CHAPTER-3
RESEARCH METHODOLOGY

Research in common phrasing refers to a search for knowledge. Research is considered to be a formal, systematic and intensive process of carrying scientific method of analysis which would include problem selection, hypothesis formulation, observation, analysis and conclusion. Research is a systematic investigation undertaken in order to increase knowledge and understanding and to establish facts and principles. It should have the potential to produce results that are sufficiently relevant to increase knowledge. Good reflective inquiry produces theories and models and theories by intellectual attempt to analyze facts and phenomena. This search for individual facts or data requires an open mind and semi open ended question for which there is no ready answer. Data is gathered through experiments, surveys or other methodologies

3.1 RESEARCH DEFINED

P. Slesinger and M. Stephenson in the Encyclopedia of Social Sciences defined research as “the manipulation of things, concepts or symbols for the purpose of generalizing to extend, correct or verify knowledge, whether that knowledge aids in construction of the theory or in the practice of an art.” Research is, thus, an original contribution to the existing stock of knowledge making for its advancement. The term, research, is much stricter in science than in everyday life. It revolves around using the scientific methods to generate hypothesis and provide analyzable results. All scientific research has a goal and ultimate aim, repeated and refined experimentation gradually reaching an answer. These results are a way of gradually uncovering truths and finding out about the processes that drive the universe around us. Only by having a rigid structure to experimentation, results cannot be verified as acceptable contribution to science.

The main purpose of research is to find answers to questions using the application of scientific procedures, to find out the truths which are hidden and yet to be discovered.
3.2 Research Gap
During the course of reviewing literature on the various aspects and on perusal of previous Research conducted, it was observed that a lot of research was available on Consumer Protection globally in respect to Goods, services, management, advertisement and food in general. It was further observed that although lots of material was available on consumer protection and foods in general, not much information was made available in India to Consumers about GMFs. In comparison as regards GM foods the UK government is very proactive in educating its citizens. Although USA has been a pioneer in genetic modification, recent research show that the citizens of USA are questioning the effects of GMFs and genetic modification on health, well being and environment thereby showing a downward trend to its acceptance and purchase power of GMFs. India is a new entrant into GM foods market. With the era of e-commerce, opening of borders for imports and globalization, Consumer Protection is of paramount importance. Each and every individual is a consumer. With new technology and advanced research, new and innovative things are being brought into the realm of the consumer with little to no information provided. As the topic research is vast, the researcher in consultation with her Guide has narrowed down the research to Consumer Protection and Global Economy dealing with only GMFs being one aspect of Global Trade.

3.3 Statement Of The Problem
“Consumer Protection and Global Economy”
(with reference to Genetically Modified Foods)

With the advent of Globalization, markets all over the world are opening upto Global trade thus giving the consumers a wide variety of goods, products, food items to choose from. With Globalization the paramount importance rest in the protection of consumers who although given variety of goods, products, food items to choose from, lack knowledge of information thereby making their choices based on the propagation of Government organization and / or companies and producers. Through Literature review it has been seem that in countries likes USA, UK emphasis and importance is given to consumers and protection of their rights as well as increasing importance on environment.
Due to information made available to consumers/citizen and the legislature/government emphasizing the need of companies making full disclosure as well as the consumers/citizen being made aware of their rights the protection level of the consumer is very high and it dependent not only on the government’s pro-active policies but also on the consumers being proactive by exercising their rights.

In India it is observed that although economy has opened up for the global trade there is little to know information made available to the consumer. In this study the research deals with one food product in the cycle of Global trade being the introduction of GMF into a food cycle in India and the protection that is given to a consumer by giving him a right to choose which is conferred upon him not only by our Constitution but also under the consumer Protection Act, the right of awareness and the knowledge of what he is consuming, thereby giving him the right to make an informed choice.

