“Progress imposes not only new possibilities for the future but new restrictions.”
- Norbert Wiener

‘Consumers by definition include us all’, Kennedy said in his Congressional Statement, ‘They are the largest economic group, affecting and affected by almost every public and private economic decision. Yet they are the only important group... whose views are often not heard’.

1. INTRODUCTION

Each of us is a consumer; every consumer consumes different commodities and services from the time of our birth to the time of our death. The world over, Consumers are now aware and are demanding value for their money. Although advancement in technology has assured of better quality machinery, products and goods, the consumer till date remains the most vulnerable aspect of the marketing strategies, very often exploited at the hands of people and business houses who indulge in corrupt practices. One of the biggest challenges at protecting consumers in this day and age is the humungous volume of global trade, imports and complexity of products traded nationally and internationally. As products contain various inputs and crosses several boundaries of jurisdiction it becomes more and more difficult for regulators to propose and create laws and legislation that safeguard and covers not only all aspects of consumer protection but also social, cultural and practical obstacles. Globalization and increase in global trade, has led to a great influx of import of goods, food products; however, there is little to no information made available to the consumers about these goods, food products etc, thus leaving the consumer to rely solely on government organizations, manufacturers. Foods produced from or using GM organisms are often referred to as GM foods. Genetically modified organisms (GMOs) are organisms (i.e. plants, animals or microorganisms) in which the genetic material (DNA) has been altered in a way that does not occur naturally by mating and/or natural recombination. The technology is often called 'modern biotechnology' or 'gene technology', sometimes also 'recombinant DNA technology' or 'genetic engineering'.
The present study deals with one aspect of Global trade i.e. genetically modified foods (GMF) and consumer protection. This study aims at finding out the protection a consumer has in relation to GMFs, which is a relatively new entry into the Indian market. A overview reveals that in India the awareness level of consumers about GMFs is very low, hence the choices made by consumers is not an informed choice.

By this study the researcher aspires to find out ways and means of creating awareness amongst consumers about GMFs foods therefore giving the consumer a right to make an informed choice, which is step towards their protection.

1.1 CONSUMER AS DEFINED IN THE GLOBAL PERSPECTIVE
A consumer is one who consumes merchandise or goods. A consumer is also a person who buys goods or utilizes services for personal use and not for manufacturing or resale. A consumer is one who can decide whether or not to purchase an item at a shop or who can be influenced by marketing tactics and advertisements. Biology defines a consumer as an organism that eats or absorbs or gets nourishment / food from an external source. Another term for Consumers is Heterotrophs. An active consumer is one who is aware of his rights and exercises them. Hence it cans be said that an aware consumer is an enlightened consumer; an enlightened consumer is an empowered consumer. An aware consumer not only protects himself from exploitation but induces efficiency, transparency and accountability in the entire manufacturing and services sector. Realizing the importance of consumer empowerment legislators world over has accorded top priority to Consumer Education, Consumer Protection and Consumer Awareness.

Consumerism is a recent and universal phenomenon. McMillan Dictionary (1985) defines consumerism as a phenomenon concerned with the protection of consumers from organizations with which there is any dealings in trade. It includes the consumers that need to be protected and activities of government, business and independent organizations that aim at protecting the consumer. Consumer Protection Act ensures, the rights of consumers as well as fair trade competition and the free flow of truthful information in the market place. They are aimed at preventing businesses that engage in fraud or specified unfair practices from gaining an advantage over competitors, at the same time provide additional protection to the
weak and helpless. Consumer Protection laws are Government regulations aimed at protecting the rights of consumers and associated with the idea of "Consumer Rights", and the formation of consumer organizations, helping consumers make better choices in the marketplace and get assistance with consumer complaints. US President John F. Kennedy on 15 March 1962 said “Consumers by definition include us all. They are the largest economic group, affecting and affected by almost every public and private economic decision. Yet they are the only important group whose views are often not heard…”.

