# IMPACT OF FOOD SAFETY PRACTICES ON CUSTOMERS' PERCEPTION: A CASE OF PUNJAB RESTAURANTS

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**NATIONAL UNIVERSITY OF MODERN LANGUAGES, ISLAMABAD**

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# "IMPACT OF FOOD SAFETY PRACTICES ON CUSTOMERS' PERCEPTION; A CASE STUDY OF PUNJAB RESTAURANTS"

By

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# ABSTRACT

**Thesis Title: Impact of Food Safety Practices on Customers' Perception: A Case of Punjab' Restaurants.**

This research study examines impact of food safety practices on customers' perception in restaurants of five major cities of Punjab, Pakistan. Result of the study indicates significant impact of food safety practices on customers' perception. Positive relation has been found between food safety practices and customers' perception. Customers are lifeline for a business and their perception toward any business determines its success or failure. In the current competitive environment, the role of customers and their perception about a business is much significant. This study is quantitative in nature and primary data sources are extracted for data collection. The convenience sampling technique is used in this study. A sample of 250 customers was selected whom received services from medium and large restaurants in five major cities of Punjab and their feedback is measured against a questionnaire. For data analysis descriptive, correlation and regression were applied with the help of SPSS. Findings show that all food safety practices which food quality, internal environment, Hygienic condition, personal hygiene of staff and facilities have positive effect on customers' perception. Results are in congruence with previous research studies mentioned in literature review section of this study. This research study provides various beneficial implications for food business operators and restaurant' managers if they implement food safety practices in their businesses.

**Keywords:** Customers' perception, Food safety practices.

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# **<u>ACKNOWLEDGEMENTS</u>**

# DEDICATION

I dedicate this thesis to my parents. Without them I would not be at this point in my life. I always found them standing behind me to support me in my decisions and in each endeavor of my life. Their unconditional love and confidence always inspired me to compete in professional world and achieves big objectives. May their souls rest in peace, (Ameen)

# CHAPTER NO.1

# INTRODUCTION

## 1.1 Introduction

Increased competition among restaurants has empowered a customer. In this scenario role of customers' perception is much significant for the success of any business and restaurant industry is not an exception in that context. This has led to the food industrialist and restaurant managers to focus more on customers' perception of their business. Restaurant managers should know what customers perceive about their service quality as it will be helpful for them to understand their image in public eye.

Now a day's customers are going more health conscious. According to a study more than 70% customer consider safety of food items as necessity (European Commission Report, 2000). Literature on public health also emphasized the importance of safety of food products (Byrne, 2000). In developed countries like USA food operator and suppliers can avail tax rebate because of their expenditure on implementing food safety practices (Food Safety Modernization Act, 2011). Food Safety Modernization Act (FSMA) incorporated new guidelines to protect U.S. food supply companies involved in food processing can take advantage of Federal and State R&D Tax Credits to support their efforts towards safer and more efficient operations (The R&D Tax Credit Aspects of the Food Safety Modernization Act, 201**1**).

In an International conference it was asserted that availability of nutritious and safe food is a basic right of each individual (FAO, 2013). In this scenario, it must be prioritize by food business operators, restaurant' industrialists and customers. Managers should take implementation of food safety practices seriously. However apart from social and legal

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obligation, this research is endeavored to study influence of food safety practices on customers' perception, in marketing and economic perspective.

In the current competitive environment where most of the restaurants have similar physical structure and facilities, success of any restaurant is based on customers' perception of their service quality (Mmutle, T., & Shonhe, L. 2017). A positive customer perception is imperative to sustain in market.

Customers' perception is an individual conception or appreciation about a product or service. It is marketing concept which tells us what customer think about a brand or offering (Bhasin, H. 2017). Customer perception can be influenced through various mean. However in this research impact of food safety practices on customers' perception is evaluated. This research is undertaken to highlight the impact of food safety practices on customers' perception, to evaluate strength of their relationship and correlation between them.

**1.2 Background**

Food safety is an important concern for today world. A popular estimate show that approximately 80% of food borne diseases are because of eating in a restaurant or hotel, however only 20% are associated with food items which is produced at home. Three major attributes are identified which are responsible for food contamination and these are inappropriate temperature, personal hygiene of food handler and cross contamination (Collins, 1997). Collins, J. (1997) expressed that changing lifestyle and food borne pathogens are main cause of infectious diseases. As 12.5 million employees served in food industry so the probability of infectious diseases is significant. Food business operators and handlers can protect people from heinous diseases if they understand their responsibility toward food safety.

The foremost important aspect for hospitality industry is to maintain customer trust by implementing on food safety regulations. Literature on public health emphasized the importance of safety of food products (Byrne, 2000). Worldwide health related expenditure is $6 billon dollars annually to combat food borne diseases (NIAI, 2000).

Various study revealed importance of perceived food quality on customer purchase intentions and found significant relation among them (Caruana, 2000). Another study pointed out that customers are different and their propensity to pay additional cost for food safety also vary as they have different perception about food risk (Antle, 2001), which induced complexity on the part of manager to deal with food safety issue. Food safety and hygiene condition is a significant component for customers' evaluation of service quality, which induces positive intentions in customers and affects customers' perceived satisfaction (Bienstock, 2003).It was found that physical environment influences on customers' emotions and lead positive or negative intentions (Belk, 2003).

According to a report that more than 55% hotels have poor sanitary condition and most of the equipment used and food contact surfaces are unclean (Food and Drug Administration Department, 2004). Evidence was found for the existence of bacteria which can cause cross contamination in food items which can enhance food insecurity further. In appropriate temperature for cooking and cooling food product enhance the chances of multiplication of germs. Implementation of food safety and hygiene control should be a first priority of restaurants and hotel industry. Food product must be prepared in safe and hygienic environment to get positive customer image of product safety expectations.

All these findings suggest a greater need to understand customer perception process which is an antecedent of buying decision in percussion of safety risk. Aakkula, J., Peltola, J., Maijala, R., & Siikamäki, J. (2005) studied customers' attitude and behavioral intentions, in connection with food safety issues. Analysis was based on comparison of demographical attributes of respondents. In line with TRA approach behavioral intentions are crucial determinant of customer behavior. Intention to react in a specific manner is shaped by subjective norms and customer mind set behavior. In other sense behavior is outcome of individual perception and intention. Behavior is affected by customer opinions, beliefs and perceived evaluation of results.

Recent research studies in food safety emphasized important role of superintendents which they can play to ensure food safety behavior in employees. A strict supervision can reduce the risk of food borne diseases to much extent (Arendt, & Sneed, 2008).

Facilities shape customers perception in a positive way. According to a well known phrase facilities enhance productivity. For an improved organization performance importance of physical surroundings and facilities are undeniable (Tucker, 2008). Rojas (2008) investigated customer behavior in prospect of food safety and found 50% of customers choice for selecting a restaurant is based on food safety hygiene concern. Another study confirmed 42.6% customers perceived a source of infectious diseases was unhygienic food processing and environment. Food quality is an important element of which should be on considered top priority for positive customer perception and satisfaction (Zhang, 2009).

A survey was conducted to determine risk factors in different food service settings and found highest rate of non compliance in restaurants setting. About 76% of restaurants were marked with non compliance behavior like inappropriate temperature, poor personal hygiene of staff, inadequate hand washing practices and use of contaminated equipments (FDA, 2009). Various policies were formed, including supervision of employees to ensure safety and hygiene practices but still it poses a great challenge for managers and departments responsible for food safety maintenance. Educated and well trained employees in food safety aspect can play a distinguished role for the compliance of food safety practices and standards. Increased globalization has led to open various food options around the world and because of this trend people more often like to eat outside their homes (Haris, K. 2010).

Safe food is an essential and indispensable need of human being. Food insecurity is common as more than 50% of population in Pakistan have unsafe food supply available in market (MNS, 2011). The situation is getting more alarming with the passage of each day. Food contamination is caused by unsafe food processing and unhygienic storage. Many research studies confirmed availability of heavy metals in food items. Food operators, traders and manufacturers are deliberately involved in food adulteration to maximize their profit margin at the cost of product quality and safety. Provision of safe food supply is also a top priority of UN millennium goals. But regrettably food structure in developing economies particularly in Pakistan is not satisfactory.

It is prime duty of food business operators and government department at large to consolidate food safety culture in society. Establishment of Punjab Food Authority in Pakistan was a step toward food safety penetration in whole province of Punjab. Later on, food safety agencies were established in other provinces of Pakistan on the similar footing. By practicing the international organizations foot prints and to ensure food safety and hygiene at national level, Punjab Food Authority enforced food safety and hygiene standards on food business operators. According to Punjab Food authority Act, 2011, implementation of food safety practices are necessary for each business. In line with scientific principles and Punjab Pure Food Rules, 2011 Punjab Food Authority teams assist food business operators and industrialists.

Salay, (2012) suggested main reasons which induced this trend are increased urbanization, participation of females as an active labor force, increased demand of recreational activities, education and income level. On the other hand eating outside enhanced the rate of food- borne illnesses. According to an estimate revenue generated out of food service is US $2.1 trillion annually, across the world, which is 10% of total GDP. However it was found that 1 out of 10 individual is associated with food service business (Edward, 2013).

An investigation emphasized that nutritious and safe food is first choice of more than 50% of adults when they select a restaurant (NRA, (2014). Food Business Operators, managers and customers should understand the importance of delivering and eating safe food products. Managers should consider risk associated with unsafe food as a financial liability and customers should evaluate impact of eating unsafe food on their health and lives (Susan W, Kevin R, 2014). According to estimates around 600 million people get ill from consuming unsafe food annually in world; however food- borne illness accounted for more than 420,000 deaths. 10% people worldwide get infected by food contamination (WHO, 2015).

Provision of safe and healthy food is a basic requirement of human health. Food business operators can significantly reduce the risk of unsafe food by implementing food safety practices at their business premises. Efforts on the part of food producer can strongly influence the whole food chain while bearing just 14% additional cost. Wrecker (2015)

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investigated producer efforts toward food safety and its corresponding effect on consumer opinion, attitude, behavior and buying pattern. The result founds that customer concern for food safety are increasing, however about 70% of customer considered food safety as necessity.

Albayrak et al. (2016) conducted a study to evaluate the importance of environmental attributes. Five different hotels were selected. Results indicated that preferences for environmental attributes were different in line with demographic attributes of customers. Alananzeh et al. (2017) conducted a study to evaluate impact of safety and hygiene perceptions on customer satisfaction and suggested that customer' perception toward safety and hygiene issues in restaurants has a significant effect on customer satisfaction level.

According to a study food borne diseases account for 40% diseases in customer because of consuming unsafe and un-hygienic food items in last five years (Faremi, F., Olatubi, M., & Nnabuife, G., 2018) . The data on customer study revealed that average propensity to consume unsafe food is more than once a year. Study reported that food producers and industrialist recollected food items more than twice a year. A same study reported food products recollection more than 9 times in previous five years.

In current decade customer perspective toward food safety has changed a lot. Customers are getting are getting more conscious about their health, an attitude of safe food consumption has emerged. Quality food products have more demand by customers because of growing awareness about food safety.  Need for organic, natural and safe food is rising. Widespread awareness campaign by national and international media and NGOs has laid the governing system and customers to take food safety problem seriously.  In various developed countries food safety infrastructure is established and improved by the state government. Likewise in Punjab, Pakistan, Punjab Food Authority is established to promote food safety infrastructure in Pakistan.  Through this research we hope to investigate how strongly food safety practices are correlated with customers' perception, what is their impact and what type of benefits can be achieved by employers (food business operators)  if food safety practices are implemented.

**1.3 Problem Statement & Research Questions**

Food safety is a pressing challenge for Pakistan to deal with. Previous studies on food safety proved that mostly food items were contaminated with harmful bacteria, which posed a serious threat for human' health (Akhter, 2013). In order to mitigate food safety issues, Punjab Food Authority was established in 2011, in Pakistan. Prime motive of Punjab Food Authority was to enforce and implement food safety practices and regulations in food business. Later on, the similar pattern was used to establish similar Authorities for the other provinces of Pakistan. Now it's a legal obligation of each business to implement food safety practices for the preparation, distribution and storing of food products (PFA Act, 2011).

This research study endeavor to highlight effect of food safety practices as a whole on customer perception. This research wants to explore that either apart from legal and moral obligations, customers valued perception about food safety has any beneficial implications for managers and food business operators if food safety practices are implemented. In modern countries of the world food business can avail tax credit because of their expenditures on implementing food safety management system (FSMA, 2011). However, in Pakistan no such rebate is available to food business operators. In this situation, to motivate food business operators to incorporate food safety practices at their businesses; this research is carried out to explore beneficial implication for food business operators in customers' perception perspective.

Previously Bruns (2002) studied customer perceptions about food safety influence which affect their choice and selection and found a positive relation among them. Jules, A (2017) concluded in his study that factor affecting customer perception like food quality, environmental condition, innovation and facilities contribute to positive customer valuation. Likewise Perramon, J., Almeida, M., Liach, J., & Feminias, L. (2014) conducted a study to evaluate green practices impact in restaurants and found that these practices improved restaurant competitiveness which overcome additional cost. However this study aims at evaluating impact on customers' perception because of food safety practices implemented in restaurants, in marketing and economic perspective.

