

Studies on Food Safety Management and It's Significance in Maximizing the Profit for Food Industry

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Abstract

The present investigation entitled “**Studies on Food Safety Management and Its Significance in Maximizing the Profit for Food Industry**” was carried out at Amity Institute of Agri-business, Amity Business School, Amity University, Mango Orchard Campus, Lucknow, Uttar Pradesh during the academic session 2009- 2010. Food safety means assurance that food is acceptable for human consumption according to its intended use and Food Safety Management System means the adoption of Good Manufacturing Practices, Good Hygienic Practices, Hazard Analysis and Critical Control Point and such other practices as may be specified by regulation, for the food business (Food Safety and Standards Act 2006). Food safety is a global issue affecting billions of people who suffer from diseases caused by contaminated food. This is one of the most widespread health problems and an important cause of reduced economic productivity. Both developed and developing countries share concerns over food safety as international food trade and cross-border movements of people and live animals increase. Governments worldwide are intensifying their efforts to improve food safety by updating national food regulatory systems. The food industry is putting in place modern food safety management systems (FSMS) to satisfy customers and consumers. The situation of food safety in developing countries in the Asia-Pacific region remains, however, far from satisfactory. Food safety can be described as the voluntary approach by some socially conscious and responsible companies that encourage the development, implementation and maintenance of HACCP based programmes in all food related establishments and grading stations for which external monitoring and verification programmes are to be properly established. India is world's second largest producer of agricultural products after China. Yet, we don't offer as much choice to our consumers. The Indian food processing industry has tremendous potential because it has a huge domestic market whose demands keep on rising as well as in the foreign market, not just made up by the rapidly growing diasporas but also by international consumers. The aggregates of export of food products as increased by massive 66.4% in just two years from INR 21,805 crore in 2006-07 to INR 36,294 crore in 2008-09. Interestingly, rise had topped the export list in each of the last three years accounting for about total exports of food and food products. And if higher demand at home last year saw a fall in non basmati rice export, it was more than companies stated by a search in export of basmati rice. Export of basmati rice had more than doubled last year from INR capital 4,345 crore in 2007-08 to INR 9,477 crore in 2008-09. By the end of the year 2009, it is estimated that some 200 million will be added to the 300 million estimated consumers of processed food in India. With the growing per capita income, the ministry of food processing in its vision 2015 document on the prospects and opportunities of the sector estimated that its size would soon travel. This is backed by an Ernst and Young estimation of it growing by 30% - 40% in the next 10 years. We are expected to double our agricultural exports to USD 20.6 billion in coming 5 years. According to the Agricultural and Processed Food Products Export Development Authority (APEDA), our share of farm exports in global trade will grow from 2% - 5%. The experimental material is consists of Six treatments like,

Bread, Biscuits, Dairy, Hotel, Fruit and Vegetables and Snacks with Exploratory Research Design under Random Sampling. The observations are recorded on the basis of various parameters are, Types of customers in the companies covered, Food safety status of the respondent firms, FSMS in business growth, FSMS in reducing product loss and FSMS in product shelf life. It is clear that FSMS is helping these companies to stand in much better position than those players who have no FSMS in their enterprise. It is a true fact that India is on the way of becoming a developed country and improving in its literacy level and per capita income not only in urban area but also in rural areas. This is the high time that every entrepreneur, who want to enter in food industry, or any existing player who is not serious about the role of food safety should be serious to the magic of FSMS in future food business.

Key words: Food safety, Studies, Maximizing, Significance, Management, Food industry, Profit, Food Safety Management System, HACCP, GMP, GHP, APEDA, Bread, Biscuits, Dairy, Hotel, Fruit and Vegetables and Snacks.

Introduction

Food safety means assurance that food is acceptable for human consumption according to its intended use and Food Safety Management System means the adoption of Good Manufacturing Practices, Good Hygienic Practices, Hazard Analysis and Critical Control Point and such other practices as may be specified by regulation, for the food business (P. K. Jaiswal, 6).