He emphasized on the 8 rights which according to him were the basic rights of a consumer which are:

1. **satisfaction of basic needs** – to have access to basic, essential goods and services: adequate food, clothing, shelter, health care, education, public utilities, water and sanitation;
2. **safety** – to be protected against products, production processes and services which are hazardous to health or life;
3. **information** – to be given the facts needed to make an informed choice, and to be protected against dishonest or misleading advertising and labeling;
4. **choice** – to be able to select from a range of products and services, offered at competitive prices with an assurance of satisfactory quality;
5. **be heard** – to have consumer interests represented in the making and execution of government policy, and in the development of products and services;
6. **redress** – to give a fair settlement of just claims, including compensation for misrepresentation, shoddy goods or unsatisfactory services;
7. **consumer education** – to acquire knowledge and skills needed to make informed, confident choices about goods and services, while being aware of basic consumer rights and responsibilities and how to act on them;
8. **a healthy environment** - to live and work in an environment that is non-threatening to the well being of present and future generations;

One of the main aims of the European Union is improving economic competitiveness and the quality of life of all its citizens who are consumers and ensures that consumer interest are built into their legislation in all relevant policy areas which is in addition to direct action to protect their rights. As use of the internet and electronic commerce
is ever growing and service sector expanding, and markets and trading borders open, EU ensures that all its citizens benefit from the same high level of Consumer Protection. Few of the rights of consumers modulated by the EU are as follows:

1. Against exploitation by unfair trade practices.
2. Protection of health and safety from the goods and services the consumers buy or are offered free.
3. To be informed of the quality and performance standards, ingredients of the product, operational requirements, freshness or the product, possible adverse side effects and other relevant facts concerning the product or service.
4. To be heard if there is any grievance or suggestions.
5. To get genuine grievances redressed.
6. To choose the best from a variety of offers.
7. To physical environment that will protect and enhance the quality of life.

**Figure 1.1 Fundamental Rights of Consumers**

Source: Compiled by the researcher on the basis of Consumer Bill of Rights 1962, United Nations

With the markets opening up to globally trade worldwide, it has become necessary and incumbent on the government and the trade houses to pursue and ensure Consumer Protection, as the satisfaction of the consumers is in the larger interest of both. As such the government has a primary responsibility to protect the consumers’
interests and rights through appropriate policy measures, legal structure and administrative framework

1.2 CONSUMER AS DEFINED UNDER INDIAN LAW
S.2 (1) (d) "consumer" means any person who—
buys any goods for a consideration which has been paid or promised or partly paid and partly promised, or under any system of deferred payment and includes any user of such goods other than the person who buys such goods for consideration paid or promised or partly paid or partly promised, or under any system of deferred payment when such use is made with the approval of such person, but does not include a person who obtains such goods for resale or for any commercial purpose

or
hires or avails of any services for a consideration which has been paid or promised or partly paid and partly promised, or under any system of deferred payment and includes any beneficiary of such services other than the person who hires or avails of the services for consideration paid or promised, or partly paid and partly promised, or under any system of deferred payment, when such services are availed of with the approval of the first mentioned person but does not include a person who avails of such services for any commercial purposes;

Explanation — For the purposes of this clause, “commercial purpose” does not include use by a person of goods bought and used by him and services availed by him exclusively for the purposes of earning his livelihood by means of self-employment.

Rights and Duties under the Indian Consumer Protection Act, 1986 (amended in 2013)
The rights are as under
1. Right to Safety— protection against hazardous goods
2. Right to be informed— about price, quality, purity
3. Right to choose— access to a variety of goods and services at competitive prices.
4. Right to be Heard—interest and welfare consumers of must be taken care of
5. Right to seek Redressed— protection against unfair trade practices and settling genuine grievances.
6. Right to Consumer Education —knowledge about goods and issues related to Consumers
The Duties are as under

1. Demand / Ask for a bill for every important purchase and also the Warranty card.
2. Check the ISI mark or Agmark on the goods
3. Inform consumer awareness groups
4. Complaints should be filed on genuine grievances only.
5. Consumers must be aware of their rights and know to exercise them.

**Figure 1.2 Rights and Duties under Indian Law**

![Diagram of consumer rights and duties under Indian Law]

**Source:** Compiled by the researcher, based on Consumer Protection Act 1986

**1.3 India as an Agricultural Economy**

Agriculture in India is the broadest sector and plays a major role in the socio-economic fabric of India. The written agriculture history of India dates back to the *Rigved* written about 100BC. Agriculture and allied sectors like forestry and fishery account for 13.7% GDP (Gross Domestic Product) in 2013.
As Per the 2010 FAO (Food and Agriculture Organization (FAO) of the United Nations ; French: Organisation des Nations unies pour l'alimentation et l'agriculture, Italian: Organizzazione delle Nazioni Unite per l'Alimentazione e l'Agricoltura) world agriculture statistics, India is the world's largest producer of many fresh fruits and vegetables, milk, major spices, select fibrous crops such as jute, several staples such as millets and castor oil seed.