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### 1.4    Research Questions

Research questions are described as following:

- What is the impact of Food Safety Practices on Customers' Perception?
- What is the strength of relationship between Food Safety Practices and Customers' Perception?
- What are beneficial implications for a Food Business Operator if food safety practices are implemented?

### 1.5    Research Objectives

Research objectives for this study are described as under:

- To evaluate the impact of Food Safety Practices on Customers' Perception.
- To understand the strength of relationship between Food Safety practices implemented and Customer's Perception.
- To suggest managerial implication for helping manager in understanding relationship between Food Safety Practices and Customers' Perception.

## 1.6   Significance & scope of the Study

Health is a greatest gift of Allah and it entirely depends on food which we eat. Safe food supply is necessary for human health. Now a day's customers are more conscious about their health and diet. Now food safety is more important aspect for customer choice of a product and his perceived satisfaction.

Very few researchers have done work to evaluate the impact of Food Safety Practices on Customer Perception. Previously no Researcher in Pakistan has conducted this type of Research. Shazadi, M., Malik, S., Ahmad, M., & Shabbir, A. (2017) conducted a study to explore the relationship between restaurant key attributes of service quality and behavioral intentions. Likewise Brewer & Rojas (2008) explored customers' attitude toward food safety issues and found significant association between them. Knight, A. (2007) compared consumers' perception about food safety at restaurants with other food system actors. But none of them solely study impact of food safety practices on customers' perception.

 It will be beneficial for food industry (FBOs) to know the critical effect of Food Safety Practices on customer's Perception which ultimately affect their businesses. Secondly it will be helpful for the researches who want to study food safety concept and its effect on Customers' perception. As customer perception is evaluated in four aspects; 1) perceived quality 2) perceived satisfaction 3) relational benefits and 4) customer's intention, so a positive customer perception will definitely improve all these domains. Further it will help in managerial decision making to either invest in food safety practices or not. This research will be helpful to understand to what extent customers consider food safety as an important aspect while they eat outside their homes. And last but not least it will provide an answer to those reluctant food business operators who questioned "apart from legal responsibility why they invest on implementing food safety practices".

**1.7 First Food Safety State Agency in Pakistan**

In order to implement food safety practices in Punjab, Punjab Food Authority is established. It was first agency in Pakistan which deals with food safety and hygiene issues in Pakistan. Punjab Food Authority was established on 2$^{nd}$ July 2012 to enforce food safety throughout the food chain. It started surveillance of food products under the rules defined in Punjab Food Authority Act 2011 and Pure Food Rules 2011.Food Points are registered to make them socially more responsible and accountable. Initially Punjab Food Authority started its working in just Lahore. From 14$^{th}$ August 2017, it started its working throughout Punjab in all 36 districts.

**1.7.1 Food Surveillance**

The first responsibility of Punjab food Authority is to inspect and supervise the food products under a systematic manner, either it is prepared, stored or distributed in market. For this purpose, food samples are collected from different food operators and analyzed in laboratory. After detailed analysis if the samples are not found as fit for human consumption, action is taken against by regional field offices. However, daily visits and inspection are done for the penetration of food safety throughout the entire chain of food products. General awareness and training to implement food safety practices is also imparted to food operators.

**1.7.2 Food Standards**

Prime motive of PFA is to implement standardization for food products under the rules defined in Pure Food Rules 2011 and Punjab Food Authority Act 2011. The scientific panel for any indispensable change can make suggestion to Punjab Food Authority after detailed discussion, on logical and scientific aspect of food items.

**1.7.3 Food Licensing**

It is mandatory for each business to get licensed from Punjab Food Authority (section 15, PFA Act 2011) to continue working in Punjab. Each license should be renewed on annual basis; validity of license is 365 day. To make food business responsible, licensing is necessary.

**1.8 Responsibilities and Functions of PFA**

The PFA Act, 2011 assigns following functions to Punjab Food Authority, which are mentioned as below:

1. Monitoring of FBOs to provide safe and hygienic food to the public.

2. To make, regulate and implement rules and procedures for food labeling, food additive and specific enforcement mechanism.

3. To implement food safety practices and quality standards.

4. Specification of standard rules and procedures for installation and up-gradation of food laboratories.

5. Provision of scientific support to the government departments in term of issues related with food safety.

6. Licensing specification, emergency prohibition orders, improvement notices and prosecution in the court of law.

7. To setup food laboratories.

8. To organize seminars, training programs and workshops related with food safety standards.

9. Promotion of food safety standards awareness in general public.

10. Enable food items and products traceable in a forward and backward manner.

11. Surveillance of food items including sample collection, its analysis and interpretation, and dissemination of reports related with nutrition level.

12. Certification of food products for export purpose.

**1.8.1 Food Safety Regulations in Pakistan**

Punjab Food Authority works to ensure food safety practices at food businesses and industries in Pakistan, particularly Punjab. Punjab Food Authority is established under the Punjab Food Authority Act, 2011. It is established to enforce food safety regulation enacted in Punjab Food Authority Act, 2011 and Pure Food Rules, 2011. Pure Food Rules present safety regulations for 104 products which are further categorized into nine major categories. These categories are enlisted as follow!

1.      Milk & Dairy Products
2.      Oil (edible) & ghee Products
3.      Water & Beverages
4.      Grains & Cereals
5.      Starch products
6.      Spices
7.      Sugar & its alternatives
8.      Fruits & Vegetables
9.      Other Food Items

The regulation formed under pure food rules address food safety issues. These regulations also address safety procedures for raw material used in the production process and other ingredients used in process, like food additives, items used for preservation and food colors. Methods to deal with antioxidants and heavy metals are also discussed in pure food rules

Similar legislation also exists to address food safety issues in other provinces of Pakistan. Punjab Food Authority also practiced rules formed by PSQCA (Pakistan Standards and Quality Control Authority) which prescribed specific standards for the processing of food items and food grade materials. These rules and regulations are traced back to World Health Organization initiative to prevail food safety. Food safety regulations define rules for 37 food items which are mandatory in nature. These rules can be bifurcated in two broad categories.

### 1.8.2 Food Safety conditions for food premises and equipment used in processing

10 major areas are identified for the assurance of food safety at food premises. These areas are in line with BRC standards.

### 1.8.2.1 Facilities & Design

Importance of facilities for job performance, premises location and its design needs careful consideration by employer. Those areas should be avoided where risk of food contamination and pollution are more evident. Production place should facilitate safe and hygienic production and where risk of food cross contamination can be avoided. Structure and equipments should be durable and easy to clean.

### 1.8.2.2 Machinery

Production line and machinery should be capable of convenient maintenance and easy cleaning to reduce the chance of food contamination. The machinery' design for manufacturing food products should comply with safety standards.

### 1.8.2.3 Pest Control

Insects can contaminate food items at any stage of food processing. It also causes to induce bacteria and germs in raw material and finished products as well, which become a source of various disease in human body. Pest control is necessary for the elimination of insects and bacteria, and for the assurance of food safety.

### 1.8.2.4 Waste Disposal Management

Proper waste management system decreases the chances of food contamination. Proper waste storage areas and disposal system can contribute to cleanliness and food safety as well.

### 1.8.2.5 Cleanliness

Establishment of proper cleaning system is necessary for individual's health. Cleanliness and use of disinfection is necessary to maintain good hygiene standards. A clean environment decrease the risk of food borne diseases. Food contact surfaces, areas for food preparation, storing and serving must be cleaned up daily. Machines and equipments used in manufacturing should also be clean.

### 1.8.2.5 Maintenance

Premises and machinery used for manufacturing process should be maintained and repaired properly for smooth functioning and to ensure food safety. Machine part should not be eroded because it can add contamination in food items while processing.

### 1.8.2.7 Personal hygiene

Personal hygiene of employees is necessary for meeting high hygiene standards. Employees dressed in neat and clean uniform give a positive impact on customers. Installation of good facilities ensures personal hygiene of employees and contributes positively toward food safety concerns. Supervisor can effectively motivate employees to ensure personal hygiene. Strict compliance can reduce risk of contamination which is induced in food products because of employees.

Following facilities help to maintain hygiene standards and these are enlisted as follow!

a) Appropriate hand washing facility
b) Usage of proper utensils to minimize direct contact with raw material, semi-finished and finished products. Elimination of direct contact will reduce chances of food contamination. Disposable gloves can also be used for this purpose.
c) Avoidance of coughing and sneezing while dealing with food items and proper coverage of cuts is necessary for maintaining good hygiene standards. Employees should avoid wearing jewelry while food processing.
d) Employees should wear proper uniform and protective clothing to avoid cross contamination in food.
e) Employees suffering from any illness should be abstained from handling food products.

**1.8.2.8 Environmental Hygiene**

Environment of food premises should be clean and hygienic. Chemicals used for cleaning, sanitation and pest control should be used and stored carefully because a dangerous risk is associated with them. So that in case of any accidental situation these chemical should not pollute or add in processing cycle. Food contamination should be avoided at each stage of production.

**1.8.2.9 Food handling and Storage**

Implementation of food safety practices should be ensured during food preparation, storage, distribution and transportation. Food products should be handled in light of food safety principles. Factor contributing pollution and contamination in food products should be avoided during transportation. Safe packaging, appropriate temperature and cleanliness of vehicle should meet food safety standards.

**1.8.2.10 Training**

Food safety training on the part of employees helps to decrease probability of food contamination. Food handlers should be supervised to ensure food safety and hygiene practices in staff members. Training should be imparted on following ground:

- Hand washing and personal hygiene Standards.
- Food safety practices for storage of Food items.
- Safety practices to handle food products.
- Cleaning and sanitation
- Usage of pest control.

**1.8.3 Food Safety Requirements**

Apart from above said general requirements, certain other requirements enacted in Punjab Pure Food Rules, 2011 for the assurance of safe and hygienic supply of food products, are mentioned below:

### 1.8.3.1 Food additives

Food additives other than mentioned in Pure Food Rules, 2011 are prohibited to use in processing. Food color should natural and should be extracted out of organic and pure food sources. It should be free from any adulteration.

### 1.8.3.2 Preservatives

Preservatives should be used as mentioned in Pure Food Regulation (2017). Other materials used as preservative are prohibited to include in food products.

### 1.8.3.3 Flavors

Any ingredient or flavoring substance which is not mentioned in Pure Food Rules (2017) is prohibited and illegal to use in food as an artificial flavor. Any toxic and harmful flavor should not be used in food processing.

### 1.8.3.4 Antioxidants

Use of antioxidants is permitted by Pure Food Regulations and Punjab Food Authority Act, 2011. Anti-oxidants can be used as flavoring material in food items provided their concentration should not increase by 0.01%.

### 1.8.4   The equipments and processing

Machinery, equipments and utensils used in manufacturing must be in good hygienic condition and should be made of food grade material. Machinery and equipment used for processing should not affect to degrade quality of food products and should be safe for human consumption.

### 1.8.4.1 Covering

Food should be protected from sunlight, dirt, and contamination. It is necessary for the food products to be covered all time by tight fitting or lid during preparation or serving. Food product should be placed on safe place to avoid impurity and harmful gases.

**1.8.4.2 Packaging**

Packaging should be safe and made of food grade material so that it should not pollute food products.

1.8.5 State Accredited & Private Institution for Food Safety

Accredited national institutes and departments working for food safety in Pakistan are enlisted as following!

- Punjab Food Authority
- BV Certification
- Sindh Food Authority
- SGS Pakistan (PVT) Limited
- Khyber Pakhtunkhwa Food Safety and Halal Food Authority
- Moody International Private Limited
- Pakistan Standards & Quality Control Authority
- Pakistan System Registrar
- Pakistan Council of Scientific and Industrial Research
- RICCI Pakistan
- Certification Service Pakistan

# CHAPTER NO.2

# LITERATURE REVIEW

Food safety concept is as old as human history itself. Food Law Act (1880) and CAA was an endeavor to check food adulteration but not implemented strictly. Even in old day's food safety practices were in vogue, food handling procedures have been defined in religious books. Increased urbanization and economic growth established the base for food safety, as the poor quality of food products and unhygienic condition necessitated the implementation of food safety practices.

Customer perception is a process to shape image of a brand or product in customer mind after interpreting sensory information and observation. Customer perception is an antecedent of customer behavior. It constitute of three major stages for the conversion of stimuli into a meaningful picture. The first stage is exposure or sensing. In first stage customer is exposed with the information or use his senses to obtain knowledge about a particular product or service. The second stage of customer perception process is organizing / focusing. Under this stage customer organize information while focusing on perceived information. The third and last stage is reacting (interpretation). After going through first two stages customers comes at responding and reacting stage, which is a last step of customer perception process. This stage is an indicative of customer behavior. Response and reaction can vary from customer to customer but each customer goes through same process.

