cosmetic Products</i>
<b>H0<sub>5</sub></b>	<i>The female consumers are not loyal as compared to male consumers while purchasing the green cosmetic products</i>
<b>H0<sub>6</sub></b>	<i>Increase in Number of Female Family members has no relation of Male using Cosmetic Products</i>
<b>H0<sub>7</sub></b>	<i>The consumers of Vadodara city do not intend to pay more towards the purchase of green cosmetic products than the consumers of Ahmedabad city.</i>
<b>H0<sub>8</sub></b>	<i>Quality of product has no Impact on the consumers of Ahmedabad city during purchase of Green Cosmetic Products</i>
<b>H0<sub>9</sub></b>	<i>Environmental awareness of the consumer has no relation on the purchase of green cosmetic products</i>
<b>H0<sub>10</sub></b>	<i>Increase in Education level for person using Cosmetic Product has no impact on his awareness on Green Cosmetic Product</i>
<b>H0<sub>11</sub></b>	<i>Person who hears about green cosmetics from only Friends/Family has no relation to his likeliness to purchase Green Cosmetic product from departmental store</i>

<b>H<sub>012</sub></b>	<i>Person who hears about green cosmetics from social media and has purchased Green Cosmetic product has no relation to increase spending on Cosmetic Products</i>
<b>H<sub>013</sub></b>	<i>Gender Subjective norm has no relation on the purchase of premium products</i>
<b>H<sub>014</sub></b>	<i>Person who used CP for Skin has no favoring likeliness to have purchased Green Cosmetic Product</i>
<b>H<sub>015</sub></b>	<i>An Individual who has used Cosmetic Product for certain body part (Skin, hair, etc.) has no relation with the usage of green cosmetic for same body part</i>
<b>H<sub>016</sub></b>	<i>Individual who gets motivated by Green Cosmetic product not causing harm to environmental has no relation on checking environmental impact while purchasing green cosmetic product</i>
<b>H<sub>017</sub></b>	<i>Consumer who considers packaging as important factor to evaluate quality is not willing to pay more for Green Cosmetic Product</i>
<b>H<sub>018</sub></b>	<i>Allergic Reaction don't impact the willingness of consumers to use Green Cosmetic Products</i>
<b>H<sub>019</sub></b>	<i>Consumers of Vadodara city when compared to Surat do not have direct relation with sustainable and environmental impact of Green Cosmetic Product</i>
<b>H<sub>020</sub></b>	<i>Brand Name has no relation on perception of quality of the Green Cosmetic product</i>
<b>H<sub>021</sub></b>	<i>Consumer aware of Green cosmetic product do not have direct relation of perceiving green cosmetics as chemical free products</i>
<b>H<sub>022</sub></b>	<i>Consumers of Ahmedabad city when compared to Surat do not have any influence of social media while purchase of Green Cosmetic Product</i>
<b>H<sub>023</sub></b>	<i>Consumers of Surat city when compared to Vadodara do not have any influence of Brand Reputation while purchasing Green Cosmetic Product</i>
<b>H<sub>024</sub></b>	<i>Influence via Word of Mouth has no relation in generating Positive emotions towards Purchase of Green Cosmetic Products</i>

<b>Objectives</b>	<b>Hypothesis related</b>
1	H09, H10, H021
2	H02, H03, H011, H012, H016, H017, H018, H024
3	H08, H020
4	H01, H04, H05, H06, H013, H019
5	H07, H015, H014
6	H022, H023
<i>Table 4.1 : Objectives mapped to Hypothesis</i>	

### **Research Design**

The study adopts a mixed-methods approach to comprehensively examine consumer behavior toward green cosmetics in the selected cities of Ahmedabad, Surat, and Vadodara. A descriptive research design was employed to analyze consumer preferences, attitudes, and purchasing behaviors, supported by a quantitative framework for data collection and analysis.

The research aligns its methodological approach with the study's objectives, integrating both exploratory and inferential statistical methods to derive actionable insights.

### **Sources of data and the collection**

The data is collected by primary and secondary sources of data for collecting the information and further analysis.