3.4 RELEVANCE OF STUDY
The study on Consumer Protection and the Global Economy is very relevant today in the time of e-commerce and Globalizations. Globalization is one of the reasons for India’s booming economy. Markets have opened up, paving the path for trade, import of all sorts of things, including foods, vegetables, packed foods, baby foods, processed foods, meats, oils, etc. Hence the need of the hour is protection of the consumer/customer, and how best one can protect its citizen other than enacting an effective, strong and deterrent law. Major concerns regarding G.M Foods making its way into markets and homes, revolve around the environment, health and wellbeing of humans. It is necessary that these kinds of foods and similar novel food products are marketed and produced after being approved for health and safety through a strict assessment of the food’s safety and uses for consumption. A comparative study shows as to the extent of knowledge and information available to consumers and the various modes and efforts made by Countries around the world to protect their citizens/consumers. As GMFs commercialization is at its inception stage, it is imperative that India chooses a wiser path, a path for the people, by the people, which calls for a total commitment towards its citizens/consumers and social responsive and accountability to their needs, thereby making our society and
environment a better and healthy place to live in. This research was conducted with the purpose to understand consumer protection and laws globally in relation to GMFs as well as the corresponding revolutions happening in India. The study was conducted to discover various factors affecting consumers purchasing power as well as the knowledge and information consumers have about GMFs, awareness of their rights, and whether consumers exercise their rights, knowledge about the effects / benefits of GMFs.

3.5 Objectives of the Study
The objectives of this Research emerged from research gap are as follows:
1. To study the factors explaining the difference in US, UK and India (Mumbai) relating to awareness and consumer buying behavior with respect to GMFs.
2. To understand whether respondents’ education qualification and profession has any effect on their willingness to buy / pay a premium for GMFs.
3. To study relationship if any between consumers awareness of GMFs and their perception of its effect on their health and well-being.
4. To explore if there is any impact of perceived morality (Ethics & Trust on biotechnology) on consumers’ willingness to buy genetically modified G.M Fs.
5. To explore if frequency of food labels is independent of consumers exercising their rights.

3.6 Formulation of Hypothesis
Hypothesis may be defined as a proposition or a set of proposition set forth as an explanation for the occurrence of some specified group of phenomenon either asserted merely as a provisional conjecture to guide some investigation or accepted as highly probable in the light of established facts. According to Turney and Robb, “Hypotheses are projections of the possible outcome of the research and are not biased pre-statements of conclusions. They present a framework for the analysis of the problem in relation to plan of attack and indicate how the projected research must lead to one or another set of conclusions. Hypothesis is the principal instrument in research. There are two types of hypothesis. The main application of hypothesis is to assume the statement and or objectives of the research of the problem. Strength of hypothesis depends on many aspects such as, how clear and precise it is, capability of testing it,
its ability to establish relationship between variables, simplicity of the hypothesis, its consistency with most known facts etc. Hypotheses are broadly of two types: Directional Hypothesis and Non-directional hypothesis.

For the purpose of this research study, Null Hypothesis has been formulated; a Null hypothesis is non-directional which states that no relationship exists between two variables tested. In this research study, the researcher has attempted to find out the protection the consumer is given by making informed choices with regards to GMF.

This research thus aims at testing of the following Hypothesis

1) Null Hypothesis

\( H_0 \) There is no significant impact of respondents’ knowledge about genetically modified foods on their willingness to buy genetically modified foods.

Alternative Hypothesis

\( H_1 \) There is a significant impact of respondents knowledge about genetically modified foods and their willingness to buy genetically modified foods.

2) Null Hypothesis

\( H_0 \) Respondents educational qualification has no effect on their willingness to pay a premium for GMFs.

Alternate Hypothesis

\( H_1 \) Respondents educational qualification has an effect on their willingness to pay a premium for GMFs.

3) Null Hypothesis

\( H_0 \) There is no significant relationship between the consumers awareness of GMFs and their perception of its effect on their health and well-being.

Alternate Hypothesis

\( H_1 \) There is a significant relationship between consumer’s awareness of GMFs and their perception of its effect on their health and well-being.
4) Null Hypothesis

**H₀₄** There is no significant impact of perceived morality (Ethics & Trust on biotechnology) on consumers’ willingness to buy G.M foods.