Increased competition in all product and service industries laid them to establish a strong association with customers. It's a good marketing tactic for keeping loyal customers (Berry, 1995; Day & Wensley, 1983; Evans, 2002; Payne & Frow, 2004). Competition generally results in good quality service (Palmer & Mayer, 1996). . Gronroos (1990)

emphasized on mutual benefits for both parties by fulfilling promises while exchange consideration. He further emphasized on achieving profit in long-term by building strong relationship between customer and producer. Organization irrespective of the fact, either they are product base or service base industries, focusing more on existing customers while offering them special benefits. Relationship building for mutual benefits is existed since long (Gronroos, 1994, 1996). Berry (1995) defined relationship base marketing as tool of obtaining customers' loyal behavior by giving value to their demands .A dine out experience is composed of sum total of all food attributes perceived by customers, which is considered as important component for business success (Baker & Crompton, 2000).

It is crucial to understand customers' perception about implemented food safety policy. Implementation on food safety practices is considered to be important for customer' confidence in the safety of food as well as customers evaluation of service quality. It is evident that customer are making their decision about acceptability of particular food product depend on customer perception of risk and benefits about particular food choice. Customers cross cultural differences also affect their risk perception, confidence on food product and their behavior ( Frewer,L., Jonge, J., & Kleef, E., 2005).

Henson (2006) found customer perception regarding food safety as individual evaluation judgment of food safety condition at food premises. Various other studies indicated that customer perception about food safety served as a powerful factor while selecting an eating place. . Almost all customers consider food safety and hygiene practices important while going for dine out (Worsfold 2006). There is a low probability of customers' revisit if food safety practices are not fully ensured (Knight, Worosz, & Todd, 2007). Anderson (2008) described customer perception of an individual customer as a reflection of other consumers though in the same restaurant setting. Customer perception shows a major role in constitution of a positive or negative customer experience Ryu (2008) considered customer's psychological satisfaction resulted in brand image. Lai (2008) concluded that customer perception as an input of loyalty. Patterson & Spreng (2009) referred Customer's satisfaction as positive attribute of customer perception. Various other studies like Liu & Jang (2009) research study confirmed significance of food safety and hygiene standards. Results of various studies indicate that customer perception is positively

related to food safety condition in restaurant. This instituted the need for a compressive and detailed research inquiry to interpret the role of food safety practices on customer perception.

(Brocato, 2012). It is an important aspect for management consideration as it count for customer satisfaction and brand positioning (Batra , 2012; Carroll and Ahuvia, 2006; Bergkvist and Bech-Larsen, 2010). Owing to enormous demand Government started its activities for the development of food safety infrastructure to ensure safety standards (Raspor et al. 2013).  Various other rules were sanctioned in nineteen century to enforce food safety in England (FDA 2014).  Grove & Fisk investigated the role of expressed and non verbal communication among customers in configuring in shaping customer response. Customer satisfaction induces positive feelings however dissatisfaction induce negative feelings for a particular product or service (Pizam, 2016).

Mohaydin.G, Chand. A, Aziz.B, Bashir.M & Irfan,J (2017) studied influence of food quality on perceived satisfaction (customer perception) while mediating effect of food safety.   In their view customer perceived satisfaction is a psychological element. It was inferred that customer perceived satisfaction is an important marketing tool for gaining customer loyalty. Loyal customers' generate more profits and shape positive brand image, publicity and increase frequency of revisits. It was found customer's perceived satisfaction is influenced by customer personal experience.

Customer perception is a most important component which determines success or failure of a brand.  Customer reacts according to his or her perception which can be negative or positive. As customer perception is an indicator of customer behavior, so customer satisfaction, loyalty, his purchase decision an trust are all depend on customer perception. (Influence of Consumer Perception on the Performance of a Business, 2018)

Cha & Borchgrevink (2018) studied impact of customers' perceptions of food safety on customer satisfaction and loyalty in an eating place while taking role of gender and restaurant type as moderating variables. The objective of this investigation was to explore the relationship between customer perception of food safety and customer satisfaction, to measure the impact of customer satisfaction on customer behavioral pattern and to investigate the role of two moderating variables which are gender and restaurant type.

The AMOS (20.0) statistical software was used in this research study and following tests were conducted like SEM, CFA and MGA. A sample of 334 respondents was taken in this inquiry. The result showed that perceived value and perceived food safety contributed direct as well as indirect effect on customer satisfaction and loyalty. Result indicated that customer perception about food safety had a positive effect on customer satisfaction.

According to Castellini & Samoggia (2018) evaluated that customer's judge food product by dividing it into different aspects. Research study indicated positive correlation between food quality and food safety which showed its importance in decision making and customer behavior while choosing a restaurant. Customers are more conscious about health and hygiene issues and are ready to pay more if good safety and hygiene standards are maintained. Poor food safety and hygiene condition will create a negative impact on customer and chances are that they would not revisit again. A poor brand image will restrict new customers and will result in lower profit. Food safety practices have a powerful impact customer's perception; Food manufacturers should take food safety and quality seriously to build positive customer perception and satisfaction.

## 2.2 Food Safety Practice

In views of Pettijohn (1997) food quality, hygiene and value addition are significant components for customer consideration. In a Chinese study restaurant cleanliness is defined to have most significant aspect of customer perception of a restaurant (Qu, 1997). Other research study used sanitation and hygiene practices to evaluate customers' expectations (Becker, Murrmann 1999). Term cleanliness and hygiene have been indicated in literature to have relation with service quality evaluation. Shostack (1977) referred customer' perception of service quality is influenced by various factors. Which necessitate considering other measure of hygiene other than physical environment factors? Various research studies have been investigated to understand the relationship among restaurant cleanliness and customer satisfaction, customer evaluation of service quality and customer behavior. (Stevens, Knutson. 1995; Becker, Murrmann, 1999). Food safety and hygiene condition is a significant component for customers' evaluation of service quality, which induces positive intentions in customers and affects customers'

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perceived satisfaction (Zeithaml, Parasuraman., 1990) and (Bienstock & Moranville., 2003).

Bienstock (2003) also investigated food safety and hygiene practices influence customer perceptions in the following aspect eating place cleanliness, resting place cleanliness and food safety. According to their study result food safety and cleanliness was found to be a significant factor for the evaluation of service quality (Bienstock & Moranville, 2003). Threevitaya, (2003) suggested that hygiene and cleanliness as most important factors which customer considered while deciding to dine out. A survey was conducted and found a surprising result that 56% restaurants are not following standard procedures for the sanitation of equipment used in processing and contact surfaces. Existence of germs can cause the chances of cross- contamination of food products. Improper cleaning of food manufacturing surfaces leads transfer of bacteria and germs in other food items (FDA, 2004). Most of the time existence of germs in raw material enhances food insecurity risk which further multiplies by transferring bacteria to other items if not properly refrigerated or stored. The factors mentioned above should be taken seriously for managerial implication for the promotion of food safety in hygienic environment.

Centre for Science in the Public Interest (CSPI, 2004) conducted a survey to evaluate additional aspects of restaurant cleanliness and hygiene in customer perspective and found employee hygiene and restaurant hygiene condition most important aspects toward customer concerns.

Todd and Greig (2007) found more than 20% of germs spread through inappropriate hand washing technique. Hands are the basic source of spreading germs and can transfer hundreds of thousands germs. Improper hand washing also contributes to contamination of food products and has dangerous results. Zeithaml (1990) and Aksoydan (2007) pointed out that food business which failed to maintain food hygiene and safety standards are regarded by customers with having poor quality. According to an estimate issued by FDA more than 15% of famous restaurant are not cooking food in a proper manner. Undercooked and overcooked food can cause various diseases in human body. Brewer and Rojas (2008) investigated customer behavior in context of food safety. For this purpose a sample of 402 respondents was selected for this study and evaluated that, about

50% of respondents considered food safety important while choosing a restaurant. 42.6% customers perceived restaurant food as a source of getting infectious diseases. Brews & Rojas (2008) also indicated in their study that customers considered inspection of restaurant hygienic condition very important.

Provision of safe and hygienic environment for the prevention of disease is an ultimate duty of food operator, state health and hygiene control departments and employees. Food safety and security is serious concern for developed countries. In the year 2009 five international organizations for the elimination and control of food borne illness developed food code 2009. These organizations in the promulgation were FDA, CDC, HHS, FSIS and USDA.

The Food Codes were the set of rules and regulations to handle food products from production to retail point. Although it was not legitimate for each state to implement it but 48 out of 56 states of United States of America adopted it which composed of 79% of total population. Food code was composed of eight schedules containing standardize procedures for the penetration of food safety, hygiene and sanitation requirements. The food code 2009 was implemented strictly as compared to the previous regulations. For an Instance, under this rule it was necessary for each food business to hire at least one food safety manager. Under this system food safety training was also initiated. CDC and scholars from academic background were invited to introduce the severe unhygienic and cleanliness issues to the public. The cleanliness is also found to be an important part of customer quality assessment (Barber and Scarcelli 2009).

Temperature control has proved to be a good measure to eliminate bacteria in food products. It was found in a report appropriate temperature can prevent the growth of various types of pathogens in food items (Association, 2010). Restaurant mangers and owner should devise their products according to higher food safety and hygiene requirements, to meet customer expectations. In most of the previous studies attributes of physical environment are tested against customer' perception of hygiene in restaurant setting. Barber & Scarcelli (2010) presented a measurement scale for cleanliness and hygiene for restaurants. Their scale composed of physical attributes like external and internal environment of the restaurant, and overall cleanliness of premises.

Food Safety Practices are guidelines which are laid out to control food handling. Food safety practices should be ensured while preparation, storage, distribution, packaging, transportation and disposal of food products. Food safety practices are the requirement which should be fulfilled by food handlers. For this purpose food safety knowledge and skills are necessary for employees and supervisors. To handle food safely it is legitimate for the food handler to be of sound health and don't have any heinous disease. Proper hygiene standards should be maintained by food handlers and for premises where processing has to be done. Internal and external environment should be suitable and safe for food products. Food contact surfaces and equipment should safe and clean (Pure Food Rules, 2011).

In this research endeavor to highlight the impact of following food safety practices on customers' perception is studied, which are listed as under:

- Food Quality
- Internal Environment
- Hygiene Condition
- Personal Hygiene of Staff
- Facilities

It is important for Food business operators to understand how their contribution toward food safety can reduce food related disease rate. A responsible behavior in this context can generate appreciation and positive image. Food operators can play a vital role for the penetration of food safety in food chain. Unsafe food consumption can lead to harmful effects like food poisoning, diarrhea and severe constipation.

Food is necessary for human being. It provides strength to our body and facilitates it to grow. It's a provision of energy and power to our body which make us enable to perform our daily functions. But if food is unsafe and unhygienic, it can be disastrous for our body. Unhealthy food can cause various diseases in human body. According to FAO survey report 50% of population in Pakistan has unsafe food supply available in market (Food for thought, 2014). It is responsibility of government, industrialists and public to create a food safety culture to avoid rampant diseases. The need of hour is to implement food safety practices at food premise to deliver safe and hygienic food to the masses.

### 2.2.1    Food Quality and Customer's Perception

Oliver & Sarbo (1988) concluded customer loyalty as ratio of value received (product) compared with what is paid. Parasuraman regarded perceived food quality as a contrast between customers' assumption and his perception (Parasuraman et al., 1988).  Cronin et al. (2000) studied perceived quality and expressed it as directly proportional to customers' pre and post purchase behavior. Kandampully, & Suhartanto, (2000) proclaimed that purchase aims are guided by perceived quality which influences customers' satisfaction. It was found under their review that satisfaction have more significant relation with buying aims. Various other discoveries asserted a positive relationship among perceived food quality, customer's satisfaction and behavioral patterns. Various researchers studied importance of perceived food quality of a product and found it as a critical factor in customer decision making process which influences customer satisfaction and future purchase intentions (Caruana et al., 2000; Chiou et al., 2002). Likewise Braddy and Robertson asserted perceived quality as a magnitude of employer income (Brady and Robertson, 2001).

Problematic issues are not only on customer (demand) side, but the supply side has same issues. Produce need to understand and translate messages from customer choice. Investment in differentiated is costly and risky at the same time. Focus has been shifted from differentiation to customer segmented products which make comfortable for supplier to understand customer choice (Benner, 2003).

Grunert (2005) identified significant issues affecting customer perception of quality and safety in food businesses to build consumer' preferences. The research study showed involvement of complex issues in forming customer assessment of product safety. Most of these issued are yet to understand by managers. Major developments have been made to provide safe food but the restaurant industry still poses a serious threat for customers. Public policy regarded more information for the betterment of purchase decision but research findings indicated more information result in more customers' confusion.

Research studies have been done in three following dimension of customer demand in quality and safety perspective. The approach identify the extent of quality and safety measure and their corresponding effect on customer choice/perception and evaluate

customer response to pay more because of improvement in quality and safety measures. Readiness to pay for added safety and quality attributes can be considered as realistic demand. The first stream of customer perception (demand) contributes to demand side, the next stream deals with the supply. However third stream evaluates customer perspective in relation with quality and safety and how their involvement leads to positive or negative buying decision. The third stream acts as a mediator between demand perception and supply perception.

There are numerous ways to define food quality. Quality is known to be having two specific aspects. The first one is objective and second one is subjective. Objective quality concerned with intrinsic properties which are supervised by food technologists. However subjective quality is perceived by customers (Klaus, 2005). The research under study concentrates on subjective evaluation of quality which is assessed by customers. Quality is perceived as a customer assessment of service delivery, appraisal and general intention toward buying (Grunert, 2005).