Food quality is the quality characteristic of food that is acceptable to consumers. This includes external factors appearance (size, shape, consistency) texture and flavour; factors such as grade standard (eggs) and internal (chemical, physical, microbial). Food quality is an important manufacturing requirement, because food consumers are susceptible to any form of contamination that may occur during the manufacturing process. Many customers also rely on manufacturing processing standards, particularly to know what ingredients are present, due to dietary, nutritional requirements (Halals Vegetation), of medical condition (diabetes or allergies). Besides ingredients quality, there are also sanitation requirements (Imran Khan, 7).

Quality assurance systems enable the application in verification of control measures intended to ensure the quality and safety of food.

The systems are a set of controls implemented and verified by the responsible person(s) at each step in the chain (e.g. producers, farmers, fishermen, food processors, retailers, distributors, storage, and transport personnel, etc.). Selection and application of quality assurance systems can vary depending on the steps in the food production chain, size/capacity of the food business, and type of product produced. Hazard Analysis and Critical Control Point (HACCP) systems and HACCP based systems are considered as an important tool for food safety management. (Ministry of Food Processing Industries, Gov. of India, 9).

Food safety can be described as the voluntary approach by some socially conscious and responsible companies that encourage the development, implementation and maintenance of HACCP based programmes in all food related establishments and grading stations for which external monitoring and verification programmes are to be properly established (S. Y. Deodhar, 2).

Food safety can be applied to satisfy the increasing demand of the consumers for producing more safe foods. If safety is to be guaranteed, it requires addressing entire food chain. The hazards which make food unsafe to health arise from bad agricultural practices, poor maintenance of sanitation and hygiene in the entire food environment, inadequate preventive controls in food unit operations, misuse of food additives and chemicals, frequent recurrence of infected inputs, and inappropriate storage and handling (FICCI Study on Implementation of Food Safety and Standards Act. 2007, 3).

Specific sources of hazards are chemical and microbiological contaminants, biological toxins including genetically modified microorganisms and plant materials, pesticide residues, veterinary drug residues, and allergens. The risk with these hazards can even cause short term or long term diseases including death also due to consumption of such contaminated foods and beverages, and ultimately as a result there would be wastage of precious public health and loss of food business (Food Safety and Standards Act 2006, 4).

Food safety is a global issue affecting billions of people who suffer from diseases caused by contaminated food. This is one of the most widespread health problems and an important cause of reduced economic productivity. Both developed and developing countries share concerns over food safety as international food trade and cross-border movements of people and live animals increase.

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Governments worldwide are intensifying their efforts to improve food safety by updating national food regulatory systems. The food industry is putting in place modern food safety management systems (FSMS) to satisfy customers and consumers.

There are the following food safety norms which have been adopting for maintain the quality and quantity standard in the food industry for judicious food safety management.

ISO 22000:2005 ISO 22000 is a generic food safety management system standard. It defines a set of general food safety requirements that apply to all organizations in the food chain.

ISO 22000, food safety management systems specifies the requirements for any organization in the food chain. These can be applied to organizations ranging from feed producers, primary producers through food manufacturers, transport and storage operators and subcontractors to retail and food service outlets together with inter-related organizations such as producers of equipment, packaging material, cleaning agents, additives, and ingredients.

ISO 22000 specifies the requirements for a food safety management system in the food chain where an organization needs to demonstrate its ability to control food safety hazards in order to provide consistently safe end products that meet both the requirements agreed with the customer and those of applicable food safety regulations.

ISO 22000 and HACCP ISO 22000 uses Hazard Analysis and Critical Control Point (HACCP), developed by the Codex Alimentarius mission. Hazard Analysis and Critical Control Point is a methodology and a management system. It is used to identify, prevent, and control food safety hazards. HACCP management system applies the following methodology:

1. Conduct a food safety hazard analysis
2. Identify Critical Control Points (CCPs)
3. Establish critical limits for each critical control point
4. Develop procedures to monitor critical control points
5. Design corrective actions to handle critical limit violations
6. Create a food safety record keeping system
7. Validate and verify system

This is used to develop a Hazard Analysis and Critical Control Point plan. An HACCP plan is a document that describes how an organization plans to manage and control its food safety hazards. An HACCP plan should contain at least the following information:

1. Critical Control Points (CCPs)
2. Hazards that will be controlled at each CCP
3. Control measures that will be used at each CCP
4. Critical limits that will be applied at each CCP
5. Procedures that will be used to monitor CCPs
6. Actions that will be taken when limits are violated by (P. K. Jaiswal, 6 [1]).