**Alternate Hypothesis**

**H₁₄** There is a significant impact of perceived morality (Ethics & Trust on biotechnology) on consumers’ willingness to buy G.M Foods

5) Null Hypothesis

**H₀₅** Frequency of food labels has no impact on respondents (consumers) exercising their rights.

**Alternate Hypothesis**

**H₁₅** Frequency of food labels has an impact on respondents (consumers) exercising their rights.

3.7 METHODOLOGY

Methods of research used

**Exploratory Research - Cum-Casual Research** was used for this study as the research is related to gaining information about the awareness level of consumers. It was designed to generate basic knowledge, clarify relevant issues, uncover variables associated with a problem and uncover information needs.

**Exploratory Research** is used to explore the description of state of affairs prevalent in U.S. A., U.K. and in INDIA (Mumbai) and **Casual Research** is used to explore the cause and effect relationship between variables like awareness, information, knowledge, socio-demographics and the perception / beliefs about risk / benefits of G.M Foods, willingness to buy and willingness to pay a premium.

3.8 SOURCES OF DATA

Data is the backbone of any research. Without it, a research cannot be undertaken. Any data can be primarily classified into two types: Primary Data and Secondary Data.
Primary Data
In this study the primary data was collected by means of questionnaire, interview and survey.

Questionnaire
After thoroughly reviewing the literature available on the subject the objectives were identified and hypothesis were formulated. A draft questionnaire design was converted into final questionnaire design which included structured as well as open ended questions giving enough scope for the respondent to express his or her views. Data was also collected by the observation method. The researcher visited farmers market, malls and observed the behavior of consumers towards food.

The questionnaire consisted of 43 questions. It was divided in 11 sections,
1. Section I deals with consumer knowledge
2. Section II deals with consumer Rights
3. Section III deals with consumer use of food labels
4. Section IV deals with consumer awareness and perception of GM foods
5. Section V deals with consumer perception of GM foods
6. Section VI deals with knowledge of GM foods
7. Section VII deals with ethics and trust in biotechnology Institute
8. Section VIII deals with G.M Foods labeling policies
9. Section IX deals with acceptance and willingness to buy GM foods
10. Section X deals with willingness to pay for GM foods and
11. Section XI deals with Socio demographics

In this research demographic data comprises of various factors like age, gender, income, occupation, number of members in the family, educational qualification of the respondents (status variable). Researcher sought to study age influence on the buying capacity, preference and awareness of the respondents. Researcher also tried to gaze into the gender orientation- as to whether any particular gender was more aware, more ignorant, whether locality and / or socio-economic background of the respondent had any relation with their awareness/behavior/preference.
Interview

1. Observation
The researcher observed consumers buying behaviour at the super market, food malls, and coffee shop. The researcher also attended the farmers market where the farmers bring their produce directly into Mumbai and sell their produce which is organised at Dharavi Natures Park on every Sunday of the month. The researcher observed the buying behaviour of consumers, the preference of food, awareness of their rights, and awareness of the kinds of food, quality, their preference in food and awareness of G.M Foods

3.9 Interviews
Personal Interviews were conducted by the researcher in Mumbai. In order to collect data on people’s awareness and the attention they pay and preference they give while making purchase of and consuming food, awareness and knowledge and information they have about genetically modified foods, its risk / benefit, willingness to buy and willingness to pay a premium, a structured questionnaire survey was conducted in Mumbai. Direct Interviews were conducted by the researcher of the Farmers, Consumer activists, NGO’s, Lawyers, Business Owners, Groceries, housewives, and other educationists like doctors, medical Representatives, Nutritionists, CEO of Dupon, teachers and the students to find out their level of awareness, knowledge and information they have about GM Foods and their preferences for food. A gist of some of the interviews conducted of prominent people is reproduced hereunder.

(Please refer Annexure - 2 for the rest of the interviews)

1. Interview with Dr. Chetna N Shukla
Homoeopath practicing for 24 years. Volunteer at the Organic Farmers market in Mumbai.

Q. Do you know what GM foods are?
A. Yes I am aware of GM foods and GM technology since many years as I travel a lot. I was introduced to this concept by my European friends and got introduced to bio concept way back in 1998 and have been of the opinion that we must eat food that is free of pesticides and insecticides and grown out of seeds not tampered by technology. I always bought vegetables from farmers of Vasai who I am aware grow vegetables in the traditional way.
Q. You think we need GM Foods for our population?
A. No, we don’t need. We are essentially an agricultural nation. We export foods. We waste food by hoarding. In fact we need measures to store food the way Egyptians did in the pyramids!! We are self sufficient to feed ourselves and also feed others.