India is the 2nd largest producer of wheat and rice, the world's major food staples and the world's 2nd or 3rd largest producer of several dry fruits, agriculture-based textile raw-materials, roots and tuber crops, pulses, farmed fish, eggs, coconut, sugarcane and numerous vegetables. India has ranked within five largest producers world over accounting for over 80% of agricultural produce items, including many cash crops such as coffee and cotton, in 2010.

India is also one of the world's five largest producers of livestock, poultry and meat, with one of the fastest growth rates, as of 2011. Since independence, India has progressed immensely towards food security. Although the population in India has tripled, the food-grain production quadrupled: thus there has been a significant increase in available food-grain per capita. With a normal monsoon season in 2011, Indian agriculture achieved an all-time record production of 85.9 million tons of wheat, a 6.4% increase from a year earlier. There has been a gradual rise in agricultural produce, in India where rice also hit a new record at 95.3 million tons, a 7% increase from the year earlier as also lentils and other food staples production. Thus, India is said to have produced in 2011 about 71 kilograms of wheat and 80 kilograms of rice for every member of Indian population. Data reveals that the per capita supply of rice every year in India is higher than the per capita consumption of rice every year in Japan. These achievements in food surplus have been achieved with traditional way of farming.

In 2013 India exported $39 billion worth of agricultural produce, thus making it the seventh largest agricultural exporter worldwide, and the sixth largest net exporter. Its net exports have grown from about $5 billion in 2003, to a net value that was double than agriculture exports of combined the European Union (EU-28), making it the fastest growing exporter of agricultural products over a 10 year period, with an
average annual export value growing at 21%. It has become one of the world's largest suppliers of rice, cotton, sugar and wheat. India exported around 2 million metric tons of wheat and 2.1 million metric tons of rice in 2011 to Africa, Nepal, Bangladesh and other regions around the world.

“In matters relating to genetically modified (GM) food crops, the government should ‘hasten cautiously,’ said eminent agricultural scientist M.S. Swaminathan. When asked about differences within the government over conducting field trials of GM food crops, Mr. Swaminathan stated that the apprehensions of various sections of the society vis-à-vis environment, health etc., should be allayed and a National Bio Regulatory Authority should be set up to go into various aspects of the issue. According to Mr. Swaminathan bio safety experts should carry out gene pollution tests and should carefully measure the risks and benefits. He noted that while the technology had been by and large accepted in items such as cotton, there was a great deal of apprehension when it came to edible items. When asked whether the farming community would accept the GM system of agriculture, he stated that farmers were mainly concerned about yield and income stability.

He also pointed out that the Food Security Act could only be implemented with the help of farmers. Mr. Swaminathan opined that productivity ought to be increased and it could be done through an ‘Evergreen Revolution’. When question about the challenges such as the diminishing amount of land available for agriculture, Mr. Swaminathan said that the use of farm lands for non-agricultural purposes should be controlled.”

According to agriculture scientist M.S. Swaminathan creating awareness about genetically modified vegetables like Bt Brinjal was of great importance and stated, “People should understand the difference between genetically modified vegetables and others. We must promote genetic literacy needed for the promotion of genetic food.” It is not just a need but rather a burning desire for creating awareness in our country; an awareness of understanding the need and priority of purchasing, conditions and warranties of purchase agreement and the rights and duties of a Consumer and the legal recourse available to him. The intention being that consumer awareness increases thereby lowering the exploitation and vice versa.”
1.4 Effect of Globalization on India's Economic Growth
Roland Robertson, professor of sociology at University of Aberdeen, an early writer in the field, defined globalization in 1992 as, “the compression of the world and the intensification of the consciousness of the world as a whole”.

The long-term growth prospective of the Indian economy is moderately positive due to its young, vibrant and enthusiastic population, corresponding low dependency ratio, healthy savings and investment rates, and increasing integration into the global economy.

The Indian economy has the potential to become the world's 3rd-largest economy by next decade, and one of the largest economies by mid-century, and the outlook for short-term growth prospective is also good as according to IMF, the Indian economy is the "bright spot" in the global scenario.

1.5 Mumbai as Mini-India: Consumer Based City
Mumbai is the capital city of the Indian state of Maharashtra. It is the most populous city in India, most populous metropolitan area in India, and the 8th most populous agglomeration in the worlds, 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 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 for Mumbai as city for survey 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 segment of the population;
8. Travelling Indian consumers—immigrants in US and England, overseas workers, tourists, professionals and their exposure to world brands and designer products;
9. Strong domestic consumer goods manufacturing sector;
10. Resurfacing of self-indulgent cultural elements after centuries of dormant state;
11. Entry of multi-national corporations into India; and
12. The emergence of the rural consumer sector.