India's tropical climate favours the cultivation of several exotic foods and flower crops. The peninsular coastline of the country drives growth of the marine industry. India's processed food exports constituted 1.5 per cent of the global food trade in 2008-09. By 2015, the Indian food industry is estimated to grow by about 40 per cent over the level in 2007 (Ministry of Commerce and Industries, 1).

India is world's second largest producer of agricultural products after China. Yet, we don't offer as much choice to our consumers. The Indian food processing industry has tremendous potential because it has a huge domestic market whose demands keep on rising as well as in the foreign market, not just made up by the rapidly growing diasporas but also by international consumers. The aggregates of export of food products as increased by massive 66.4% in just two years from INR 21,805 crore in 2006-07 to INR 36,294 crore in 2008-09 (Ministry of Food Processing Industries, Government of India, 10).

Interestingly, rice had topped the export list in each of the last three years accounting for about total exports of food and food products. And if higher demand at home last year saw a fall in non basmati rice export, it was more than companies stated by a search in export of basmati rice. Export of basmati rice had more than doubled last year from INR capital 4,345 crore in 2007-08 to INR 9,477 crore in 2008-09. By the end of the year 2009, it is estimated that some 200 million will be added to the 300 million estimated consumers of processed food in India. With the growing per capita income, the ministry of food processing in its vision 2015 document on the prospects and opportunities of the sector estimated that its size would soon travel. This is backed by an Ernst and Young estimation of it growing by 30- 40% in the next 10 years. We are expected to double our agricultural exports to USD 20.6 billion in coming 5 years. According to the Agricultural and Processed Food Products Export Development Authority (APEDA), our share of farm exports in global trade will grow from 2-5% (Ministry of Food Processing Industries, Government of India.8).

In his project entitled "Development of HACCP procedures for the production of soy based foods and their evaluation", Dr. A.P. Gandhi developed different types of soya based food products with and without HACCP and proved what happens in both conditions. He determined what may be physical, chemical or biological hazards may present.

In his project work Dr. A.P. Gandhi recommended that HACCP procedures with GHP and GMP recommended by Codex Alimentarius Commission/ FAO improves the utilization of soy based foods quality and these products have great export potential as per International standards (A.P. Gandhi, 5).

Tables given below clearly showing that when Dr. Gandhi followed HACCP, how quality affects at composition level, microbiological level, sensory parameters



Table.1
Quality assessment of Soymilk by Dr. A.P. Gandhi

Quality standard expected	With out HACCP	With HACCP
<i>Composition:</i>		
Protein:		
a maximum of 4%	3.2%	4.3%
Fat:		
a maximum of 2%	1.6%	2.0%
Carbohydrates		
A maximum of 3%	2.2%	3.0%
Crude Fiber:		
a maximum of 4%	5.0%	3.7%
Ash:		
a maximum of 6.5%	4.4%	3.3%
Moisture:		
a maximum of 80%	80%	80%
<i>Microbiology:</i>		
Total plate count:		
20,000/g max	30,000/g	6,000/g
Total coli forms:		
100/10g max	130/10g	Nil
<i>Salmonella:</i>		
Negative/100g	20/100g	Negative

<i>E.coli</i> :	Negative/100g	15/100g	Negative
<i>Staphylococcus</i> :	100/10g maximum	135/10g	Nil
Yeast:	100/10g maximum	100/10g	Nil
Mold:	100/10g max.	112/10g	Nil
TI:	less than 75% of original.	<50%	<80%
Urease activity:	Nil	Nil	Nil
Available lysine:	Min 5.5g/6g N	5.2g/6gN	g/6gN
Sensory parameters:			
Color:	Creamy to yellow	Yellow	Creamy
Odor:	Less beany	Beany	Less beany
Taste:	Nutty	Nutty	Nutty
Defects:			
Insect parts:	Total absence.	Absent	Absent
Foreign material:	Total absence.	Absent	Absent