<b>Type of Data</b>	<b>How is it collected?</b>
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<b>Primary Data</b>	Non-disguised close-ended questionnaire from Ahmedabad, Vadodara, and Surat cities of Gujarat
<b>Secondary Data</b>	Reliable sources, library, research papers, online statistical data, articles, journals
<i>Table 4.2 : Data collection specifics</i>	

### Population of the study

All the residents for the population of the study are from the cities of Ahmedabad, Vadodara, Surat, Gujarat State:

Male age group	Between 13 to 27
Female age group	Between 13 to 55
<i>Table 4.3 : Data collection age group</i>	

### Sampling Designs

i. **Sample frame:**

The sample frame consists of randomly selected respondents from the selected cities of Gujarat State (Ahmedabad, Vadodara and Surat).

ii. **Sample Size:**

Approximately, sample size of 1200 respondents is drawn from the selected cities of Ahmedabad, Vadodara, Surat in Gujarat state, for the same the bifurcation is below:

City	Sample Size	Female/Girls (70%)	Age Group	Male/Boys (30%)	Age Group-

	(N)				(Teenagers and College going)
Ahmedabad	600	420	Between 13 to 55	180	Between 13 to 27
Surat	400	280	Between 13 to 55	120	Between 13 to 27
Vadodara	200	140	Between 13 to 55	60	Between 13 to 27
<b>Total</b>	<b>1200</b>	<b>840</b>	-	<b>360</b>	-

Table 4.4 : Data collection details

The sample size was selected according to the below mentioned formula:

$$n = \frac{z^2 \times \hat{p}(1-\hat{p})}{\epsilon^2}$$

Here, P=Estimated Population, assume that 50% them uses cosmetic products= 50/100= 0.5  
 Z= 95% confidence level=value=1.96  
 e= 5% (allowable error) = 0.05

$$n = \frac{0.5 (1-0.5) (1.96* 1.96)}{0.0025}$$

$$0.0025$$

$$=0.9604/0.0025= 384.16 \text{ (approximately)= } 390$$

As there

are three cities, 390\*3= **1170**

The sample size after approximation was taken as **1200** (it might change according to the validity of the data received by the respondents).

<b>Ahmedabad</b>	<b>Surat</b>	<b>Vadodara</b>
80,59,441	71,85,000	21,90,000
<i>Table 4.5 : Data Universe size</i>		

**\*Sample % taken according to the population of the three cities as per census 2011.**

iii. **Sampling Method:**

Stratified and convenience sampling were used from randomly selected respondents for the study.

iv. **Sampling Media:**

Sampling Media is in the form of filling out a non-disguised close-ended questionnaire.

**Statistical tools and techniques:**

- Descriptive Statistics: Used to summarize demographic data and consumer responses to key variables.

Software: Microsoft Excel and SPSS for data cleaning and summary tabulation.

- Correlation Analysis:  
Examines relationships between variables like environmental awareness (Q30, Q31) and purchase decisions (Q34).

- Significance Testing: The correlation coefficients were tested using the formula:

$$t = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}} \quad * \text{ A significance level of 0.05 was used.}$$

- Regression Analysis:

Multivariate regression models were estimated to assess the impact of independent variables (e.g., price sensitivity, education level) on dependent variables (e.g., purchase intention).

Model Testing: Adjusted R<sup>2</sup>, F-statistics, and p-values were evaluated to ensure model fit and significance.

- **Analysis of Variance (ANOVA):**

ANOVA was used to compare group means for variables like attitudes and demographics.

**Reliability and Validity testing:**

- **Cronbach Alpha:**

Cronbach Alpha is a statistic that determines the internal consistency or reliability of data over multiple items or how dependable replies are when compared to the questionnaire. In this study, 15 questions (in the form of a Likert scale, with one representing strongly disagree and five representing strongly agree) were internally tested.

$$r_{11} = \left[ \frac{k}{(k-1)} \right] \left[ 1 - \frac{\sum \sigma_b^2}{\sigma_t^2} \right]$$

<b>Questions components</b>	
The sum of the item variances	11.042
Variance of total scores	71.989
<b>Cronbach Alpha</b>	<b>0.907</b>

**Cronbach's alpha value is 0.907**, the data's internal consistency or reliability. A high value close to 1 indicates strong reliability, suggesting that the variables in the data sets are highly correlated.