1.6 GENETIC MODIFICATION / BIOTECHNOLOGY

**Figure 1.3 Growth-Regulating” Gene into Goldfish Eggs**

![Diagram showing the process of genetic modification](image)

Biotechnology literally means the use of a living organism (hence, “bio”) to perform a task or function. Historically the term was used to describe processes like cheese, yogurt, wine, or beer production. In modern parlance, however, biotechnology is commonly used to refer to the newer methods of genetic engineering (GE) of organisms through the use of recombinant DNA or rDNA.

People use the term GMO today to refer to a genetically modified organism, one that has been engineered using rDNA. Others refer to foods created in this manner as genetically engineered or GE foods. So, a GE or GMO food is a food modified using rDNA methods or one that contains a GE ingredient.

A genetically engineered food is a plant or meat product that has had its DNA artificially altered in a laboratory by genes from other plants, animals, viruses, or bacteria, in order to produce foreign compounds in that food. Genetic alteration is not natural, it is experimental. Genetically Modified corn has been engineered in a laboratory to produce pesticides in its own tissue. Some popular phenotypes of Genetically Modified foods are:

i. Fruit and vegetables which are resistant to frost so as to make them conducive to be grown in cooler climates;

ii. Disease resistant plants and animals thereby ensuring healthy produce;

iii. Herbicide-resistant food (from plant origin) ensuring crops are not destroyed;

Genetic Modification refers to all modern techniques in cellular and molecular biology used to alter the genetic composition of foods or food ingredients, including in vitro nucleic acid, recombinant DNA, genetic modification, and genetic engineering.

Genetic Modification is different from traditional breeding techniques in three principal ways:

1. it reduces the random nature of classical breeding;
2. it accomplishes the desired results much more quickly and predictably; and
3. it makes it possible to cross the species barrier (Roller and Harlander).
GM crops have provided producers with opportunities to lower production costs, enhance crop production, and increase profits by using inputs more efficiently. Bacillus thuringiensis (Bt) kills insects with alkaline digestive systems through the action of a crystalline protein toxin called cry proteins. Bt transgenic corn is genetically engineered to resist the European corn borer (ECB), which causes reduction in yield (Thomas). Thus, BT transgenic corn lowers input costs and improves productivity. GM crops also offer other potential benefits, such as using fewer chemicals and pesticides, enhanced taste and quality of some foods, increased nutrients, as well as improved resistance to disease and pests. Animal performance can also be improved through genetically engineering. For example, bovine somatotropin (BST) or bovine growth hormone is a naturally occurring protein made in the pituitary gland of the cow. Recombinant bovine somatotrophin (rBST) is BST produced by GM bacteria in the laboratory. A cow administered rBST can increase milk by more than 20% (Aldrich and Blisard).GMFs are foods containing GM ingredients. Consumers are widely exposed to GM foods through either direct or indirect consumption of processed foods produced. According to the Pew Initiative on Food and Biotechnology (2006), 76% of cotton, 85% of soybeans, and 45% of corn grown in the United States were genetically engineered in 2004. In addition, about 54% of all canola in 2001 and more than 50% of papayas grown in the United States are GM. Some examples of processed foods including GM soybeans are bread, cereal, ice-cream, noodles, biscuits, and so on. Corn syrup, beer, margarine, flour, confectionary, and salad dressing may contain GM corn. Cottonseed oil and canola oil for cooking are derived from GM cotton and GM canola. About 70% of processed foods on shelves have at least GM ingredients (The Pew Initiative on Food and Biotechnology, 2004; GEO-PIE). In addition, it is estimated that one third of U.S. dairy producers administer rBST to their cows (Raloff). On the basis of information, food attributes are characterized into three categories:

