Evaluation of Food Safety Practices in select food companies

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Abstract

Food Safety is a scientific discipline describing handling, preparation and storage of foods in ways that prevent food borne illnesses. In present era there is much advancement in the process of product control and practices which are aimed to produce wholesome and safe food. Governments have imposed very strict quality and food safety assessment parameters for food establishments. All food establishments have not adopted practices to ensure food safety. In the present study the survey of some food establishments were conducted to evaluate current food safety practices adopted by various food establishments. The evaluation was done by using structured questionnaire/checklist. The questionnaire/checklist detailed of food establishment, management and personnel, personal hygiene, establishment design and physical facilities, maintenance and sanitation of establishments, control of operations and consumer awareness with product information.

Keywords: Food, Safety, Quality Assurance, Food Safety Practices, Safety Methods, Hygienic, Pest Control, Quality Control.

Introduction of the Food Safety Practices

The Food is fuel for human body. It is necessary for growth and maintain the proper health condition, the food give nutritional support for an human system.The component is ingested in to organism and assimilated by the organism's cells to provide energy, maintain life and stimulate growth. Most of the people obtained food from agriculture sector. According to world population growth, it is impossible to have adequate food supply. So food companies are playing a significant role to solve the problem. The food companies are manufacturing nutritious foods and long shelf life products. The Demand for the food and consumer satisfaction, health point of view, the food companies are making safety foods.

The most important quality parameter within the food sector is food safety. In contradiction with rapid and continuous development of food processing technologies, applied latest quality control and analytical methods, the number of food safety incidents are increasing huge.The Food safety assured that food products are safe to consume. It means taking care with all aspects of food production and preparation to make sure that the final food product is safe without any contamination. The food safety is usually managed through regulation, Quality Assurance and Hazard Analysis Control Critical Point (HACCP),Good Manufacture Practice (GMP),Quality Management System(QMS) ,Global Food Safety Initiatives (GFSI), International Organization for Standards (ISO 22000).International Organization for Standards (ISO 22000).These are international recognized logical tools for adapting traditional inspection methods to modern methods. The Prevention of Food Adulteration Act (PFA) Introduced by the Government of India in1954. It was replaced by the food safety standard Authority of India in 2011. According to this act, Food protection from contamination that may lead to the health risk of consumer

The Food safety tools are proved to be very effective tool to safety parameter in food processing. Based on the observation of my thesis carried out the fallowing conclusion are made that the raw material management and final product management enhance the safety.The raw material and final product Analysed in the Quality Control Lab

before they are sent for processing proximate analysis of the processed food product has also being carried out in the Quality Control lab in the entire three shifts. The Food Safety practices looks for hazards and anything that could go wrong regarding product safety and implements controls subsequently to ensure that the product will not cause harm to the consumer. The Food safety system mainly focuses on identifying and preventing hazards that may lead product to deteriorate. The Food safety methods are more efficient and effective companies oversight and places more responsibility for assure safe food to customers from the food producers. The biscuits companies in India using compete effectively in the world market by reducing barriers to international trade.

MATERIALS AND METHODS

The study was performed in four biscuit manufacturing companies which are private limited food companies in Hyderabad, Telangana state. The employees are working total 3800 in four food companies for three shifts to produce the biscuits and cookies. The respondent total 120 employees taken from the total population. The simple random sampling method is using for select the sample from total population. The random sampling method each individual is selected entirely by chance of each member of the population.

The biscuit companies are following the food safety standards and guidelines as per the government rules and regulations. The select food companies are following food safety 1.BRC (British Retail Consortium), 2.HACCP (Hazard Analysis Critical Control Points) ,3. Agricultural and processed Food Products Export Development Authority APEDA),4 .ISO 22000 Certified,5. FSSAI.