Product quality can be defined by two above said approaches. Subjective quality is attained when food producer interpret customer demand and design product properties according to customer wishes, however in case of objective quality approach customer derive quality benefits out of product which has been built by producer intentions. Food quality is a strong criterion for food operators .Some researchers considered food safety as a part of product quality however some regarded food safety and quality as separated aspect. According to their view point food safety can be different from other quality dimensions.

 According to Bell et al, (2005) service quality and food quality should be considered as two major components of quality perception which have dominant impact on building customer perception in restaurant settings. Various studies on quality perception acknowledge it as major attribute of customers' future intentions (Chow et al., 2007).

Clark and Wood also admitted that food quality accounted for choosing a restaurant by customer and a major constituent of customer loyalty. Namkung, & Jang. (2007) also found a positive relationship between food quality and satisfaction. Post consumption

behaviors like recommendation and intentions are also get affected by it. Namkung & Jang (2007) expressed that food quality has a many factors which need to considered, which are "presentation, variety, healthy options, taste, freshness and temperature."

Liang & Zhang. (2009) conducted research study on "customer satisfaction in student food service" and find out that food quality is significant factor which managers should consider for the uplift of customer satisfaction. Past researches confirmed that perceived quality and customer satisfaction lead positive intentions to continue in positive direction (Chang et al., 2010).

Food quality is a foremost critical factor which influences customers' perception (Haghighi et al., 2012; Harrington et al., 2012; H. S. Kim, Joung, Yuan, Wu, & Chen, 2009). According to a census conducted by National Restaurant Association (2014), more than 60% of adults opt for healthy and safe menu while selecting a restaurant for dine out. Sumaedi & Yarmen, 2015 expressed food quality as major factor for the enhancement of customers' satisfaction and loyalty. Jooeon Ha studied the effects ofdining atmospherics on behavioral intentions through quality perception and find out that perceived quality of food has influential impact on customer behavioral patterns.

A positive ratio will determine higher level of satisfaction. Kabir.J, (2016). Found that the food quality as the third most significant aspect of customer' satisfaction. By going through all the relevant literature we assume following hypothesis which is mentioned as under:

**H0: Food Quality (Sub Food Safety Practice) has no significant influence on Customers' Perception.**
**H1: Food Quality (Sub Food Safety Practice) has a significant influence on Customers' Perception.**

### 2.2.2 Internal Environment and Customer's Perception

Customers' decisions get affected by physical environment of a restaurant setting which they exhibit into two types of behaviors, one of them is "approach" and the second one is "avoidance" (Mehrabian,. & Russell, 1974). Enormous literature in the field of environmental psychology explained that environment has powerful impact on customer' psychology and his behavior (Darley & Gilbert, 1985; Holahan, 1986). Additionally, Baker (1994), indicated in his research inquiry that environment provide information to customers to visualize overall restaurant image.

Bitner (1992) classified physical environment it into three dimensions—

1.   Ambient conditions: related with ventilation, temperature, humidity and pressure.
2.   Spatial layout and functionality: refers to flooring, furnishing and arrangement of all items which facilitate transaction.
3.   Signs, symbols, and artifacts: a symbolic representation to welcome customers.

Bitner (1992) further argued that servicecape either facilitate or disturb the customers to perform their activities and transaction''

Environment of a food premises has profound effect on customer perception and satisfaction. Chang, K. (2000) studied "Impact of Perceived Physical Environments on Customers' Satisfaction and Return Intentions" and found strong positive correlation between them. Actual product quality gets affected by physical environment psychological impact. Some studies found that physical environment can play a significant role in attracting new customers and maximize producer income by improving financial performance (Dube, Renaghan, 2000). Several other studies indicated that pre-consumption behavior is an antecedent of environmental condition. They further emphasized that atmospherics play their role in influencing mood positively or negatively (Mattila, Wirtz, 2001).

Anja Reimer, Richard Kuehn, (2005) studied the impact of servicescape on quality perception and concluded that servicescape is not only a predictor of perceived service quality but also help in intangible evaluation of a product or service. Hence physical environment has dual effect (positive and indirect effect) on the perceived quality.

According to their finding environment has considerable role for interpreting customer intention and evaluation toward a product. It is evident from this research that special consideration should be given to internal environment. Positive perception leads toward delight experience, which definitely impact customer perception positively (Moore et al., 2005). Various reports published in environmental psychology suggest that internal environment is not limited to tangible aspects but also intangible one. Wall and Berry (2007) suggested that environmental components as the most significant attribute to effect perception of customers.

Creation of an ambient environment will help to understand the justification for specific customers' behavior. Behavior can be controlled, shaped and changed by taking good marketing tactics for mutual benefit of customer and producer at the same time. Jiun-Sheng, Chris Lin, Haw-Yi Liang, (2011) described in their research work that Environment positively correlated with customers' emotions and their satisfaction.

Chishti (2013) emphasized to elevate quality standards and improvements in physical environment to keep more customers loyal and compete in market. Many research studies shows physical environment shapes customers expectations and overall image of service quality. Physical environment contributes to positive customer feedback about quality.

Finding presented that customer experience will be more pleasant provided environmental stimuli are more affirmative. Studies also show that each segment of the environment serves customers' psychology and his satisfaction differently. Studies also confirm that service environments play major role in building positive customers' perception and future intentions toward a product.

From above exploration of literature, we come to an understanding to formulate second hypothesis for our study which is described as under:

**H0: Internal environment have no impact on customer perception.**
**H1: Internal environment have positive impact on customer perception.**

### 2.2.3 Hygienic Condition

Hygiene condition and sanitation should be a priority for every operator who deals with food items. Sanitation and hygienic condition should be considered seriously while preparing, distributing or storing food products, otherwise contaminated food will result in various diseases including food poisoning and diarrhea. In hospitality industry high standards should be maintained to achieve higher level of customer satisfaction.

Food hygiene safety standards should be prioritizing on all other quality standards. Strict follow up should be taken by employees in this regard. It is also mandatory that the premises where food is processed and the workforce should adopt good hygiene and safety practices.

Hygiene word is derived from French language and its mean is "art of heath" or something which is good for health. Hygiene referred to a set of practices which are adopted to prevent various types of diseases. So the phrase hygiene condition specifies a condition which is good for health and where preventive measures had been adopted to eliminate diseases. It include regular cleaning of premises and food contact surfaces, measures adopted to prevent food contamination, proper hand washing and storing food raw material at appropriate and safe temperature etc

Aarnisalo (2005) affirmed that customer' satisfaction is an outcome of food hygiene quality at restaurant. Worsfold D (2006) pointed out that if dining experience is unhygienic customers will not revisit that restaurant. Employees should maintain hygienic condition throughout the production stages whole premises as whole. Restaurant hygiene is a crucial attribute in determining perceived quality and customers' satisfaction (Center for Science in the Public Interest, 2008).

Chinese study declares restaurant' hygiene as some total of customer' perception of restaurant (Jang and Liu 2009). Cleanliness is an integral aspect of any restaurant image. Issues related with hygiene condition and food safety are more accentuated with increase in hotel ling by customers. Customer's perception is influenced by restaurant hygiene condition. Study shows that restaurant cleanliness is not only critical for measuring and

shaping customer' satisfaction but also determine revisit intentions. Addition to that, study respondents acknowledge importance of restaurant hygiene irrespective with expensive or cheap restaurants. Customers' perception is developed through a constituent procedure. Restaurant cleanliness is perceived by customers through integral process instead of specific items. Thus food operators should focus on diverse items to ensure the highest level of restaurant cleanliness.

Any employee who is handling food item should not have any infectious disease like jaundice, diarrhea or any skin infection etc and if identified with any disease should be ceased to handle food items. Food waste should be properly disposed off. Adequate hand washing facility should be available to employees.  Food contact surfaces and premises should be clean and sanitized properly.  Food items should be cooked, refrigerated and stored at appropriate temperature (Kisembi, Muinde, 2010)

Bharwani (2012) considered hygiene as a risk which should be taken seriously by its operators in hospitality industry. To maintain high level standards of hygiene while preparing and serving food is crucial for attaining organization commitment.  He further emphasized on physical safety of swimming pool, gymnasium and other facilities at hotel. According to his view point kitchen staff can play important role toward food safety and hygiene practices. Al Yousuf (2015) asserted that should restaurants should adopt food safety practices to control food hazards. Employees should pay more attention to personal hygiene and hygiene condition while dealing with food products while preparation, distribution and storage.. According to Darko (2015) visitors acknowledge efforts of restaurants operators for the implementation of food safety and hygienic practices. Several other studies differentiate the perception base on gender related with hygiene and safety issues in hospitality industry. Results concluded females are more conscious toward hygiene as compared to male.

The findings of various studies denoted that food safety and maintenance hygiene condition is top priority of customer when going for dine out. Checkit's research also suggested that customer would not compromise eating in dirty and unhygienic environment; in contrast some of them get ready to bear unfriendly staff and poor service. The survey result indicated that more than 60% of customer graded unhygienic condition

and dirty premises as a reason for not re-visit a restaurant, however, 32% of customers responded with the reason of staff unfriendly behavior. Only 16% respondents quoted the reason as poor and late service delivery.

Alananzeh (2017) studied the "Impact of Safety Issues and Hygiene Perceptions on Customer Satisfaction" at Aqaba hotel and asserted that customer' perception toward hygiene directly affects their satisfaction level. For statistical analysis following techniques were used, which are reliability analysis, measures of central tendency and the mean.

By going through above literature following hypothesis is formulated as under!

**Ho: Hygiene Condition has (Sub Food Safety Practice) insignificant relationship with Customers' Perception.**

**H1: Hygiene Condition has (Sub Food Safety Practice) significant relationship Customers' Perception.**

### 2.2.4    Personal Hygiene of Staff

Staff physical appearance presents an image of the restaurant or any business which support its objectives. Different styles of uniform and tidy appearance reflect professionalism to customers and add value to the business environment. Personal Hygiene of Staff is necessary for positive customer perception. Result of various studies show that employees can deliver good service quality and can evoke positive customer feedback which results in higher customer satisfaction level while increasing future revisits (Bowen, Siehl, & Schneider, 1989) & (Borucki & Burke, 1999).

A study of ready-to-eat food from retail premises in North Eastern England by (Richardson, & Stevens, 2003) indicated that members of staff who practiced poor personal hygiene could contaminate food items with infected excreta, pus, respiratory drippings or other Infectious discharges. Hui Liao & Aichia Chuan (2004) studied factors influencing employee service performance and customer outcomes and found   Front-line employees represent an organization to its customers and play an important role in building customer perception for an effective service delivery.

Restaurants try to meet customers' requirements in their own unique and innovative ways. Competition is a source of all innovations restaurants industry. Customers contact staff can play a critical role in assessing and fulfilling customers' requirements (Peters and Pikkemaat, (2005). Evaluating responsiveness of employee is an effective way of measuring employees' performance. Customer satisfaction is one of an outcome of customer of customer perception which is evident through their behavior. Various policies were formed, including supervision of employees to ensure safety and hygiene practices but still it poses a great challenge for managers and departments responsible for food safety maintenance. Educated and well trained employees in food safety aspect can play a distinguished role for the compliance of food safety practices and standards. However, food safety training is not an end in itself unless it is provided with strict supervision (Green & Selman, 2005).

Recent research studies in food safety emphasized important role of superintendents which they can play to ensure food safety behavior in employees. A strict supervision can reduce the risk of food borne diseases to much extent (Arendt & Sneed, 2008). Food Business Operators, managers and customers should understand the importance of delivering and eating safe food products. One of the most challenging issues for an organization is the maintenance of continuous satisfaction level of its customers and being profitable simultaneously (Mathew, 2008).

FDA (2009) conducted a survey to determine risk factors in different food service settings and found highest rate of non compliance in restaurants setting. About 76% of restaurants were marked with non compliance behavior like inappropriate temperature, poor personal hygiene of staff, inadequate hand washing practices and use of contaminated equipments.

"Personal hygiene of staff and implementation of hygiene standards is a positive step toward gaining customer trust. Each food business operator should adopt higher standard of hygiene and a tidy employee physical appearance. Personal hygiene of staff is a first step toward maintaining food safety standards" (Aida, 2010). Ning Kuang Chuang & Tereca Chen (2011) conducted research to investigate how employee uniforms influence customers' perceptions and general image of serve quality in a restaurant and found

appositive correlation between employee physical appearance and their job performance. Significance relation was also existed between physical appearance and customers' perception in a restaurant setting. Managers should consider risk associated with unsafe food as a financial liability and customers should evaluate impact of eating unsafe food on their health and lives (Susan W, Kevin R, 2014).

Appropriate grooming standards should be adopted by staff to make business premise more appropriate however personal hygiene practices will give a positive impact on customer perception. An appropriate dress code is beneficial and a promoter of publicity which determine grace of a firm. An appropriate dress code incites a sense of respect for employees in the eyes of customers. Customer perception of business is influenced by the outer look of employees and improves the brand image. A proper uniform reduce

Vegas & Anna (2016) investigated how customer's perception change base on dress code of staff, specifically in restaurant industry. The findings suggest employers dealing with hospitality business to use appropriate uniform for their business advantage. Employee physical appearance is an important component of brand identity. Employee physical appearance adds grace to the environment. A formal dressing of staff adds beauty to the atmosphere and professional impression to customers for dinning out experience. It allows customers to recognize employees conveniently in case of any inquiry or complain. It facilitates customers to perceive product or service quality idea and help customer in decision making.