1. Search attributes: whereby the quality of a product can be ascertained before consumer buys and consumes it;
2. Experience attributes: whereby the characteristics of a product is ascertained only after buying and consuming the product;
3. Credence attributes: where quality of a product cannot accurately be determined even after inspection, buying and consuming it (Nelson; Darby and Karni).
Consumers have considerable difficulty detecting GM attributes before purchase and after consumption of a GM food. Consumers in the U.S. are exposed to beef from cattle fed GM corn. However, consumers cannot tell which beef products have been fed GM corn even after consumption. Consumers are not able to detect the presence of GM ingredients unless the presence of GM ingredients is disclosed through labeling. Hence most GM products fall in the credence good category (Isaac and Phillips). Because of the credence nature of GM products, there is an information gap between consumers and producers. As applications of GM get complicated and sophisticated, asymmetric information about GM ingredients seems to be increasing. According to studies conducted by Hallman et al., 2003 in general, U.S. consumers are not informed about GM foods, and most consumers are unaware of the prevalence of GM ingredients in food products. In addition, their study found that more than half of the respondents provided incorrect answers in more than half of the questions. The lack information and knowledge about GM foods is the main cause for consumers having an unfavorable attitude toward GM. On the other hand, GM crops have been widely adopted and accepted by farmers and agribusinesses. Agribusiness companies such as Monsanto and Syngenta support the application of biotechnology.

Few benefits are set out as under:
1. As there is less chemical residue due to genetic modification, GM crops are beneficial to health;
2. Production cost of farmers is said to be reduced due to genetic modification thereby benefiting society; and
3. Food prices are lowered thereby benefiting consumers.

It is also contended that decrease in the use of pesticides and herbicides, leads to adoption of more environmentally friendly farming thereby benefiting the consumers and the environment by increasing the soil moisture retention and decreased soil erosion. Environmental concerns include:
1. Potential for GM crops to interact with non GM plants, leading to contamination of organic crops and/or herbicide resistant weeds;
2. GM crops may threaten indigenous plants and animals; and
3. The herbicides used with some GM crops kill plants that are beneficial to wildlife.
However, despite the benefits, consumer and environmental groups like Greenpeace and Friends of the Earth have a greater interest in food safety and the quality issues associated with GM products. There are concerns that foods with transplanted genes may cause allergic reactions in some consumers, and GM foods might have unforeseen harmful effects on human health. In addition, there are concerns regarding the ethics of tampering with nature via genetic modification. A study conducted by Hallman et al., 2002 shows that some consumers argue that GM violates the basic principles regarding the relationship between humans and nature, and GM is like “playing God”. Consumer and environmental groups contend that the unknown risks of biotechnology outweigh the benefits, and the safety of biotechnology is unproven. Consumers who are not in favor of GM products insist that they have the right to know whether or not products are produced using biotechnology.

According to NGOs Greenpeace and Friends of the Earth, biotechnology only benefits big companies, not consumers (Greenpeace). In a few years the second generation GM products with a benefit disclosure are expected to be on the market. Unlike the first generation of GM products providing benefits mostly to producers, the second generation GM products offer tangible and observed benefits to consumers. According to International Food Information Council, many GM products with benefits likely to be in the market soon some of which are as follows:
1. Improved protein balance Peanuts;
2. Improved freshness, flavor, and texture Strawberries;
3. Sweeter Peas;
4. Rice with higher protein content;
5. Soybean and canola oil having higher content of tearate, margarine and shortenings more healthful; and vegetables and fruits having vitamin content;

It is further contended that second generation products/crops will enhance attributes which outweigh the potential risks as such consumers would be more likely to adopt those products. There have been many issues and controversies regarding biotechnology and the public debate about biotechnology continue. Overall, while the biotech industry has emphasized the positive effects of biotechnology to society, some consumers and environmental groups have focused on the negative characteristics of biotechnology.
Some of the advantages and disadvantages of GMFs are set out herein below:

**Advantages of GMFs**
1. Pest resistance
2. Herbicide tolerance
3. Disease resistance
4. Cold tolerance
5. Drought tolerance/salinity tolerance
6. Nutrition
7. Pharmaceuticals
8. Phytoremediation

**Disadvantages of GMFs**
1. Genetically modified crops fail to deliver promised benefits
2. Genetically modified crops pose escalated problems on the farm
3. Extensive transgenic contamination unavoidable
4. Genetically modified crops not safe
5. Foods raise serious safety concerns
6. Dangerous gene products are incorporated into crops
7. Terminator crops spread male sterility
8. Broad spectrum herbicides highly toxic to humans and other species
9. Genetic engineering creates super-viruses
10. Transgenic DNA in food taken up by bacteria in human gut
11. Transgenic DNA and cancer
12. CaMV 35S promoter increases horizontal gene transfer