Results

This study presents the results of the data analysis of the responses obtained from the employees from the select food companies in Hyderabad, Telangana state. The study presents Descriptive statistical analysis, Chi-Square   Analysis and ANOVA   Analysis with respect qualitative data analysis is describe in details. The data analysis has done with the main objectives of finding out the factors, particularly food companies employees data qualitative analysis. The Data analysis is a process of allowing to collected data, analysis of data significance and determination of finding and conclusions. The data analysis helps in finding conclusions and results helps with help of scientific methods. The significance of the data analysis is to provide suitable findings for proper results and conclusions. The data collected and coding of data is done with suitable software like SPSS ver.23. The data collected by several respondents of select food companies with help of questionnaires.

Demographic Descriptive Analysis
1. Gender wise Respondents Descriptive Statistical Data Analysis
Table : 1. Gender wise classification of respondents

Sl.No	Gender	Frequency	Percent	Valid Percent	Cumulative Percent
1	Male	422	81.2	81.2	81.2
2	Female	98	18.8	18.8	100.0
	Total	520	100.0	100.0	
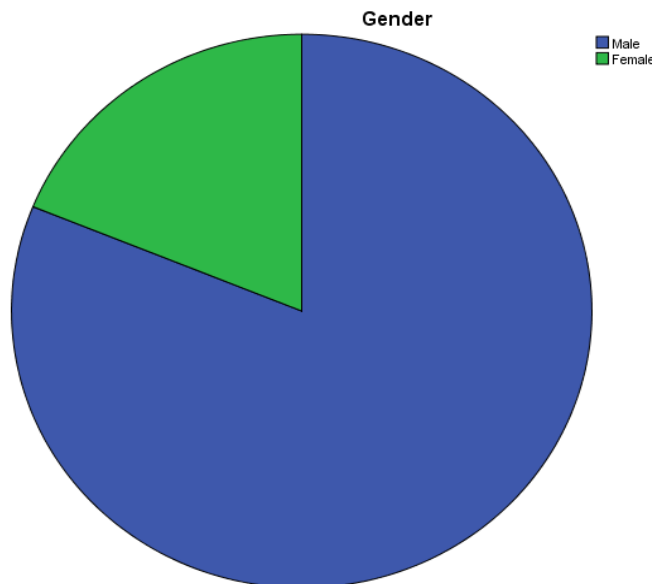
From the table no:1. total sample of 520 respondents, in that 422(81.2%) of the respondents are male employees, remaining   98(18.8%) of the respondents are female employees.

2. Age wise Respondents Descriptive Statistical Data Analysis

Table : 2. The Age wise classification of Respondents

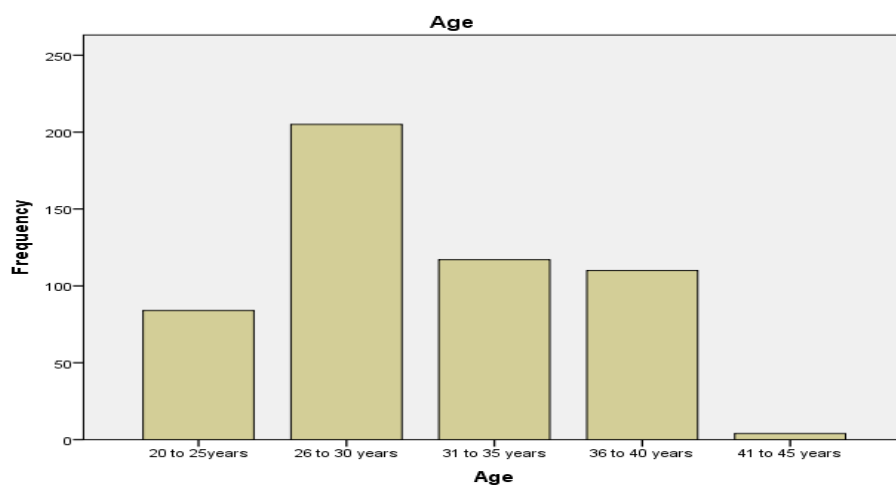| Sl.No	Age	Frequency	Percent	Valid Percent	Cumulative Percent
1	20-25 years	84	16.2	16.2	16.2
2	26-30 years	205	39.4	39.4	55.6
3	31-35 years	117	22.5	22.5	78.1
4	36-40 years	110	21.2	21.2	99.2
5	41-45 years	4	.8	.8	100.0
6	46-50 years	0	0	0	0
7	>55 years	0	0	0	0
	Total	520	100.0	100.0	