Table. 2
Quality Assessment of the Soya Sprouts by Dr. A.P. Gandhi

Quality standard expected	With out HACCP	With HACCP
Composition:		
Protein:		
a minimum of 12%	10%	13.1%
Fat:		
a minimum of 6%	5%	6.7%
Crude Fiber:		
a maximum of 4%	5.2%	3.8%
Ash:		
a maximum of 1.0%	1.4%	1.0%
Content	mg/100g	
Vitamin A, 11	8	11.5
Vitamin B 0.340	0.250	0.358
Vitamin C 28.1	22.0	30.1
Calcium 67	52	72
Iron 3.0	2.1	3.3
Magnesium 70	60	75
Phosphorus 160	156	161
Potassium 480	450	490
Moisture:		
a maximum of 69%	60	65
Microbiology:		
Total plate count:		
20,000/g max	50,000/g	10,000/g

Total coli forms:	100/10g max	120/10g	Nil
<i>Salmonella</i> :	Negative/100g	10/100g	Nil
<i>E.coli</i> :	Negative/100g	15/100g	Nil
<i>Staphylococcus</i> :	100/10g maximum	135/10g	Nil
Yeast:	100/10g maximum	100/10g	Nil
Mold:	100/10g max.	123/10g	Nil
Defects:			
Insect parts:	Total absence.	Absent	Absent
Foreign material:	Total absence.	Absent	Absent

Material and Methods

Research methodology is only the way to inculcate those methods which require to obtained final analysis and discussion for complete the report.

The present investigation entitled “**Studies on Food Safety Management and its Significance in Maximizing the Profit for Food Industry**” has been carried out at Amity Institute of Agri-business, Amity Business School, Amity University, Mango Orchard Campus, Lucknow, Uttar Pradesh during the academic session 2009-2010.

In the present investigation the research problem is that How a Food Safety Management System help to stand a food enterprise in the market for long term. In this study there are 14 respondents have selected for conduct the study and 7 companies are covered for survey.

In the present investigation the survey has been conducted on the basis of well structured questionnaire, in which some selected question asked by the respondent in regarding food safety and food quality (Www.Seafarershealth.Org. 16).

Questionnaire to Conduct the Survey

Name of the Organization:

Name of the respondent:

Designation of the respondent:

Contact no. of the respondent:

E-mail Address of the respondent:

Q.1.Your responsibility in your organization is related to food safety. (Mark only one)

- Yes
No
- Q.2. Have you ever completed any course related to food safety?
- Q.3. What do you mean by Food Safety Management System?
- Q.4. Why do you follow Food Safety?
- Q.5. Food safety is properly managed in your organization? (Mark only one)
Yes, always
Yes, almost always
No
- Q.6. Workers involved in production line pay enough attention to personal hygiene (clean clothes, hand washing, fingernails and hair)? (Mark only one).
Yes, always
Yes, almost always
No
- Q.7. Contact between raw food and cooked or ready to eat food is (mark only one)
A. No problem:
Correct
Wrong
Do not Know
B. A source of contamination:
Correct
Wrong
Do not Know
- Q.8. Who is your customers?
Indians
Foreigners
Both Indians and Foreigners
- Q.9. There is a HACCP team in your organization?
Correct
Wrong
Do not Know
- Q.10. Do you update and improve FSMS time to time? (Mark only one)
Yes
No
- Q.11. FSMS help to increase your product shelf life? (Mark only one)
Correct
Wrong
Do not know
- Q.12. How FSMS help to improve product shelf life?
- Q.13. Your organization can get success without FSMS in the market same as with FSMS? (Mark only one)
Correct
Wrong
Do not know
- Q.14. Investment in FSMS is beneficial in your organization's business growth? (Mark only one)

- Correct
Wrong
Do not know
- Q.15. Consumers give a positive response to safe food? (Mark only one)

- Yes, always
Yes, almost always
No

The experimental material is consists of Six treatments like, Bread, Biscuits, Dairy, Hotel, Fruit and Vegetables and Snacks with Exploratory Research Design under Random Sampling.