Q. How healthy you think the GM Foods are? Are they healthy or not?
A. Not at all. Ever thought why most American new generations are allergic to most natural products- milk, peanuts, eggs etc. Milk is full of hormones and fortified unnecessarily. Why put something into another thing when nature never wanted it in it. Eggs are broilers! It is natural to be allergic to toxins but not to natural food items! This is due to faulty eating habits- may be these tampered food crops.

2. Interview with Mr. Kavita Mukhey
Nutritionist (30 yrs), in 'Organic Awareness field’ and also a breast feeding counselor for La Leche, into farming and is a part of the farmers market. According to Kavita, "farmers are all going to be lost to us soon since their children are not getting into farming and city people will have no food on their plates soon……that’s how the farmers market came about"

"understanding about the genetically modified seed (GMS) business is the earth has to live on for the children…..besides that there are companies that want to take our freedom….they want to take away our intellectual property which is our basic seeds"

Taking on GMS in very important because it talks about our basic necessity which is food and we are thus tampering with it. There are already a lot of chemicals in our bodies due to pesticides, chemical fertilizers and pollution……now with GMS there may a total stoppage in terms of procreation in the human race……GMS can cause infertility or even deformed offspring…..thus noting that…… GMS tampers with the very core of life itself
Q. What according to you is GM and why according to you isn’t it regarded as healthy…have you based this assumption on any particular findings of yours?

A. It’s a gene from anything e.g. spread of the mad cow disease the cow was fed cow…..following natures circle of life is fine but here insertion of a particular gene for desired results isn’t desirable. GM seeds are being encouraged and sold largely by these companies as its mainly for the power i.e. monopolization of the market, they are marketing such by using the tagline that the produce becomes disease resistant. At a GM meet in Delhi my friend Colin Gonsalves finds some of these. Meets one of the farmers actually and questioned why was Btbrinjal seeds being encouraged in a country which is superfluous in such i.e. we have around 500 varieties in India of Brinjal, we don’t have problems growing them. This farmer hit the nail on the head. Mass distribution of GM seeds with a claim that their pest resistant is a hoax as it has been proven….Nowadays we don’t even know what we put into our mouths we think tofu is healthy when in actual fact were just ingesting GM. Same is the case with American corn all over the country. (Interviewer: when I interviewed this director in Nagpur she openly admitted all corn we eat is BT corn). All the more reason to buy organic. Our farmers use hybrid seeds they aren’t even interested in improving such. When the natural seeds for spinach were available in the market the farmers refused to purchase such due to them being lethargic or complacent. There is an evident lack of sensibility.

3. Interview with Mr. Firoz Amijee

Background
(Director, registration and regulatory affair of Europe, Africa and Asia-Pacific of Pioneer Overseas Cooperation) he has been a researcher in London for 3 years as well as worked in London University and Aiden University. He is revered by the UK government, also worked with the government of environment from 1990-1996 in evaluating Biotech GM & developing regulation to control GM. He was the principal scientist as head of GMO control based in London. Worked in Dupont since 1998, has also worked in Brussels for 10 years as head of regulatory affairs as well as 2 years in Iowa USA. Since 2010 he has been regulatory head of Europe, Africa and Asia-Pacific.
Q. Explain in short how is modern technology used today?
A. With the rise of income the demand for better produce accelerates which gives rise to development in technology to improve food products, after a long 20 year search GM process was singled out on to give the desired results. It was first tried in microbes then in seeds to deal with insects then used to make plants insect resistant, leading to less usage of pesticide, then the insertion of the gene into the plant itself however first making sure that it was safe, efficacious and beneficial obviously. This insect resistant factor in GM plants helps break down the herbicides unlike in Non GM plants which the farmer has to use pesticide which is not cost effective.

4. Interview with Dr. Sandhya Kranti
Head division on crop protection at CICR (Central Institute for Cotton Research), worked at the Vegetable Crop Research Institution at Varanasi as well.