Figure :2. Age wise Respondents

Interpretation:-

From the above table no:2 shows that Age of   total   520 Respondents, it   indicate that 20 to 25years between age employees 84 (16.2%) , 26 to 30 years between age employees 205   (39.4%) , 31 to 35years between age employees 117 (22.5%), 36 to 40years between age employees 110 (21.2%), 41 to 45years between age employees 4 (0.8%) ,the remaining age group employees are   not select   in the study.

3.Marital Status wise Respondents Descriptive statistical Data Analysis

Table : 3. Marital Status wise Respondents classification

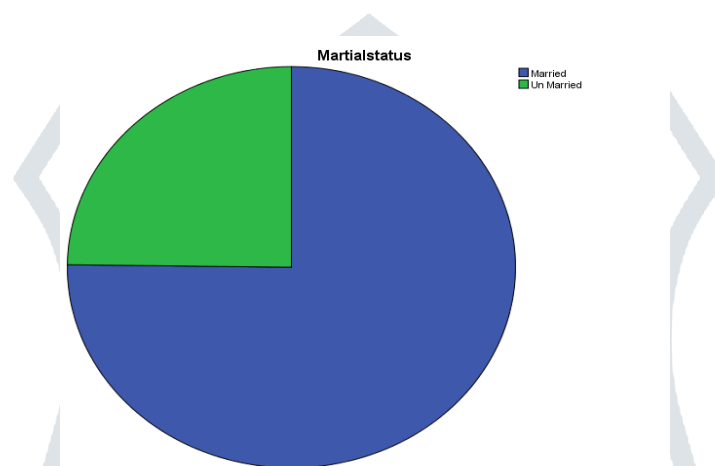| Sl.No	Marital status	Frequency	Percent	Valid Percent	Cumulative Percent
1	Married	391	75.2	75.2	75.2
2	Un Married	129	24.8	24.8	100.0
	Total	520	100.0	100.0	

Figure: 3. marital status wise Respondents

Interpretation :-

From the table no:3. total sample size 520 Respondents, in that 391(75.2%) of the Respondents are married employees, remaining   129(24.8%) of the Respondents are Un Married employees.The analysis clearly shows that the   married employees are   more in Respondents.In future un married employees increase more and more so management should be pro active.

4.Designation wise Respondents Descriptive statistical Data Analysis

Table : 4. Designation wise classification of Respondents

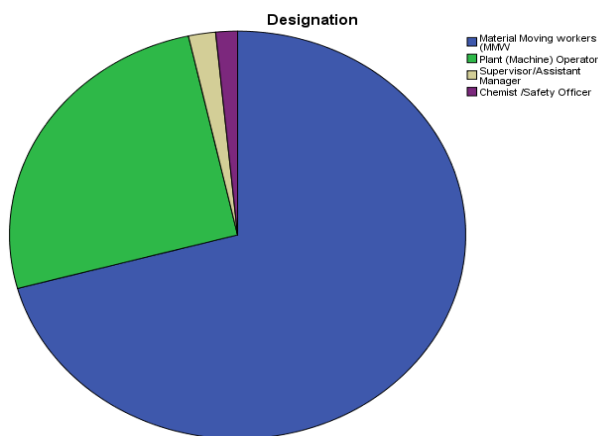| Sl.No	Designation	Frequency	Percent	Valid Percent	Cumulative Percent
1	Material movement worker (mmw)	368	70.8	70.8	70.8
2	Plant (machine) operator	134	25.8	25.8	96.5
3	Supervisor/Assistant manager	10	1.9	1.9	98.5
4	chemist/safety officer	8	1.5	1.5	100.0
5	Deputy manager	0	0	0	0
6	Manager	0	0	0	0
7	General Manager	0	0	0	0
	Total	520	100.0	100.0	

Figure : 4. Designation wise Respondents

Interpretation :-

The table no:4.Described that   total   sample size   520 Respondents in that 368(70.8%) of the Respondents are Material movement worker (mmw), 134(25.8%) of the Respondents are Plant (machine) operator ,10(1.9%) of the Respondents are Supervisors /Assistant managers , 8 (1.5%) of the Respondents are chemist/safety officer. The Data Analysis designation wise Respondents that data have taken   from the working employees inside the companies at work place.