By going through above literature we formulate following hypothesis, mentioned below!

**Ho:     Personal hygiene of staff (Sub Food Safety Practice) has direct relationship with Customers' Perception.**
**H5:     Personal hygiene of staff (Sub Food Safety Practice) has direct relationship with Customers' Perception.**

### 2.2.5 Facilities

With fast pace globalization the level of development and completion among businesses has increased manifolds. Food businesses are not exception in this regard either they are dealing product or services. Poor facilities incite a negative feeling in customers. However, good facilities evoke pleasant customer' impression and perception about a business. It adds beauty to the clean and pleasant environment. When facilities are placed in order in a restaurant, it signifies customer that manager owner is in better control of his business. A good functioning restaurant manifest a steady flow of customer while showing that a business have proper control of its actions. An ambient environment develops positive emotions in customers and they stay longer in that environment.

Although food menu and its quality is considered to be most important factor for customer choice of a restaurant yet restaurant ambient environment and prompt facilities are other more significant components which affect customer perception (Auty, 1992). Kim & Huh (1998) proposed 10 components which account for positive customers' perception and their overall service quality and these are maintenance of hygienic condition, food quality and taste, range of menu, indoor and outdoor facilities, facilities for children, comfortable environment and price in restaurant service.

It is defined as the integrated administration of work premises to enhance the functionality of the organization (Mudrak, 2004). In a specific manner FM refers the administration workplace and services which are needed to facilitate and support basic work activities by adding value for the customers (Mudrak, 2004). FM primary function is to manage facilities and other support services for the efficient working conditions. However some researches considered it as a necessary evil. It is one of the reasons that it generates more cost as compare to income. Facility maintenance gives a positive impression to customers (Rasila, Gelsberg, 2007).

According to a well known phrase "Facilities Influence Productivity" which highlight importance of facilities for shaping customers' perception. The concept of facility management shows increased importance of physical surroundings and facilities for organizations performance (Yusoff, 2008; Lepkova, Vilutiene, 2008; Pitt, Tucker, 2008).

Convenience or facility is taken as a thing which reduces difficulty and support transaction activities. Easy access, parking facility, washroom availability and proper waste disposal system are some attributes which make restaurant more convenient and influence customer perception.

Like other developed disciplines, the discipline of Facility Management has emerged from practices of three further types' management, operations and maintenance and office administration (Pitt, Tucker, 2008). Eddie (2010) investigated the impact facilities on customer satisfaction, in shopping mall (sector). Under this study a longitudinal customer satisfaction survey was conducted. Multiple regression analysis was used as statistical test and after that compare regression outcome of 5 years. His study conclude that administration of facilities and its maintenance is an important element which determine customer satisfaction; condition of sanitation and washrooms is also affect customer' perception.

According to a popular survey (N.R.A, 2014), it was showed that *72%* of customers consider facilities and convenience as necessary while choosing a restaurant. As Knutson (1988) inferred in his study as small facilities can make gigantic change. Thus we can say that convenience is legitimate for customer satisfaction.

In this scenario each industry tries to compete by augmenting best marketing strategy to differentiate itself from others. Some countries have developed their restaurants and hotel industry vigorously (Alexander, 2015).

Rianto Nurcahyo,R; Fitriyani,A; Hudda,Irma (2017)studied **"The Influence of Facility and Service Quality towards Customer Satisfaction and Its Impact on Customer Loyalty in Borobudur Hotel in Jakarta"**. Result of this study indicate that facilities have influential impact on customer satisfaction which show that low level of facilities account for low customer satisfaction level. It was found under this study that service quality also paramount to customer satisfaction directly. Customer satisfaction boosts customer loyalty. The more satisfaction result in more loyal customers. Generally it was found that dissatisfied customers will not visit restaurant again. Customer loyalty badly affected by the poor quality of facilities. For this research study non probability sampling technique

was used, however statistical test applied were normality, multicollinearity, and heteroscedasticity test.

Literature above lead to the formulation of fifth hypothesis for this research study:

**Ho:   Facilities (Sub Food Safety Practice) provided have no significant relation with Customers' Perception.**
**H6:   Facilities (Sub Food Safety Practice) provided have significant relation with Customers' Perception.**

## 2.3    Customers' Perception

Weigert (1985) referred trust as a logical prediction to reduce complexity. Rozin (1986) considered food choice as psychological patterns which are affected by product quality. However, psychological judgments which results in purchase intention and positive customer behavior often influenced by food safety level. Perception toward food safety risk determines benefit not only for customer but also for food operator. Because of it food safety penetrates throughout the food chain.  Positive intention comes out of evaluation of certain product or brand. Purchase intentions are outcome of behavioral process (Ghosh 1990). Customer trust of food safety information lead to positive intentions, however food safety information are transferred across customers through following classification; as labeling, marketing, customer contact while purchasing, customers positive words of mouth, suggestion from health practitioners and state departments and media (Padberg (1992).Courtland (1992) expressed in his research study that for a customer to buy a product, it is necessary that he should be aware of its existence. The process starts with the exposure of information, then attending it and later translates it into a perception. Quality perception is a way to receive and select information from certain environment with the help of sensory organs (Markin, 1995).  It is important from manger perspective to understand perception process deeply. It is because customer purchase decisions are affected by various components which an efficient marketer can shape by using good marketing strategies.

Product can be referred as anything which provide customer with the solution, a core benefit or an additional value addition (Stephen, 1995) product is an integral part of marketing mix. It depend on an efficient marketer how he presented it to the customers. Future of a product should match the requirement of its customer. A successful marketer first understands the expectations of customers and then designs it to stand out against competitors. Differentiation can be done by including additional features in line with core requirements. Products are the source point to satisfy customers' requirements. Product can be tangible and intangible which fulfill human need. Customer perception of quality bases on various information which he or she translate and shape an image of expected product or service characteristics. According to Gregory (1995) process to form perception is composed of receiving information and interpreting it into a meaningful picture of related aspect or environment. Naumann (1995) described five factors of customer perceived value as relation between producer and customer, price, quality and image of the product and service.

Different research approaches had been employed to evaluate the impact of customer perception of quality on choosing a restaurant. Grunert (1996) proposed two basic dimensions for the evaluation of food quality perception. The first one is time dimension which analyzed customer perception before and after buying. The second one is vertical dimension which provoke customers purchase one product instead of another. Determination of customer trust is affected by the factors which are biased reporting and unauthentic information. The first factor indicated reliability of reporting source and second refereed to genuineness of information. Frewer (1996) investigated a similar trust dimensions distribution approach via factor analysis and found perceived competence and honesty as a relevant attributes.

INRA (1998) conducted a survey across whole Europe to understand consumer trust on private and state agencies for providing food safety related information. Trust is composed on general belief, discernment. The relationship of food safety risk and its corresponding effect on trust had been explored in various studies (Liu et al., 1998). Various research studies tried to measure customer perception of risk in broader context (Mitra et al., 1999; Tse, 1999). Importance of food safety has been recognized globally.

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Occurrence of food safety incidents has a profound influence on customer trust and confidence. According to the finding more confidence had been found in information reported by consumer organization and health practitioners. State officials are found to be less sensitive toward public concern (Frewer, 1999).

Customer perception of value helps in building competitive advantage, as customer always consider purchasing high valued products and services (Doyle, 2000). Value and perception is more individual base (Oh, 2000). Customer perception of value has dual effects. Firstly it influence customers purchase decisions and secondly it enforce positive recommendation and future revisit intention (Grewal, 2000; Petrick, 2002). Perceived quality depends on tangible aspects like durability, product performance and brand name. Perceived quality is a general image in customer mind for a product or service however it its identification can be helpful (Aker, 1991). This issue is studied under means-end approach to consumer behavior (Reynolds, & Olson, 2001).

Customer perceived satisfaction is used interchangeably with customer perceived value. Customer perceived value refers to the overall worth of a product in customer perception. Normally customers are unfamiliar with the actual product cost so they behave according to his or her build perception. Customer perceived intrinsic value is influenced by quality as well as price. Perceived product or service value can be different for different customers. Customer perception of service value is a vital aspect of strategic marketing (Woodruff, 1997, Morgan, 2001).

Another Study emphasized the importance of technology and awareness in building customer perception toward food safety benefits which can influence buying behavior (Schroeter, Penner and Fox, 2001). Yeung & Moris (2001) studied Food safety risk and its corresponding effect on customer perception and purchase intention.

"In this research study they tried to answer the following questions.

1)     How food associated risk influence customer perception toward food safety?

2)     To what extent these perception effects purchase decision?

3)     What course of actions customers take to avoid food risk?

The attributes which configure customer perception toward food risk are taken as independent variables; however their corresponding effect on purchase likelihood is taken as dependent variable in this study. The empirical results show that a negative correlation between customer perception of risk and their purchase behavior, keeping other things as constant".

Different customers assessed product quality differently. An excellent quality for one customer is not necessarily perfect for another. Some customer consider price as an indicator of product quality (Kotler 2001). Components of trust for (GM) food are measured by Frewer (2001), which indicated that information pertaining to government departments, media and industry were highly regarded as un-trust worthy by customers because of their personal interests. Hence family members and friends were considered to be less biased in reporting information and are more trust worthy. Effect of reporting bias has been identified in literature. Henson (2001) studied impact of reporting bias in survey. Trusts serve a significant role in civil society irrespective of weak background (Mollering, 2001).

Most customers use environmental clue or recommendation to judge quality, however in case of non availability of information, price serve as a antecedent of quality. Various stimuli in environment affect customer decision making which indirectly shape particular customer response. Long term loyalty result in profitability and economic growth for an organization (Molla & Licker, 2001). Vanec (2001) investigated quality as a useful key for the creation and maintenance of competitive advantage for a firm. Bruns (2002) suggested that customer perceptions about food safety influence their choice and selection in numerous ways. It shows that food safety perception have significant role toward two types of customers behavior which are approach and avoid. The first behavior (approach) result in choosing a product and the second behavior is manifested through avoidance of particular food product or brand.

Chen & Dubinsky (2003) emphasized that perceived customer value is influenced by product perceived risk, price and perceived quality. However Poppe (2003) investigated a strong correlation perceived safety and customers' confidence on a certain product. Trust

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is described as customer willingness to accept certain risk on the expectation that interests of customers will not be harmed by producer because of producer' reputation and positive expectation. Uncertainty is an important element of confidence which evoke customer to rely on producer; however interdependence is seemed to be a second most essential condition. Trust is defined in various disciplines. Trust help in decision making. Customer trust is based on five important attributes which are 1) authenticity of source, 2) provision of unbiased information, 3) legitimacy, 4) firmness and 5) good faith. Trust is perceived as a general belief that people concerned would abstain from exploiting their responsibility (Morrow, 2003). Impact of trust on customer buying decisions is also considered as important in economic perspective (Eiser, 2003). Formation and evaluation of customer trust is important in food safety concern. Customers purchase products from producer or supplier because they consider producer trust worthy and reputed. It is essential to understand to understand the mechanism of trust perception in customers and how it transfer in community.

A European survey was conducted 2004 found that in case of incomplete information, customers demand additional information to decrease their risk and uncertainty. By going through literature, it is evident that if proper food safety practice are implemented it would definitely contribute in building positive trust. Safe practices pertaining to food preparation, storing and distribution yield appreciation, reliance and positive image of any restaurant concerned. Implementation of safety practices serves as extrinsic cues which are reflected in positive customer views and favorable behavior.

Divolf (2005) found that brand knowledge contribute to association with the brand in customers' perception .Customer attitude toward a product had a strong impact on decision to buy. Customer perception of food safety should be considered while analyzing customer trust of food products. Many studies analyzed to what degree certain food items or products are considered risky and safe by consumers (Berg, 2005).

An exploratory research investigation found that positive recommendations also affect customer perception of value in a restaurant setting. Tsiotsou, (2006) emphasized that better quality result in higher buying intention as compare to lower quality. Social

benefits and trust have direct effect on customer perception. Trust is an important criterion to evaluate goodwill of any business (Xu, 2007).

Quality is assessed by customers. Advancement in technology influenced customer expectation toward quality. Product performance and its durability had been a criterion to judge product quality in past. Now durability and performance are considered as core requirement and completion is started on additional features (Prefi, 2007). Customer satisfaction is not an end itself which result in economic wellbeing of a business. It's a major indicator of loyalty. Positive customer satisfactions generate loyal customers which are further translated in economic profit. It should be taken seriously for managerial implication as it provokes loyal behavior in customers (Xu, 2007).

Hutt (2007) evaluated this term and found a comparison in customer mind about producer product benefits in association with the consideration which he needed to paid.

Hutt & Speh (2007) further explained customer perceived value as a combination of two types. First are core benefits which are actual requirements and second are an add-on benefit which is not necessary but create additional value for customers. Other studies defined customer perceived value as a ratio of as a weighted average of "get in" and "give out".