Q. When according to you did the emergence of GM foods in India actually take place?
A. The first commercial crops are dated way back to 1996 in the USA it was then bought to India in 1999 and finally commercially released in 2002. No side effects were reported all through 1996 -2011 in USA. Though the Biosafety Protocol was passed by the UN in 2003 it must be noted that the USA isn’t one of them. There have been strong conflicts between the EU and USA regarding the biosafety protocol reference to GM foods. The US claims these regulations violate free trade agreements, the EU counter-position is that free trade is not truly free without informed consent.

Survey
The research was conducted using GEOLINE MODEL which systematically divides the geographical region of Mumbai into Central, Western and Harbour lifelines of Mumbai to ensure validity of the sample of 509 respondents. Researcher selected an appropriate sample size for the study i.e. 509 respondents from all central western and harbor lines of Mumbai in keeping with constraint of time and money. Respondent were categorized in different categorized on the basis of their age, educational qualification, profession, gender.
6 categories were undertaken of Respondents according to their age:
   i. 18 to 24 years
   ii. 25-34 years
   iii. 35-44 years
   iv. 45-54 years
   v. 55-64 years
   vi. 65 years & above

Further, 6 categories were undertaken on the basis of their educational qualification:
   i. Less than High School
   ii. High School
   iii. Technical College
   iv. College
   v. Graduation
   vi. Post Graduate & above

Also, 5 categories were undertaken on the basis of their occupation:
   i. Business
   ii. Agriculturalists
   iii. Student
   iv. Service
   v. Housewife

Secondary Data
Secondary data was collected through extensive study of information available through archives comprising books, articles, magazines, periodicals, databases etc to understand and study the protection consumer has globally, the level of information made available to consumers about GMF and laws as applicable to companies/producers/Government / Legislatures regarding the manufacture and sales of GMF in US and UK
3.10 Research Design

Research Design is the fundamental blueprint of conducting and carrying the entire research which includes the system of collecting data, coding, analyzing and drawing inferences in order to make efficient decisions useful to the user or management team.

In this study the researcher has considered the research design as the conceptual framework to conduct a research which constitutes the blue print for the collection, measurement and analysis of data. Being an outline of research procedure, it helped the researcher to keep a track at all stages of the research. It also helped to systemize procedures to save time and effort and provided direction to the study undertaken in addition to the selection of the proper research technique and gave an idea of the sample- selected tools for the data collection and statistical analysis of the data to test the hypothesis formulated.

The research type is quantitative in order to explore the awareness level and consumer buying behavior towards genetically modified foods and to find out whether consumers were making informed choices or were merely relying on the assurances, promises and claims made by government organizations, institutions, companies and manufacturers, brand names etc. The research methodology of this present study is based on the lines of Exploratory Research Cum Casual Research. Researcher has made conscious efforts while designing the methodology for the research by taking all the important factors and elements into consideration to make the research perfect.

3.11 Universe of Study

Researcher in the present study has taken respondents / consumers from the city of Mumbai. Mumbai being the Financial Hub of India, it has a diversity of people from all different backgrounds involved in all different kinds of jobs from corporate to menial. People chosen were from all walks of life, different backgrounds, involved in different jobs from corporate, businessmen, student, housewife, agriculturalists professionals. Mumbai is the capital city of the Indian State of Maharashtra. It is the most populous city in India, the most populous metropolitan area in India, and the 8th most populous agglomeration in the world, with an estimated city population of 18.4 million and metropolitan area population of 20.7 million as of 2011.
Mumbai is the financial, commercial and entertainment capital of India. It is also one of the world’s top ten centers of commerce in terms of global financial flow, generating 6.16% of India's GDP\(^1\) and accounting for 25% of industrial output, 70% of maritime trade in India and 70% of capital transactions to India’s economy. Mumbai has a vast diversity of people of different age group, socio-economic strata, education qualifications etc is essentially a consumer oriented society. The factors that governed the choice of Mumbai city for the study are:

1. Fast growing middle class, its changing values and pent up consumer demand,
2. Changing women's roles, their participation in being bread earners and the changing structure of the family,
3. Rising consumer ambitions and expectations across many sections of the population,
4. Increased consumer spending on luxury items supported by past savings and the introduction of the credit system,
5. New types of shopping avenues - e-commerce, mobile apps for shopping, huge malls and credit card offers,
6. Media propagation, satellite and cable TV, mobile apps for shopping and the thriving film industry,
7. Media sophistication and familiarity with English language among media people and a wide section of the population,
8. High level of consumer awareness and sophistication across different sections,
9. Travelling Indian consumers - immigrants in US and England, overseas workers, tourists, professionals and their exposure to world brands and designer products,
10. Strong domestic consumer goods manufacturing sector,
11. Resurfacing of self-indulgent cultural elements after centuries of dormant state,
12. Entry of multi-national corporations into India, and
13. The emergence of the rural consumer sector.