5. Education Qualification wise Respondents Descriptive statistical Data Analysis

Table: 5. Education Qualification wise Respondents

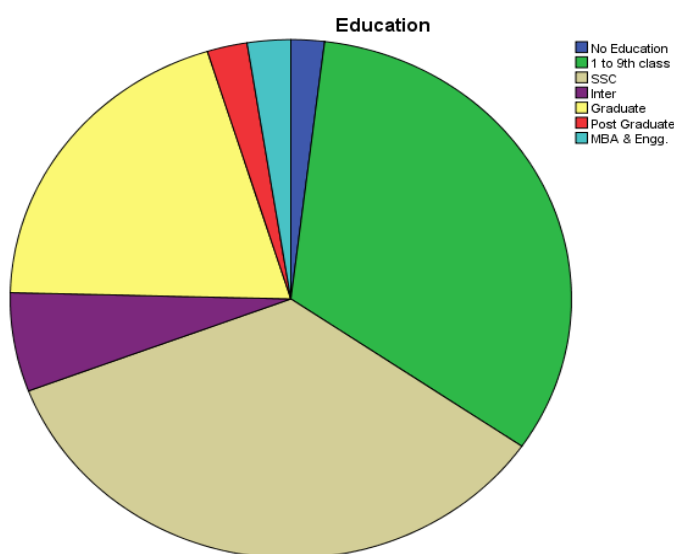| S1.No	Education	Frequency	Percent	Valid Percent	Cumulative Percent
1	No Education	10	1.9	1.9	1.9
2	1-9th class	170	32.7	32.7	34.6
3	SSC	180	34.6	34.6	69.2
4	Inter	32	6.2	6.2	75.4
5	Graduate	103	19.8	19.8	95.2
6	Post Graduate	12	2.3	2.3	97.5
7	MBA & Engg.	13	2.5	2.5	100.0
	Total	520	100.0	100.0	

Figure: 5. Education Qualification wise Respondents

Interpretation:-

From the   table no:5 indicate that sample size 520 Respondents, in that 10(1.9) of Respondents no education,170(32.7%) of the Respondents education between   1 to 9th class , 180(34.6%) of the Respondents education is SSC , 32(6.2%) of the Respondents education   is Inter , 103 (19.8%) of the Respondents education is Graduate, 12 (203%) of the Respondents education is Post-Graduate, 13 (2.5%) of the Respondents education is MBA & Engg. The analysis of the Respondents as per qualification most of the employees10th and below 10th class which are working as a material moment workers   and   Most of the employees education qualification graduate which are working as a plant / machine Operators.

6. Income wise Respondents Descriptive statistical Data Analysis

Table: 6. Income wise classification of Respondents

Sl.No	Annual Income	Frequency	Percent	Valid Percent	Cumulative Percent
1	Up to 1,00,000 lakhs	379	72.9	72.9	72.9
2	1,00,001 to 2,00,000 lakhs	139	26.7	26.7	99.6
3	2,00,001 to 3,00,000 lakhs	2	0.4	0.4	100.0
4	3,00,001 to 4,00,000 lakhs	0	0	0	0
5	4,00,001 to 5,00,000 lakhs	0	0	0	0
6	5,00,001 to 6,00,000 lakhs	0	0	0	0
7	Above 6 lakhs	0	0	0	0
	Total	520	100.0	100.0	