The observations are recorded on the basis of various parameters are, Types of customers in the companies covered, Food safety status of the respondent firms, FSMS in business growth, FSMS in reducing product loss and FSMS in product shelf life. All the data were collected on the basis of schedule through Company visit, personal, telephonic interviews and also collected from books, magazine, journals and internet

Results and Discussion

The present investigation entitled “**Studies on Food Safety Management and Its Significance in Maximizing the Profit for Food Industry**” has been showing the preference of respondent in the six different companies on the basis of Pie chart presentation of total respondents type, Doughnut chart presentation, Pie chart presentation of companies have FSMS in place, Pie char presentation of respondents showing their favour to FSMS and Pie chart presentation of FSMS in product shelf life.

There were following results have been find out on the basis of these data

Table 3 .Types of Customers in the Companies Covered

S .No.	Type of Company	No. of Respondents	Customers are Indians	Customers are Foreigners
1	Bread	3	✓	X
2	Biscuit	2	✓	X
3	Dairy	1	✓	✓
4	Hotel	2	✓	✓
5	F&V	4	✓	✓
6	Snacks	2	✓	X
Total		14		

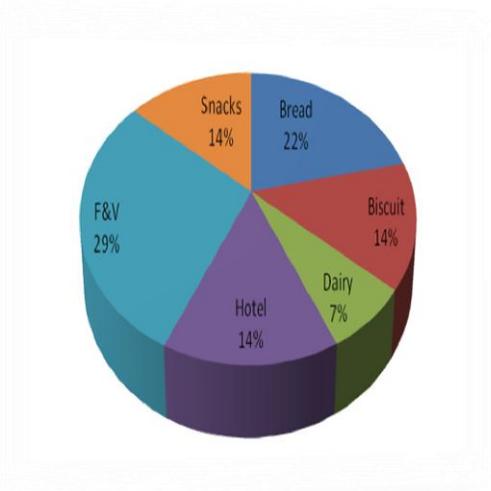


Figure 1. In this research work, 29% respondents were from fruit and vegetable processing industry, 22% were from bread manufacturing industry, 14% were from snacks industry, 14% from biscuit industry, 14% from hotel and 7 % from dairy company.

Table 4. Food Safety Status of the Respondent Firms.

S. No.	Type of Company	No. of Respondents	HACCP in Place	Under development	Plan to Implement	No plans to Implement
1	Bread	3	-	-	-	✓
2	Biscuit	2	✓	-	-	-
3	Dairy	1	✓	-	-	-
4	Hotel	2	✓	-	-	-
5	F&V	4	-	✓	-	-
6	Snacks	2	✓	-	-	-
Total		14				

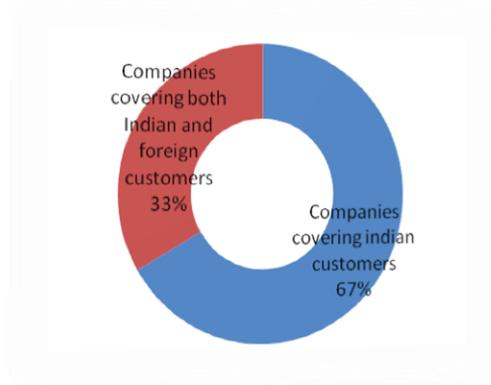


Figure 2. Doughnut Chart Presentation.

This doughnut chart clearly showing that 33% companies, covered in this research work, targets both Indian and foreign customers and companies targeting Indian market is 67%.

Table .5 FSMS in Product Shelf life.