### 3.12 Techniques of Sampling

The researcher has used two sampling techniques for this study that is Convenience Sampling wherein the respondents were conveniently chosen based on their relative ease of access keeping in mind the age group and the gender and Snowball Sampling where the respondents in turn referred to their friends and relatives forming a bigger
sample. Mumbai provided a convenient sampling location both in terms of number and the variety of Respondents, Mumbai being the financial capital city of India in addition to being a metropolitan. The study was carried out in places where there was some kind of food retail presence (both organized and unorganized) such as in market places, near shopping malls, railway station etc. However, care was taken to ensure coverage of different socio-economic and demographic groups of customers.

**Pre-Testing of Questionnaire**

The basic purpose of pretesting of questionnaire is to ensure that the questionnaire is very well interpreted by the target group. Once the researcher finished designing the survey questionnaire, identified 12 people from the target group to pre-test it. The target group was systematically divided into women, married women with children, students, employed, unemployed and activist. 2 members with different socioeconomic backgrounds from each group were asked the questions to understand the response whether the questions were understood by the respondents. On observing that the consumers many a times had merely heard of GMF but not aware of what it, necessary changes incorporating the additional options was made and further questions on awareness were added.

**Development of Opinion Scale**

Various kinds of rating scales have been developed to measure attitudes directly. The most widely used is the Likert Scale. Likert (1932) developed the principle of measuring attitudes by asking people to respond to a series of statements about the preference of Genetically Modified Foods, Knowledge of GM foods, Awareness of GM foods, in terms of the extent to which they agree with them, and so tapping into the cognitive and affective components of attitudes. These ordinal scales measure levels of agreement/disagreement. A Likert-type scale assumes that the strength/intensity of experience is linear, i.e. on a continuum from strongly agree to strongly disagree, and makes the assumption that attitudes can be measured. In its final form, the Likert Scale is a five (or seven) point scale which is used to allow the individual to express how much they agree or disagree with a particular statement.

1 -Strongly agree 2- agree 3 Neutral 4- disagree 5-strongly disagree
Processing of Data

The researchers after gathering the data manually entered the data into personal computer using excel. The qualitative data was converted into quantitative wherever required.

Coding of Questionnaire

The researcher coded the data as nominal where the respondents information were coded as pure numbers for further analysis of the data in excel sheets. Example: male 1 female 2 etc. Later the data was imported to a statistical software SPSS for further course of action.

3.13 SAMPLE SIZE

For the purpose of the determination of the sample size for the study the voters list as per 2011 was used.

Universe of Study

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Total Mumbai population is 13000000 as per voters List 2011

**To calculate Sample SIZE (n)**

Firstly, MARGIN ERROR (M E) = Z* SQRT P (1-P) / n WAS CALCULATED.

Where Z = standard normal variate from table turned out to be 1.96 for 5% Level for significance

P is the proportion of population who shop (considered 18 years and above) as per voters list 2011

p = 0.514 (calculation refer excel sheet) and 1-p = 0.486

And Margin error is 0.025 (for 5% level of significance)

Thus M E = Z * SQRT P (1-P) / n

0.025 & 0.025 = 1.96 * 0.514 * 0.486 / n

n = 1.96 * 0.514 *0.486 / 0.025*0.025

= 509

Therefore the Required sample size is 509 for this study

**3.14 VARIABLES OF THE STUDY**

Variables can be called as any general characteristics which are measured and are also affected in amplitude, intensity or both.

**Dependent Variables**

Dependent Variables are those which are generally affected by independent variables.