AnnualIncome

■ Upto Rs1,00,000/-
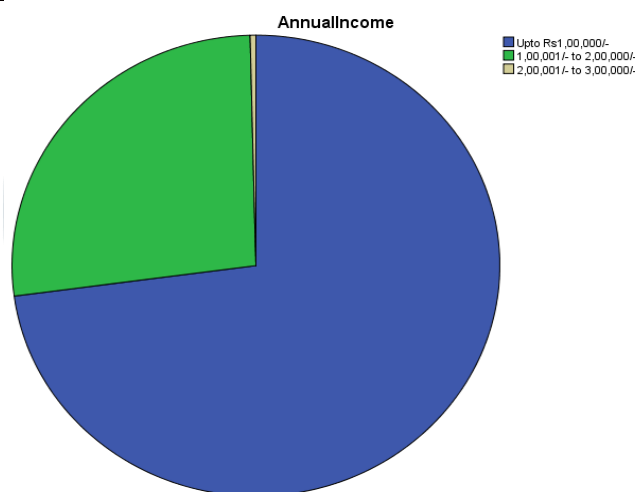■ 1,00,001/- to 2,00,000/-
□ 2,00,001/- to 3,00,000/-

Figure: 6. Annual Income wise Respondents

Interpretation:-

From the table no:6.Respondents sample size 520 in that   379(72.9%) of the Respondents annual income   up to one lakhs , 139(26.7%)) Respondents annual income in between one lakhs one to two lakhs, 2(0.4%) of Respondents annual income in between two lakhs to three lakhs. The employees annual income majority of employees in between one to three lakhs only.

7. Experience wise RespondentsChi-Square Data Analysis.

Table : 7. Experience wise Respondents

Sl.No	Experience	Frequency	Percent	Valid Percent	Cumulative Percent
1	Up to 1year	1	0.2	0.2	0.2
2	Up to 2 year	360	69.2	69.2	69.4
3	Up to 3 year	111	21.3	21.3	90.8

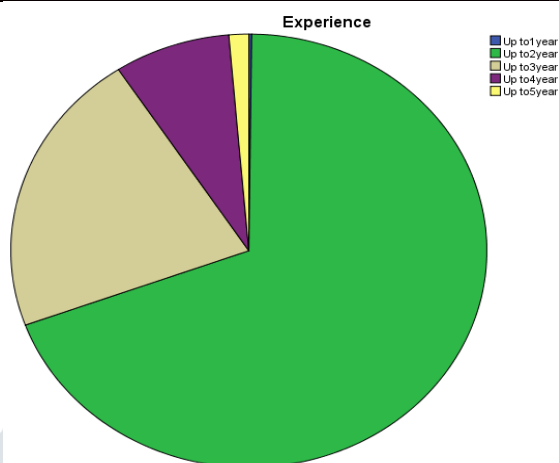| 4 | Up to 4 year | 41 | 7.9 | 7.9 | 98.7 |
5	Up to 5 year	7	1.3	1.3	100.0
6	Up to 6 year	0	0	0	0
7	Above 6 year	0	0	0	0
	Total	520	100.0	100.0	

Figure: 7. Experience wise Respondents

Interpretation:-

From the table no: 7. sample size 520 Respondents in that 1(0.2%) of the Respondents up to one year working experience, 360(69.2%) of the Respondents up to two years working experience, 111(21.3%) of the Respondents up to three years working experience, 41 (7.9%) of the Respondents up to four years of working experience, 7 (1.3%) of the Respondents up to five years of working experience.

8.The Chi Square   data   analysis entire demographics variables

Table 8. Chi-Square demographics variables wise Respondents

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	205.457[a]	45	.000
Likelihood Ratio	230.275	45	.000
Linear-by-Linear Association	45.062	1	.000
N of Valid Cases	520		

a. 24 cells (37.5%) have expected count less than 5. The minimum expected count is .25.

Accept and reject criteria

Null Hypothesis: Demographic variable of Respondents does not influence the food safety Practices .
Alternative   Hypothesis: Demographic variable of Respondents   influence the food safety Practices .