Jonge, D (2008) attempted to monitor consumer confidence of food safety and concluded those customer use extrinsic cues are strong indicators of product safety. For example certain certification, product environment and location are perceived as determinants of food safety in customer perspective. Extrinsic cues serve as an important criterion while purchasing. Results concluded that requirement of risk relievers is high for customer who seek food safety crucial while deciding to purchase. Identification of components affecting customer confidence related with food safety issues will help to understand customer behavior (Jonge, 2008).

In summarize form we can say that customer perceived value is an analogy of customer perceived benefits which he expected to gain out of the product and the amount which he required to pay (Christopher, Payne, & Ballantyne, 2008).Perceived quality is an image in customer mind to consider certain branded product superior as compare to other

alternative products in the market (keller, 2008). Chi, (2008) suggested that a good product quality will increase customer inclination toward buying that product. His study further found that quality had a significant effect on customers 'buying behavior

Customer's Perception is our desired dependent variable in this study. Following factors constitute customer perception, which are mentioned as under:

1. Perceived Product Quality
2. Relational Benefits like Social benefits, Special benefits and Trust.
3. Perceived Customer Satisfaction
4. Customer's Intention like retention and positive feedback.(Xu, 2010)

Implementations of these standards as a food safety practices in obligatory for each food business operator (PFA Act, 2011). The impact of food safety practices on customer trust has not been studied previously. Competitive advantage is an ability of business to generate customer value. This led the focus of researchers shifted toward process of value creation. Kotler (2012) evaluated perceive value as a difference between as customer perception of benefits gain out of a product in relation with other products in market. Customer purchase intentions are a guide to customer behavior to purchase certain product (Shah et al., 2012). Customer purchase intention is associated with customer perception and behavior. In past various researchers focused their attention to investigate a relation between customer purchase behavior and brand equity (Irshad, 2012). A positive relationship had been found between brand equity and positive recommendations to others (Azizi & Ajini, 2012). Brand loyalty encourage consumer to pay more for a certain brand, comparing with other products available in the same market (Erics, 2012).

Proper implementation of food safety practices at food premise generates positive remarks from customers. As people are going more conscious about their health and diet, implemented food safety practices will be rewarded by customers in form of loyalty, publicity and positive intentions.

 Zeeshan (2013) emphasized the importance of product quality as it had a key role in developing buying intention. Intention to purchase a particular product can change by quality or price effect (Gogoi, 2013). Many studies recommended 6 steps for making

final decision about purchasing a product. The first step is awareness and next is knowledge. In these steps customer become aware of existence of product and after that he get knowledge about it. The third step of purchase decision is interest which evokes a customer to make a preference (4th step). In the fifth step customer is persuaded to buy a specific product and in last step, he ultimately purchase that product (Kawa, 2013). Most of the time a cheap and unfamiliar product with simple packaging, is considered as risky and untrustworthy by customer (Gogoi, 2013). However some product are well known brand in the market. Brand name builds a positive perception in customer' mind. Brand name is considered to be important for attaining loyal customer and retaining market share. Loyal customers do repurchase and generate positive words of mouth for a brand. It is evaluated that brand awareness influence customer decision to buy a particular brand (Tih & Lee, 2013).

Restaurant hygiene condition is regarded as customer assessment of service quality and a strong measure of customer satisfaction. Very few researchers have studied hygiene and safety factor as a determinant of customer perception. Some studies evaluated the influence of internal or external environment on customer' perception while others considered physical appearance of staff as important determinant of customer' perception. No one study food safety practice impact on customer views, in a broader sense.

This research study endeavor to highlight effect of food safety practices as a whole on customer perception. Understanding customer valued perception is in interest of managers and food business operators. It is worth understanding to compare cost versus value of implementing food safety practices if food business operators desire to expand their business in national or international market. Provision of safe and healthy food in hygienic environment is something which should be appreciated by customers. No one wants to dine out in unhygienic environment where equipments are not properly sanitized and floor and washrooms are dirty.

Customer values depend on customer perception toward things. Customer perception toward value perfection can be identified in many ways, like product goodness, staff friendliness, hygienic environment, safety practice or car parking etc. in restaurant esthetic design and physical environment play a vital role in shaping customer value.

Jules, A (2017) concluded in his study that factor affecting customer perception like food quality, environmental condition, innovation and facilities contribute to positive customer valuation. The study emphasized to concentrate on these factors for customer value addition and for positive customer experience. Customer expectations should be fulfilled for the attraction of more customers. His study highlighted role of perceived value and satisfaction which led to favorable customer behavior.

## 2.4 Conceptual Framework

In conceptual framework Food Safety Practices which are Food Quality, Internal Environment, Hygienic Condition, Personal Hygiene of Staff and Facilities are independent Variables. Customers' Perception is dependent variable in this study Conceptual model of research study is represented in form of diagram.

### FOOD SAFETY PRACTICES

| |
|---|
| 1. Food Quality: FQ |

| |
|---|
| 2. Internal Environment: IE |

| |
|---|
| 3. Hygienic Condition: HC |

| |
|---|
| 4. Personal Hygiene of Staff: PH |

| |
|---|
| 5. Facilities: FC |

**Customers' Perception**
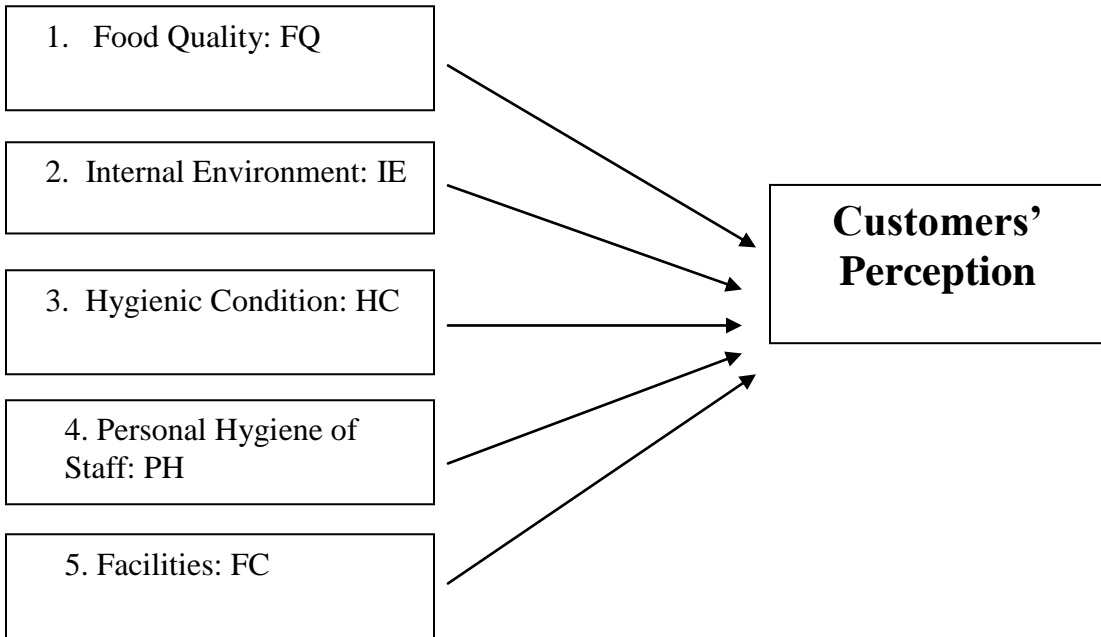
# CHAPTER NO.3

# RESEARCH METHODOLOGY

Underline chapter will discuss in detail the research methods used to conduct this research investigation. This chapter is composed of general introduction, approaches to research methods, type of research, research objectives, research design, population and sample, sample size, sampling technique, data collection methods, research instrument, research variables, measures used, data analysis, statistical technique used and discussion. Research design, sampling technique and data analysis techniques, even each research decision indicate usefulness of this research investigation to outline how customers' perception is influenced by food safety practices implemented by food business operators. This chapter will present explanation for using primary data sources and research design and methods justification used in this research study.

Objective of any research is to validate research findings in the eyes of suspicious audience (Sumser, 2001). A successful researcher must have strategies based on reasons and logics to win his audience trust (Lucas, 1995). In views of Goldstein (2002) research methodology is not only a device to assemble information but it serve as a solid ground for making rational decisions. Research study is seemed to be argument and their claims are based on sold reasoning and evidences (Reinard, 2001). Goldstein (2002) emphasized that research methodology is neither a simple tool for statistical analysis nor just a parameter used in survey conduction, report findings and generalization of results. Research methods or methodology is considered as a rhetorical strategy.

## 3.2 Research Methodology' Approaches

Research Approach is a broad plan which composed of detail procedures used for data collection, data analysis and translation of results. A plan consists of various decisions which are taken in a logical sense and order. It's a philosophical assumption which a researcher brought under study, various procedures are applied on it, data is collected, analysis is done and inference is made. Research approach is selected on the base of research problem, personal experience of researcher and for the particular audience of study. There are three research approaches which are qualitative, quantitative and mixed methods. Qualitative research approach is used for exploring qualitative aspects related to individuals, groups or certain problem which are unable to describe in numerical form. Qualitative approach focuses on quality of variables or entities which are unsuitable for experimental examination.

Quantitative approach is used to test the relation among variables which can be measured in numerical form. Mixed method approach deals with both types of data (quantitative & qualitative), uses a specific design for theoretical and philosophical framework. Mixed method approach provides a detailed understanding of research problem under study. A quantitative approach uses statistical methods for data collection and its analysis and focuses on number for making opinions, concepts and decisions (Amaratunga , 2002). Quantitative research approach emerges out of academic disciplines.

Amaratunga (2002) emphasized that research approach under used for the collection of information should be coherent and original; a true research must contain previous relevant literature in subject area section. Research approach is used in accordance with the requirements for research problem, research topic and information needed to resolve research problem (Gronhaug, 2001). Quantitative research approach is used in this study to test the strength of relationship among variables involved. The variables are expressed in numerical form and information is extracted from primary data sources. Research problem and research objectives also make sense for using quantitative research approach for this study.

## 3.3 Research Strategy

Research strategy adopted by Kivela (2000) is adopted in this study. Under this research study, customers are requested to fill research questionnaires who visited restaurants in a period of three months. The attributes of dining experience have considerable impact on customer perception, attitude, decision making and expectation (Kivela, 2000). Numerous research instruments had been used for the measurement of customer satisfaction and loyalty, in context of hospitality and restaurant management. In this research study customers' perception toward food safety practices implemented, in major restaurants of Punjab (Pakistan) is studied.

## 3.4 Research Nature (Primary Research)

Primary research is done specially to address a particular problem (Birks, 1999). For this purpose primary data sources are extracted to collect data, it may be quantitative or qualitative in nature. Fleming (2003) concluded two basic modes for collecting information, first is asking them and the second one is observing particular phenomenon, individual or event, which are two modes of descriptive research. For this research study primary data is collected which is quantitative in nature.

## 3.5    Research Design

A Research Design is a combination of methods and measures to collect and analyze independent and dependent variable which is defined in research problem. In order to examine the relation between variables quantitative approach is accustomed.

## 3.6    Population and Sample

### 3.6.1    Population

In views of Polit and Hungler (1999:37) the population is the sum total of all individuals or objects which conform to the specific set of standards in a study. Fraenkel and Wallen, (2009) considered population as a larger group of individuals or members possessing similar attributes, out of which a sample is taken. In this research study the population was all customers residing in Punjab who visited medium and big restaurants. The two

main characteristics of individuals to be considered as population of this study are as follow!

➢ Must be resident of Punjab Province

➢ Often visit restaurants in Punjab

### 3.6.2    Sample

A segment of the population which represents the whole population is known as sample and the procedure by which it is selected is called as sampling (LoBiondo-Wood & Haber 1998:250; Polit & Hungler 1999:95).A sample is a representative of all population involve in the study. As is very difficult to obtain and analyze data from all population that is why its fraction (sample) with homogenous characteristics is drawn for analysis, and its finding is applied on whole population. Sampling is an efficient way to reduce human effort, time and financial constraints. Convenient Sampling technique is used to draw sample from population.

### 3.6.3    Sample Size

Most of the market research studies aimed to augment information about the characteristics of population under study (Malhotra, 2007). A population consists of all elements sharing common characteristics. Identification of target population initiated from specifying targeted population (Malhotra, 2007).   Target population is the combination of participants possessing certain information which is soughed for making conclusion.

The next step is determining sampling framework. Sampling size or sampling frame is representative of target population, it include directions for determination of target population (Malhotra, 2007). He further emphasized that if proper list is not included in target frame than at least directions should be mentioned. The third stage is sampling technique and fourth stage is determining sampling size which require due consideration on the part of researcher. The last step involve, is the execution of sampling process (Malhotra, 2007).

Shahzadi, M., Malik, S., & Shabbir, A. (2018) studied perceptions of fine dining restaurants in Pakistan by taking a sample of 296 customers. Likewise Dipietro, R., Greogry, S., & Jackson, A. (2013) evaluated customer perceptions and intentions in context of green practices in quick service restaurants, this study used a sample of 260 respondents for evaluation. Bujisic, M., Hutchinson, J., &Parsa, H. (2014) conducted a study to highlight effects of restaurant quality attributes on customers behavioral intentions.