S. No.	Type of Company	No. of Respondents	FSMS help in Business growth	FSMS does not help in Business growth	Cannot say
1	Bread	3	-	✓	-
2	Biscuit	2	✓	X	-
3	Dairy	1	✓	X	-
4	Hotel	2	✓	X	-
5	F&V	4	✓	X	-
6	Snacks	2	✓	X	-
Total		14			

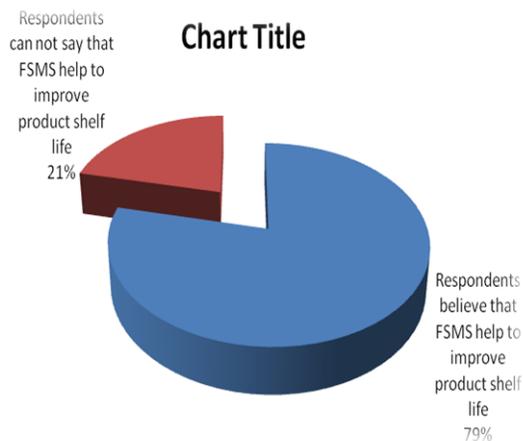


Figure 3. Pie Chart Presentation of FSMS in Product Shelf life

This pie chart expressing that 79 % of total respondents said that FSMS help to increase their product shelf life and on the other side 21 % of the respondents was not clear about the role of FSMS in their product shelf life. The present research finding shows that out of the total number of respondents i.e. 14 mostly said that Food Safety Management is very important for any food industry. Every one out of these respondents did a course which was related to food safety. Most of these technically sound persons told me during the discussions that why safe food is going to be more and more important to the consumers. They told me about-

Food born disease – these diseases caused by food poisoning and food infection.

Food safety is the integral part of any food system and Measures are taken for Manufacturing and importing food, which is free from poisonous and harmful effects. It is, therefore, not surprising that food safety has received the attention of WTO. The approach has been to ensure safety and quality of food products at the manufacturing Stage itself rather than after manufacture. It is with this aim of detecting food quality at the manufacturing stage that the system of Hazard Analysis and Critical Control Points was devised (V. Sardana, 12).

Food safety management help us to check easily where can be a potential hazard may occur in our food chain and with the help of proper transparent system we can catch that step where the problem is. It help to improve our organization performance in the market, it help to save our workers time. Most of the export-oriented meat processing plants in India follow world class sanitary and phytosanitary measures given by the OIE, a referral institution of WTO. The plants are certified with HACCP (Hazard Analysis Critical Control Points), ISO-9002 and SGS meeting the OIE norms. These measures are for meat safety which starts right at the Primary production level either with the farmers raising 5–20 animals or in the feedlot. In the HACCP, the Critical Control Points (CCP) are closely monitored at the reception of the animals (procured from disease free areas), ante-mortem examination, post mortem examination, chilling of carcasses at 0 - 4 °C for 24 hours to bring pH level below 7, freezing of deboned meat at 35–40 °C for 10–12 hours and storage at 18 °C. All these measures exclude the possibility of transferring any contagious/infectious/zoonotic disease to the importing countries (S.K. Ranjhan, 11).

In fact, HACCP and ISO-22000 based systems are designed to prevent the occurrence of potential food safety problems. This is achieved by assessing the inherent risks attributable to a product or a process and then determining the necessary steps that will control the identified risks. The goal of implementing a particular HACCP and ISO-22000 system is to prevent or minimize risks associated with biological, chemical, and physical hazards to acceptable levels as it is based on prevention rather than detection of hazards (Sekheta *et al*, 13).

The increase in public concern worldwide regarding food hazards and decline in public trust in food risk regulators suggests that there is a need to identify the actual concerns held by the public regarding specific food hazards in order to develop effective risk communication. HACCP and ISO-22000 based quality systems are designed to prevent the occurrence of potential food safety hazards. The goal of implementing a particular food safety system is to prevent or minimize risks associated with biological, chemical, physical, electronic and mental hazards to acceptable levels as it is based on prevention rather than detection of hazards. Many food manufacturers seem to be

not aware enough of the above mentioned hazards and mainly both insidious and hidden groups of hazards. It is HACCP team's responsibility to consider such hazards while analyzing hazards along the food chain in their establishments ((Sekheta *et al*, 14).