In this study the dependent variables are categorized under three heads being:

1. **Belief**
2. **Attitude**
3. **Intention**
1. **Belief comprises of the following explanatory variables:**
   i. Safe for Human consumption
   ii. Adverse effect on wildlife and environment
   iii. Relatively riskier for GM Meats than crop
   iv. Benefit to society due to productivity improved
   v. Perception of risk/benefits

2. **Attitude comprises of the following explanatory variables:**
   i. Preference of G.M labeling
   ii. General predisposition of G.M. Food

3. **Intention comprises of the following explanatory variables:**
   i. Willingness to buy G.M Foods
   ii. Willingness to pay a premium for G.M Foods
   iii. Consumer rights

**Independent Variables**
Independent variable is called the variable which affects the dependent variable. In this study the independent variables are put in 2 categories namely 1. **Information** 2. **Normative Compliance.**

1. **Information comprises of:**
   i. Awareness / Information of G.M Foods
   ii. Availability of G.M Foods in supermarkets
   iii. Knowledge of GM foods
   iv. Frequency of Food Labels used
   v. Socio demographics
   vi. Ethics & trust in FDA & Govt. Institutions

2. **Normative Compliance comprises of:**
   i. Perceived morality
3.15 Reliability

The Researcher took the help of all questions and tested them with the 509 Respondents to show the reliability of the study undertaken. The researcher aimed at proving as to whether out of the 509 Respondents if any 100 where taken whether the results on the study would be consistent.

This problem relates to whether research results can be applied to a wider group than those who took part in a study. In other words, would similar results be obtained if another group containing different respondents or a different set of data points were used? For, if 100 respondents out of Respondents who participated in a research study focused on the aware Respondents about their rights, genetically modified foods, awareness of risk & benefits of G.M Foods, is the information obtained from these 100 Respondents sufficient to conclude how the entire Respondents feels about their rights, G. M. Foods? What if the same study was done again with 100 different Respondents, would the responses be similar?

Reliability is chiefly concerned with making sure the method of data gathering leads to consistent results. For some types of research this can be measured by having different researchers follow the same methods to see if results can be duplicated. If results are similar then it is likely the method of data gathering is reliable. Assuring research can be replicated and can produce similar results is an important element of the scientific research method.

Assessment of Reliability of Research Instrument

Researcher applied Cronbach alpha on IBM SPSS 20 test to study the reliability of the data and was successful as it turned out to be 0.73 which is more than 0.7 and proves data to be reliable.

The Researcher used the primary data to test the reliability. In order to test for the reliability of the primary data IBM SPSS with the reliability scale of Cronbachalpha was used.
Reliability

Scale: ALL VARIABLES

Table 3.1: Reliability of data

<table>
<thead>
<tr>
<th>Cases</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>511</td>
<td>99.5</td>
</tr>
<tr>
<td>Excluded&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2</td>
<td>.5</td>
</tr>
<tr>
<td>Total</td>
<td>509</td>
<td>100.0</td>
</tr>
</tbody>
</table>

List wise deletion based on all variables in the procedure.

Table 3.2: Reliability Statistics

<table>
<thead>
<tr>
<th>Cronbach’s Alpha</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.73</td>
<td>43</td>
</tr>
</tbody>
</table>

**Interpretation:** Researcher applied Cronbach alpha test to study the reliability of the data and was successful as it turned out to be **0.73 which is more than 0.7 and proves the data to be reliable.**

The Researcher in order to check the reliability of the data collected from the 509 Respondent carried out the Reliability Test where Cronbach alpha test was applied on all 43 questions from the questionnaire. The results showed that the data was absolutely reliable.

**3.16 Scope Of The Study**

The scope of this study revolves around understanding the proactive nature of government towards their consumers globally and how the government authorities in India can be more proactive towards educating consumers about their rights and duties thus giving the consumers not only a right to chose but also to make informed choices thus protecting consumers from false, misleading claims. It can be used as a tool for educating and creating awareness amongst consumers. It can also act as a basis for government policies in our economic system. Even though decision making is not a part of research but facilitates decisions of policy makers.
The researcher attempted to address the following:

1. Awareness & Education of Consumers in USA and UK about their rights/duties.
2. Awareness & Education of Consumers in India about their rights/duties
3. Accessing the awareness of consumer of genetically modified foods in USA, UK and India (Mumbai)
4. Awareness & Education of consumers about risk & benefits about Genetically Modified Foods in India.