Interpretation:-

The   table no:8. described   that   the relationship between the education of the Respondents and their Food safety practices. This analysis concludes that   result   found   is 205.457 , the   significant difference (P value) is 0.00.It is found that   significant difference (P value) less than 0.05.As per the table indicate that Null hypothesis is rejected and Alternative Hypothesis is accepted. Hence, it is concluded that the demographic variables of Respondents influences the Food safety Practices.

9.The   ANOVA   data   analysis entire demographics variables

Table : 9. ANOVA demographic variable wise Respondents

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.439	3	2.813	16.598	.000
Within Groups	87.448	516	.169		
Total	95.887	519			

Accept and reject criteria

Null Hypothesis: Demographic variable of Respondents does not influence the food safety Practices .

Alternative   Hypothesis: Demographic variable of Respondents   influence the food safety Practices .

Interpretation:

The table no:9. Described that the relationship between the education of the Respondents and their Food safety practices. This analysis concludes that   result found F value is 16.598 , the   significant difference (P value) is 0.000. It is found that significant difference (P value) less than 0.05.As per the table indicate that Null hypothesis is rejected and Alternative Hypothesis is accepted. Hence, it is concluded that the demographic variables of Respondents influences the Food safety Practices.

10. The entire food safety methods statistical analysis of chi-square.

The food safety methods are enhance the quality of the products. It increase the market as follow the standard methods. The food safety methods cover companies food safety certification, following the standard operation procedures in raw material analysis and final product analysis as well as packaging material analysis. The Quality control laboratory accreditation ,calibration of equipment etc. It all food safety methods play significant role to enhance the food safety.

Table : 10.Chi-Square Test Statistics

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	523.250[a]	6	.000
Likelihood Ratio	579.738	6	.000
Linear-by-Linear Association	27.576	1	.000
N of Valid Cases	520		

 a. 4 cells (33.3%) have expected count less than 5. The minimum expected count is 1.25.

Accept and reject criteria

Null Hypothesis: Food Safety Methods of Respondents does not influence the food safety Practices .

Alternative   Hypothesis: Food Safety Methods of Respondents   influence the food safety Practices .

Interpretation:

The   table no: 10. described   that   the relationship between the Food Safety Methods of the Respondents and their Food safety practices. This analysis concludes that Pearson Chi-Square   result   found   is 523.250 , the   significant difference value (P value) is 0.000.It is found that   significant difference (P value) less than 0.05.As per the results from the table indicate that Null hypothesis is rejected and Alternative Hypothesis is accepted. Hence, it is concluded that the Food Safety Methods of Respondents influences the Food safety Practices.

Conclusions

The study shows that the employees response on food safety practices in select food companies. There is a high level of awareness and adopted the food safety of FSSAI and HACCP, ISO22000:2005, BRC, APEDA. The reasonable association between FSSAI and other international bodies responsible for ensuring compliance with food safety and

hygiene standards and food laws. The role of food safety standards must be considered within the circumstance of food inspections are carried out by companies. With regard to the recent inspections most of businesses food companies stated that they encountered difficulty complying with the regulations. As the study is limited to four food companies which is located at Hyderabad, Telangana foods.

The select food companies have produced biscuits and cookies ensure crispiness and most hygienic which is more acceptable. Usually popular biscuits are consider as a snacks there contain crisp fired product and manufacturing many types of biscuits. All the raw materials and packaging material analysed in the Quality Control laboratory before they are sent for processing proximate analysis of the processed food product has also being carried out in the Quality Control laboratory in all the three shifts, it has given chance for employees for active participation and also improved their knowledge in fields of food processing and food safety. The companies many products produced which are protein rich and calorie supplement products to children and all age groups. The select food companies are following the food safety standard and guidelines, As per records dates conducting internal and external audits, providing suitable employees training, the companies overall food safety practices satisfied with the export quality food products. The select food companies data collection and analysis concluded that   respondent perception food safety practices influence the employees demographic variable, as per research study select food companies are following suitable food safety standards and making safety products.

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