### 1.7 Genetically Modified Foods in India

Although being a late entrant, Bt cotton in 2002 India has surpassed the early entrant, China to become the 5th largest country in terms of area under GM crops (ISAAA, 2007). Till date however, no permission have been given for the commercial production of GM food crops. Many states of India, particularly in the cotton producing states such as Gujarat, cottonseed oil is commonly used as a cooking medium. Therefore, inadvertently GM edible oil might have already made its way into...
the market. From all the material available on record it will be seen that till date no study has been conducted in India that tries to understand the GM crop issue from consumers’ perspective. With rapid development of GM food crops in India and around the world, liberalized trade environment, stagnant productivity of green-revolution-era crops, and the burgeoning of population; policy makers would very soon be asking themselves – When (and not If) they should allow production and import of GM food crops. According to Grainnet, 2007, India has eliminated customs duty on import of corn due to the pressure from the poultry sector and the starch manufacturing industry. It is seen from the study conducted that in India, neither the exporters had any explicit GM/non-GM labelling requirement put in place nor was there any effectively operational GM testing mechanism in place. Grainnet further opined that while one may argue that consumers may be less concerned whether or not their cotton clothes are made up of GM cotton or non-GM cotton (non-food crop), the same, however, may not be assumed regarding food (crops). According to the author, level of awareness among Indian consumers regarding GM foods, their perceptions and attitudes towards consumption of GM foods and their willingness to pay for GM foods, are some of the major issues which need to be addressed before GM foods are introduced in India in the near future.

In developed countries the debate about GM foods among various stakeholders has been going on for quite some time now. Studies have also been conducted in many countries including Argentina, Australia, China, and Italy that try to understand consumers’ awareness, acceptance, and willingness to pay for GMFs (e.g., Kaneko and Chern, 2005; Zhong et al., 2002). This study is an attempt to investigate consumers’ understanding, perception and willingness to pay for GMFs in India.

1.8 Evaluation
GMF needs to be safe and not be a potential threat to human or animal health as well as has to be safe to the environment. As in Europe, farmers and consumers in India should have the right to support or reject the GM product even after it is authorized for use. These GM Crops should be required to show they can be grown without the fear of it mixing with conventional crops, a concept known as co-existence, which is the responsibility of the country where the product is produced.
1.9 CHALLENGES AND CONTROVERSIES

The major dispute and controversy concerning GMFs relates to the advantages and disadvantages derived from GMO’s, Food and other goods produced from GM crops, food production using GMO’s which have been raised by Governmental regulators, consumers, biotechnology companies, non-governmental organizations and scientists. Possible harmful effects from GMF, labeling of genetically modified food necessary or not, government regulators stand / role, effect on environment, impact on farmers, including farmers in developing countries, feeding the growing world population and the role of GM crops, and G.M food as part of the industrial agriculture system are some of the major points of contentions related to GMF.

Major concerns advocated by groups such as Greenpeace and World Wildlife Fund are that risks of GMF have not been adequately identified and managed, they have questioned the objectivity of regulatory authorities. Countries like Europe, UK, have made labeling of G.M Foods mandatory. India does not currently permit any GMF crop to be commercially cultivated, however there is no surety that there is no GMF ingredients in the food produced in India. Currently in India there are hundreds of acres of field trials and unmonitored processed and raw grain imports into the country. Hence, the policy of ‘No GM seeds being sold’ does not assure consumers that their food is GM free today or will be GM free in the future.

Two kinds of justifications are by and large offered favoring mandatory labeling:
1. Warns consumers about potential health impacts
2. Labeling is a consumers right to know.

In 2008, 56 GM crops were undergoing various stages of research in the country. Of these, a whopping 41 comprised food crops around 169 varieties of cereals, oil seeds, cash crops, vegetables, fruits, pulses and spices. Majority of the crops are at the laboratory stage, 11 major food crops undergoing different phases of field trial. Some of the crops are Brinjal, rice, potato, tomato, mustard, ladies finger, corn, cabbage, cauliflower, pigeon pea and groundnut.
The Indian law on GE food, its regulation and its safety is vague, unclear and full of ambiguities. It does not even consider various international principles, which are baseline to various other laws of the world. Added to this is the fact that all funded studies, experiments are conducted and funded by the research companies itself eg. Monsanto, hence the question as to its authenticity.

Hence the need of the hour is awareness and freedom of choice which is provided to every citizen us under our constitution. This study tries to explore the premises of GM Foods in India particularly Mumbai City and its relationship and effect on consumers.

In the Chapter 2 literature review, researcher has covered the literature review referring to various books, journals and articles published on the websites.