33% respondents accepted that they have no a particular food safety management system in their organization because the market they are covering does not compelling them to follow food safety. Their customer is satisfied with their products. They have no HACCP team, no documentation for food safety system. But they also accept the reality that if we are looking for future perspective then we have to pay attention on food safety. Indian government is also paying attention to provide safe food to Indian consumers and for that different rules and regulations are here and we feel that in future government will strictly implement these rules and regulations. But some people from industry say that there is no need to invest in Food Safety Management System because it will increase the product cost. Out of total respondent, 21% were not in the favour to invest in FSMS. But the management which know the importance of ISO 22000 , HACCP, GMP, GHP eager to invest in FSMS as other 79% respondents (Seng *et al*, 15).

Conclusion

If the citizens of a country are not taking healthy and safe food then there will be probability of more no. of cases of food born diseases. When they will be ill, then these patients will invest to cure themselves. If the food which will be available to them is safe then there will be fewer chances of food born diseases and the burden which comes to an economy as a result of food born diseases will be less. This is the case of an individual country but what happens when companies which not following FSMS want to enter in international market or want to be an exporter. Such types of companies enter but not just export food also export food born diseases and another country becomes an importer of these food born diseases.

Customers who are good per capita income are very careful about to their health and heavily invest for good health. They always demand for same food. They always show great response to those products which is prepared under hygienic condition. This is the reason that Indian exporters are far behind than other countries in case of food export.

If we take the look of India, in big cities we can see that players who are very careful about their future taking a nice turn to get get certified with ISO or HACCP. We can take an example of Chappan Bhog sweets (ISO 9001-2000 and HACCP certified) and Neelkanth sweets (HACCP certified) in Lucknow city of Uttar Pradesh state, who feels that their customers can go to other competitors in search of safe and hygienic food.

Enhanced HACCP and ISO-22000 based quality systems are having a positive effect throughout the horticultural industry, however, confusion relating to choice and the requirement for multiple systems is not conducive to rallying support for such inside the farm gate. The first few steps for the horticulturalist are difficult enough without having to face such a predicament. HACCP offers a more comprehensive and science-based alternative for controlling food safety hazards compared with traditional sanitation programs based upon good manufacturing practices (GMP). Ultimately, controlling measures for all discussed hazards including the insidious is the key to have much safer food production controlled by enhanced HACCP and ISO-22000 systems.

FSMS increase efficiency of workers in working premises. Due to personal hygiene there will be less chances of contamination. FSMS not only just for business. During work, workers know how much importance of hygiene in their daily life. When audit process is done in a food enterprise, they sharply notice each and every thing related to food safety. Such types of audit and time to time up gradation help to improve process involved and to get trust of customers. It is said that word of mouth is the best way to make your product popular and it will happen when consumer get a good health from food which he consume. In metro cities, life style is very hectic and people have no time to cook food so they consume ready to eat food and there is a very good opportunity for food industry in India because we have the second largest population in the world and everyone of them need food.

FSMS help to improve product shelf life because it maintains hygienic condition reduce microbial load in the complete food chain and if any problem occurs then easily it can be traced. FSMS help to increase tourism in a country because in developed countries, rules and regulation of food safety are very strict and their consumers are well aware about safe food and they also think before visit any where that is there safe food will be available or not for them. It is clear that FSMS is helping these companies to stand in much better position than those players who have no FSMS in their enterprise. It is a true fact that India is on the way of becoming a developed country and improving in its literacy level and per capita income not only in urban area but also in rural areas. This is the high time that every entrepreneur, who want to enter in food industry, or any existing player who is not serious about the role of food safety should be serious to the magic of FSMS in future food business.

Acknowledgments Authors are thankful to Dr. Rajendra Kumar and to Mr. Vikas Kumar in Lucknow for the moral and enthusiastic support during the course of study. Special thanks to the Ministry of Food Processing Industries, Government of India and to the Amity Institute of Agri-business, Amity Business School,

Amity University, Mango Orchard Campus, Lucknow, Uttar Pradesh for their support and kind cooperation.

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