3.17 Limitations Of The Study

1. The study was confined to Mumbai only
2. Study may be limited as the respondents possess limited knowledge of GM foods their benefits/risks as compared to USA and UK
3. Study may also vary depending on urban/rural context.
4. Study is restricted only to the aspect of awareness of Consumers regarding their rights and their knowledge about Genetically Modified Foods.
5. Errors due to Sampling may occur even when utmost care is taken due to the literacy and awareness level of the customers.
6. While analyzing the data, every precaution has been taken, but few topographical errors are bound to appear.
7. The paucity of time and cost involved the researcher was unable to conduct a much more in depth study

3.18 Utility Of The Study

The researcher has found the following benefits which will accrue the industry, academia, Share Holders and prospective investors, Government agencies as well as to consumers.

1. This study will benefit as the insights drawn from this research can help authorities evolve the laws dealing with genetically modified food, consumers and their right of choice. The findings of this study would enable in designing and imparting relevant knowledge and information of Biotechnology/ genetic modification to consumers. This research would also help Government agencies and regulators for framing future policies.
2. The suggestions of this research if implemented can provide huge opportunity for creating awareness among the masses.

3. This report will be of good interest to many large domestic FMCGs as well as large international FMCGs in getting better insights of the Indian market. This would also benefit shareholders of these companies.

4. The suggestions of this research will be of great interest to NGOs and Organic food activist on how to on achieve their objective of creating awareness of Genetically Modified foods.

The study was carried out over a 4-year span. However the actual study period is different for each phase of the study. Primary research in Mumbai was done from April, 2011 to February, 2012. Secondary research included an in depth study of various literatures published during the last 10 years.

Table-3.3: Period of the Study

<table>
<thead>
<tr>
<th>Sr No</th>
<th>Research Activity</th>
<th>Study Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Literature Reviews</td>
<td>February 2009</td>
</tr>
<tr>
<td></td>
<td></td>
<td>December, 2011</td>
</tr>
<tr>
<td>2</td>
<td>Sample design and design of Questionnaire</td>
<td>January, 2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>March, 2011</td>
</tr>
<tr>
<td>3</td>
<td>Primary Research - Survey</td>
<td>April 2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>February 2012</td>
</tr>
<tr>
<td>4</td>
<td>Tabulations, Data Analysis and Findings</td>
<td>March, 2012</td>
</tr>
<tr>
<td></td>
<td></td>
<td>October, 2012</td>
</tr>
<tr>
<td>5</td>
<td>Report Writing</td>
<td>September 2012</td>
</tr>
<tr>
<td></td>
<td></td>
<td>March 2013</td>
</tr>
</tbody>
</table>

Source: Compiled by the researcher

Most of the analysis and report writing was carried out during 2010-2011.
3.19 SCHEME OF CHAPTERIZATION

The research thesis has been structured as per the following chapterization.

Chapter I: Introduction

It provides an Introduction and overview of Globalization, Consumer Laws and Genetic Modification and the key challenges and opportunities. The chapter further deals with concepts of various terms, need and significance of the study, objectives of the study and statement of research problem.

Chapter II: Literature Review

This chapter presents a literature review on Consumer protection, globally as well as in India. It enumerates the protection / laws in respect of Genetically Modified food.

Chapter III: Research Methodology

It deals with the Research Methodology, Need and Importance of the Research, Formulation of Hypothesis, Research Approach and Universe of the study, Sampling and Data Collection, Scope and Limitations.

Chapter IV: Data Presentation, analysis And Interpretation

This chapter discusses in detail the Tabulation of Data, Analysis and Interpretation of data and the discussions of results obtained and Structural Equation Model (SEM).

Chapter VI: Findings And Observation, Conclusion And Suggestions

This section deals with various findings of the study and provides a conclusion. It also presents some of the suggestion given by the researcher based on the findings of the Study.

Chapter 4 covers tabulation of data, quantitative and qualitative analysis of the primary data , as well as the secondary data. This also covers hypothesis testing through analysis of the primary and secondary data, testing different tools and techniques.