In this research study data is collected from Customers of medium and big restaurants of major cities of Punjab in the form of survey questionnaires. A total 350 questionnaires were distributed for data collection. 250 questionnaires were valid. So a sample of 250 customers of different restaurants in Lahore, Faisalabad, Multan, Rawalpindi and Gujranwala is taken as a valid sample size for research. The sample size for research is according to standard as declared by scholar (Hair et al., 2010). And their feedback is measured against a questionnaire. All major cities of Punjab are selected. Out of 350 questionnaires distributed in-person, 260 responded. However, 250 questionnaires were considered as valid. Response rate is 71%. It was considered as good response rate (Babbie., 1998).

## 3.7    Sampling Technique

Sampling technique used in this study is Convenience sampling. It is a particular type of non-probability sampling technique. Under Convenience sampling data is collected from population members who are conveniently available to participate in the study. In business studies convenient sampling technique can be applied to obtain primary data about particular issue like perception about specific brand image or obtaining perspective customers opinions about a new design of a product launched (Saunders, M., Lewis, P. & Thornhill, A, 2012).

Convenient sampling technique is used if the main research study is conducted without any additional inputs. No criterion is considered to select members of a sample and because of this reason it is extremely easy to include elements in the sample. Each individual of the population can be a part of the sample and is based on the closeness and availability to the researcher to get included in the sample (Bhat, A., 2018).

Convenient sampling is the simplest form of sampling and easy to use. It is more appropriate for pilot study and hypothesis formulation. Convenient sampling technique facilitate to obtain data in short time period and it is also cheapest to implement (Saunders, M., Lewis, P. & Thornhill, A., 2012). Convenient sampling is very useful to find relationships among different phenomena (Convenience Sampling, 2007).

## 3.8   Data Collection Methods

Data collection is a way of assembling information from specific data sources in order to answer a particular research problem. Data collection methods are categorized in two broad classifications, which are secondary data collection methods and primary data collection methods.

### 3.8.1   Primary Data Collection Methods

Primary data can be quantitative and qualitative as well. A quantitative data consists of numbers. Quantitative data is less costly and more reliable. Normally quantitative data is analyzed through statistical measures which are correlation, regression, mean, mode and median etc. However qualitative data is in form of opinions, beliefs, judgments which lacks in property to be described in numbers. For statistical analysis primary data sources of quantitative nature is used. Respondent feedback will be measured against a questionnaire.

## 3.9    Research variables

The study involves variables are mentioned below:

### 3.9.1 Independent Variables

**Food Safety Practices**

Sub Variables (Independent) are as following;

- Food Quality
- Internal Environment
- Hygiene Condition
- Personal Hygiene of Staff
- Facilities

### 3.9.2  Dependent Variable

Customers' Perception is desired dependent variable in this study

### 3.10  Measures (Research Instrument)

We used adapted questionnaire to record feedback of respondents. The questionnaire is consisting of 43 questions. The target population was customers of famous medium and large scale restaurant in five major cities of Punjab. Food Quality is measured by 6 items derived from Yoo, S. (2012) and Faremi, F., Olatubi, M., &Nnabuife, G. (2018). Internal Environment is measure by 4 items derived from Okojie, P. &Isah, E (2014). Hygienic Condition is measured by 5 item derived from Yoo, S. (2012) &Faremi, F., Olatubi, M., &Nnabuife, G. (2018).Personal hygiene of staff is measure by 7 items derived fromOkojie, P. &Isah, E (2014). Facilities are measure by 5 items derived fromYoo, S (2012) &Faremi, F., Olatubi, M., &Nnabuife, G. (2018).Customer**s'** perception **is** measured by 12items developed by Robin, B., Yang, C., & Charles, P. (2013

### 3.10.1  Likert Scale

In order to analyze customers' response, 5 point Likert scale was used in this study. Likert scale is used for measuring response of respondents in line with subjective statement; from how strongly agree to strongly disagree. Five Points of this Scale are mentioned below.

| Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

### 3.10.2 Section 1
### Demographic Information

Section 1 comprises of 5 questions about the customer (respondent) demographic information, like name, gender, city, age group and Educational qualification.

### 3.10.3  Section 2
### 3.10.3.1 Food Quality

06 items developed by Yoo, S. (2012) &Faremi, F., Olatubi, M., &Nnabuife, G. (2018) were used to record responses against Food Quality. The following questions are required to be responded by Customers:

- Food Product delivered is fresh?
- Food product is not expired?
- Food product presentation is good?
- Food product packaging is safe and hygienic?
- Food Products are protected from contamination?
- Food products are cooked/freeze/presented at safe internal temperature?

### 3.10.3.2 Internal Environment

04 items developed by Okojie, P. &Isah, E (2014) were used to record responses against Internal Environment. The following questions are required to be responded by Customers:

- Exterior environment of food premises is clean?
- Air ventilation arrangement available?
- Food Product is protected from sun, dust and wind?
- Sink are unobstructed and clean?

### 3.10.3.3 Hygiene Condition

5 items instruments developed by Yoo, S. (2012) &Faremi, F., Olatubi, M., &Nnabuife, G. (2018)were used to record responses against Hygiene Condition. The following questions are required to be responded by Customers:

- Food Premises floor and carpet is clean?
- Windows or windowsills are clean?
- Tablecloth is clean?
- Food contact surfaces (plates, glassware etc) are clean?

- Hand sinks are unobstructed, operational and clean?

### 13.10.3.4 Personal Hygiene

7 items instruments developed byOkojie, P. &Isah, E (2014) were used to record responses against Personal Hygiene.

- Operator at food premises dressed up in neat and clean uniform.
- Operator wears aprons, gloves and masks while preparing and handling food items.
- Effective hair restraints are properly worn.
- Operators avoid coughing and sneezing while preparing/presenting food products.
- Operators avoid smoking at food premises.
- Operators avoid handling money while serving food.
- Operators avoid wearing jewelry.

### 3.10.3.5   Facilities

5 items developed by Yoo, S (2012) &Faremi, F., Olatubi, M., &Nnabuife, G. (2018) were used to record responses against Facilities.

- Washroom is available for and customer and employees.
- Garbage is properly disposed off at food premises.
- Waste disposal facilities available.
- Pest control system is placed.
- Adequate hand washing facilities available.

### 3.10.3.6 Customer Perception

12 items developed by Robin, B., Yang, C., & Charles, P. (2013) were used to record responses against customers' perception.

- Do you feel satisfied with the food safety practices implemented at food premises?
- Are you satisfied with the food quality delivered?

- Do you think food operators well trained and knowledgeable about food safety?
- Do you food operators well supervised?
- Do you prefer to purchase from this food business because of safe and hygienic food products?
- If you notice good food safety practices implemented at food business, will it positively affect your purchase decision?
- Do food safety practices increases your trust on food quality?
- Do you often purchase from this food business?
- Will you visit again this food business?
- Are you willing to bear some extra cost because of food safety arrangements?
- Do you appreciate those businesses who maintained food safety practices?
- Will you give positive feedback if other asks your opinion about this food business?

## 3.14    Data analysis

Data was analyzed by utilizing the Statistical Package for Social Sciences (SPSS 20) software.

### 3.14.1    Statistical Techniques.

For this research, three types of statistical techniques were be used for data analysis. These are:

1.      Descriptive Analysis
2.      Reliability Analysis
3.      Cron-bach alpha
4.      Correlation analysis
5.      Confirmatory Factor analysis
6.      Regression analysis
7.      Multiple Regression Analysis

### 3.14.1 Descriptive Statistics

First statistical analysis which would be used in this study was descriptive analysis. Descriptive analysis is carried out to obtain information about normality of data. Descriptive test provide facts about mean, standard deviation and frequency distribution of data. It involves summarization as well as organization of information for better understanding. Descriptive test help to define data but don't facilitate in making inferences. Descriptive statistics don't conform to probability approach.

### 3.14.2 Reliability Analysis

The second test conducted was reliability analysis. Reliability analysis measures to which extent a construct deliver consistent and homogeneous results, for repeated measurements. The analysis which measure reliability of instrument is called reliability analysis. Reliability of measure indicates extent to which it is without bias and hence ensures consistent measurement across time (stability) and across the various items in the instrument (Sekaran, 2007).

### 3.14.3 Cronbach' Alpha

Cronbach' alpha is a common measure to check internal consistency. It is used to measure reliability of scale. It is mostly used when instrument have multiple likert questions (Cronbach' Alpha, 2018).

### 3.14.4Correlation analysis

Correlation analysis was done to measure linear association among variables. Correlation analysis is a measure of strength of relation between variables involved. This analysis is conducted if the researcher desired to develop a connection among variables. It does not help to determine a cause and effect relation. A connection is found between variables involved if change in one variable account for change in other variable. The correlation found can be negative or positive. Increase in one variable account for increase in other variable, the relationship is said to be positive. On other hand if an increase in one variable cause a decrease in other variable, correlation is said to be negative. The range of correlation is +1 to -1. Values near to +1 indicate strong positive correlation among

variable, however values near to -1 indicate strong negative correlation among variables.

### 3.14.5    Confirmatory Factor Analysis

CFA is used in this study to confirm validity of the construct. Confirmatory Factor Analysis is a particular type of factor analysis which is mostly used in social science. CFA is a statistical analysis used to verify the factor structure of a set of observed variables. It is used to test the hypothesis that a relationship exist between observed variables and unobserved latent construct.

### 3.14.6    Regression Analysis

Simple Linear regression analysis is used to interpret relationship among the independent, dependent variables. A regression analysis is a process to analyze relation between variables involved. Regression analysis helps to learn how desired variable is influenced by one or more independent variables.

The chapter explained research approaches used, research design, sampling techniques, data collection methods, variables involved, research methodology and statistical technique used in this study. Relationship among variables is examined through statistical examination. For this purpose descriptive analysis, correlation analysis, regression analyses are used to test degree of interconnection and strength of relationship in order to meet research objectives.

### 3.14.7 Multiple Regression Analysis

The basic motive of multiple regression analysis is to predict relationship between two or more independent variables (predictors) and a dependent variable known as a criterion or desired variable. This technique is useful to study individual impact of all these variables on yield. Multiple regression analysis is used when more than one independent variable is involved in a study and their influence on dependent variable is desired to predict.

# CHAPTER NO.4

# ANALYSIS OF DATA

4.      **Data Analysis**

This chapter contains the findings of data analysis for this research study. Statistical Software SPSS -20 is used for data analysis purpose This Research Study contains results of three type of analysis. In first section demographic variables are defined under the head of descriptive analysis. The second section is about descriptive and reliability analysis. And the last section composed of regression analysis findings in which simple linear regression is used to test the relationship between independent and dependent variable.

## 4.1     Demographics analysis

Demographic analysis is a statistical analysis to understand the impact of demographic attributes on the desired variables in a study. It helps to understand that how demographic variables like age, gender, citizenship varied over time and how they influence a study result or outcome.  Demographic Analysis is generally abbreviated as DA which is used as technique to predict population estimates. Word demographic referred to basic characteristics of population in a research study. It includes information like age, gender, nationality, education, profession, income level a marital status etc, which used in a research survey. Demographic analysis allows a researcher to study dynamics of a population. Basically demographic analysis had been developed to understand role of population but now a day's its scope has been extended further to different areas of research. Now demographic analysis is being employed on administrative records to bring out independent estimates for decision making. It is considered as a reliable

standard for measuring correctness of census data. As demographic analysis pertaining to labor force facilitate in measuring flow of laborers population. In business to develop a good business plan, demographic analysis is often conducted to know characteristics of potential customers in a geographical area. DA is also used as a comparative analysis in research studies.

The demographical attributes of respondents are described below:-

### 4.1.1 Gender

### Table 4.1Gender wise respondents

The respondents (customers) are categorized on the base of their gender, which are described as under.

| | | **Male, Female** | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| | Male | 197 | 78.8 | 78.8 | 78.8 |
| Valid | Female | 53 | 21.2 | 21.2 | 100.0 |
| | Total | 250 | 100.0 | 100.0 | |

**Table 4.1.1 illustrate that total number of respondents are 250 in this survey out of which 197 are male with percentage 78.8% and 53 are female with percentage 21.2%.**
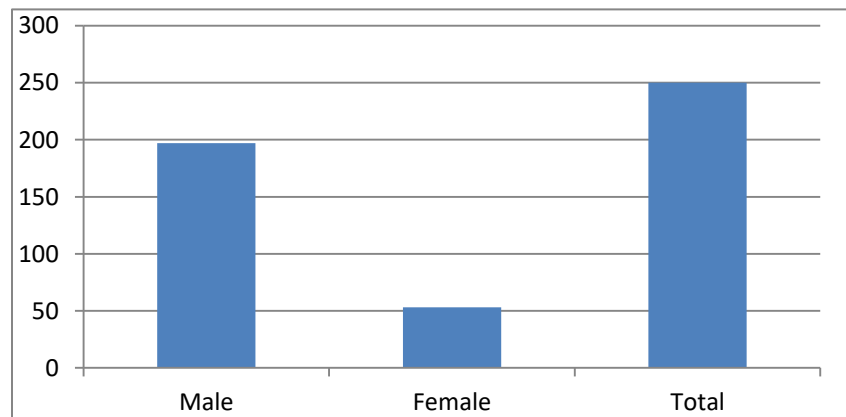


**Figure4.1.1 Gender Wise Respondents**

**4.1.2 Respondent's City**

**Table 4.2        Respondent's Customers (Residents' city)**

| Lahore, Faisalabad, Multan, Rawalpindi, Gujranwala | | | | |
|---|---|---|---|---|
| | Frequency | Percent | Valid Percent | Cumulative Percent |
| Faisalabad | 50 | 20.0 | 20.0 | 40.4 |
| Multan | 53 | 21.2 | 21.2 | 61.6 |
| Rawalpindi | 50 | 20.0 | 20.0 | 81.6 |
| Gujranwala | 46 | 18.4 | 18.4 | 100.0 |
| Total | 250 | 100.0 | 100.0 | |

**Table 4.1.2 Respondent's City**

**Table 4.2** illustrates the facts about respondent's citizenship. It shows that maximum respondents who participated in this survey are from city Multan with a frequency of 53 respondents, however 51 respondents participated from Lahore, 50 from Faisalabad and Rawalpindi and just 46 respondents participated from Gujranwala. Their participation percentage is 21.2, 20.4, 20.0, 20.0 and 18.4 respectively.

**Respondent's Citizenship**
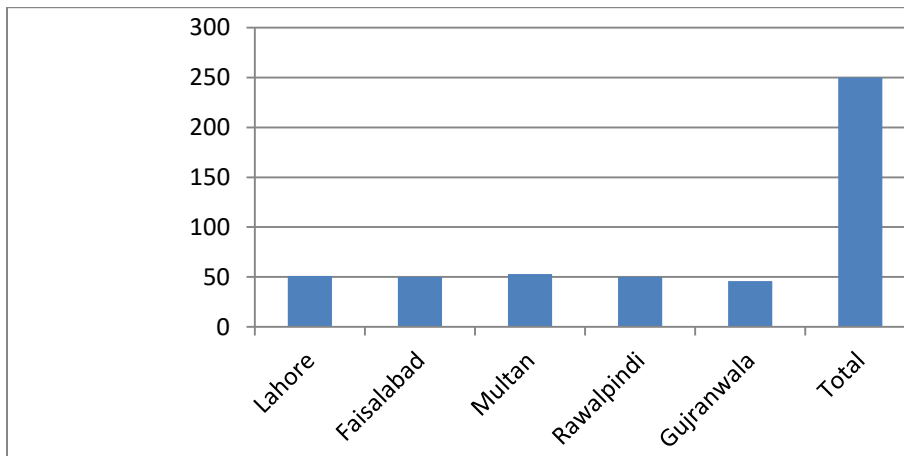


**Figure 4.1.2 Respondent's Citizenship**

### 4.1.3 Educational level of the respondents

**Table 4.3: Educational level of the respondents**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | matric | 49 | 19.6 | 19.6 | 19.6 |
| | intermediate | 36 | 14.4 | 14.4 | 34.0 |
| | undergraduate | 37 | 14.8 | 14.8 | 48.8 |
| | graduate | 92 | 36.8 | 36.8 | 85.6 |
| | post graduate | 36 | 14.4 | 14.4 | 100.0 |
| | Total | 250 | 100.0 | 100.0 | |

**Matric, Intermediate, Undergraduate, Graduate, Postgraduate**

**Table 4.1.3 Educational Level of the respondents**

Table 4.1.3 illustrates that maximum number of respondents who participated have qualification as graduate, on second number are respondents with Matric qualification, on third position are respondents with under graduate qualification, however minimum number of respondents are from postgraduate and Intermediate. The frequency of Graduate Customers is 92 and their percentage is 36.8%, frequency of participants with Matric qualification is 49 with 19.6%, participants with undergraduate qualification are 37 with 14.8%, however respondents with intermediate and post graduate qualification have same frequency (36) and similar percentage of 14.4%.
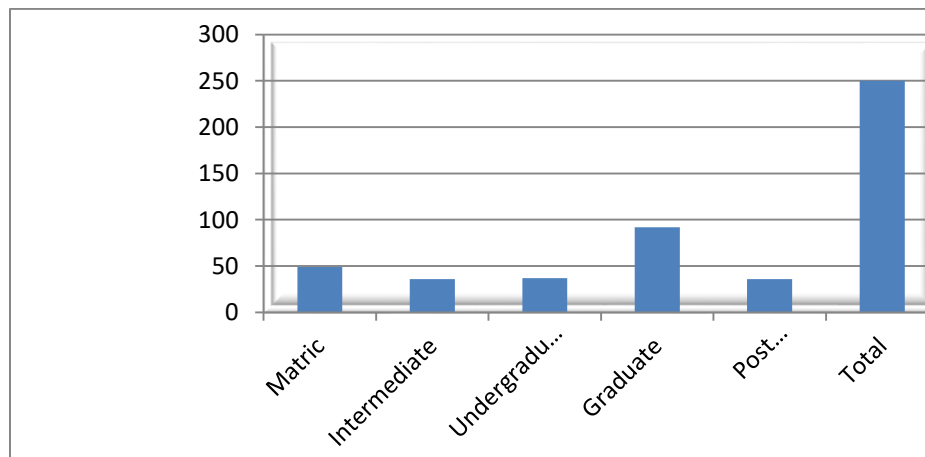


**Figure 4.1.3Educational Level of the respondents**

### 4.1.4 Respondent's age group

### Table 4.4 Age group of respondent

The table 4.4 illustrates the age group of participants in this survey which is mentioned below!

| **20-29, 30-39, 40-49, 50-59, 60-69** | | | |
| --- | --- | --- | --- |
| | Frequency | Percent | Valid Percent | Cumulative Percent |
| 20-29 | 94 | 37.6 | 37.6 | 37.6 |
| 30-39 | 83 | 33.2 | 33.2 | 70.8 |
| 40-49 | 50 | 20.0 | 20.0 | 90.8 |
| 50-59 | 19 | 7.6 | 7.6 | 98.4 |
| 60-69 | 3 | 1.2 | 1.2 | 99.6 |
| 55.00 | 1 | .4 | .4 | 100.0 |
| Total | 250 | 100.0 | 100.0 | |

**Table 4.1.4 Age group of respondent's**

Table 4.1.4 illustrate the frequency of participants according to their age group. It shows that out of total 250 participants, maximum number of participants is from 20-29 age groups. The frequency of participants under age group 20-29 is 94 with 33.2%. The second rank of participants is from age group 30-39 are 83 and their percentage is 37.3%. The next category of participants under age group 40-49 is 50 with percentage 20.0%. On fourth position participants under age group 50-59 are 19 with percentage 7.6%. And the last category is about participants of age group 60-69 are just 3 with % age is 1.2%.
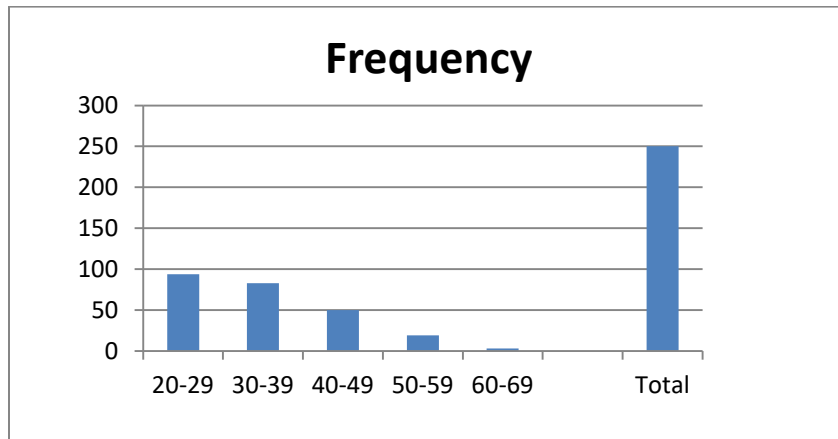


**Figure 4.1.4 Age group of respondent's**

## 4.2 Descriptive Analysis

|  | Abbr. | N | Minimum | Maximum | Mean | Std. Dev. |
|---|---|---|---|---|---|---|
| Food Quality | AVRGFQ | 250 | 2.00 | 5.00 | 3.8173 | .60451 |
| Hygiene Condition | AVRGHC | 250 | 2.00 | 5.00 | 3.8618 | 1.00106 |
| Internal Environment | AVRGIE | 250 | 2.00 | 5.00 | 3.7840 | .71406 |
| Personal Hygiene of staff | AVRGPH | 250 | 2.00 | 5.00 | 3.5914 | .65259 |
| Facilities | AVRGFC | 250 | 1.20 | 5.00 | 3.7160 | .70419 |
| Customer Perception | AVRGCP | 250 | 2.42 | 5.00 | 3.9923 | .69397 |
|  | Valid N (listwise) | 250 |  |  |  |  |

**Table 4.2 Descriptive Analysis**
**AVRGFQ, AVRGHC, AVRGIE, AVRGPH, AVRGFC and AVRGCP denotes average of all independent and dependent variable**

Descriptive analysis is carried out to obtain information about normality of data. Descriptive test provide facts about mean, standard deviation and frequency distribution of data (Sekaran, 2006). It involves summarization as well as organization of information for better understanding. Descriptive test help to define data but don't facilitate in making inferences. Descriptive statistics don't conform to probability approach. The table illustrated above provide the value of mean, minimum, maximum and standard deviation values against all the independent, dependent variables. It presents that the minimum, maximum, mean and standard deviation values in relation with Food Quality are 2.00, 5.00, 3.8173 and .60451 respectively, against Hygiene Condition are 2.00, 5.00, 3.8618 and 1.00106. However, Internal Environment has been found as minimum (2.00), maximum (5.00), mean (3.7840) and Standard deviation (.71406). Likewise minimum, maximum, mean and standard deviation values in term of Personal Hygiene of staff are 2.00, 5.00, 3.5914 and .65259. The minimum, maximum, mean and standard deviation values against Facilities are 1.20, 5.00, 3.7160 and .70419. Accordingly minimum, maximum, mean and standard deviation values against Customer Perception are 2.42, 5.00, 3.9923 and .69397.

## 4.3 Correlation between Independent and Dependent variable

| | Food Quality | Internal Environment | Hygiene Condition | Personal Hygiene of Staff | Facilities | Customer Perception |
|---|---|---|---|---|---|---|
| **Food Quality** | 1 | | | | | |
| **Internal Environment** | .615** | 1 | | | | |
| **Hygiene Condition** | .397** | .473** | 1 | | | |
| **Personal Hygiene of Staff** | .526** | .496** | .340 | 1 | | |
| **Facilities** | .483** | .476** | .452 | .463 | 1 | |
| **Customer Perception** | .477** | .417** | .304 | .376 | .352 | 1 |

Table 4.3 Correlation

**\*\*. Correlations are significant at the level of 0.01 (2-tailed)**

**\*P<0.05, \*\*P<0.01, \*\*\*P<0.001**

**\*. Correlations are significant at the level of 0.05 (2-tailed)**

Correlation is a statistical measure which defines degree of association between independent and dependent variable. In the Table above values of these two variables are given. Tyrell, (2009) expressed that strength of relationship is measured between two variables, (r) is a correlation coefficient and its value should be between +1 and -1. The range of correlation is from -1 to 1. The values with negative signs indicate inverse relationship while positive values indicate positive relationship between variables. However a correlation with Zero value indicate absence of any relationship between variables. Correlation values near +1 are strongly correlated and values with correlation 1 are perfectly correlated.

The Table above shows that the value of correlation between Food Quality (Independent Variable) and Customer Perception (Dependent Variable) is .477 which is aprox .5 which shows moderate, positive and direct relationship between Independent and dependent variables. Change in independent variable accounts for change in dependent variable.

Similarly the Correlation between Internal Environment and Customer Perception is .417. It indicates Internal Environment and Customer Perception are moderate correlated. Correlation between Hygiene Condition and Customer Perception is .304 which shows a moderate relationship. The value of Correlation between Personal Hygiene of staff and Customer Perception is .376 and correlation for Facilities and Customer Perception is .352. All values show a positive and direct relationship. Increase in one variable cause an increase in other variable and vice versa.

The table indicates that mostly the relationship between two variables is direct and moderate. Independent and dependent variables moves in similar direction, variation in one variable cause a change in other in the same way. From analysis we can say that all attributes of Food safety practices (Food Quality, Internal Environment, Hygiene condition, Personal Hygiene of Staff and Facilities) are positively correlated with Customer Perception. Food Safety Practices have direct and positive influence on Customer Perception.

**4.4 Confirmatory Factor Analysis**

Factor analysis is used to reduce the large number of items to small number of uncorrelated factors. Dimension reduction command was ran by the researcher to carry out confirmatory factor analysis. It also assists in shrinking large dataset into smaller ones. Validity of the dataset was ensured by applying confirmatory factor analysis. Sampling adequacy shows the strength of connection between the variables and sphericity refers to the orthogonality of components of a variable.

**4.4.1 Kaiser-Meyer-Olkin and Barlett's Test:**

To perform construct validity (Convergent and Discriminant), confirmatory factor analysis was performed using Principle Component Analysis (PCA) with Varimax Rotation Method. Kaiser-Meyer-Olkin (KMO) and Barlett's test of sphericity were also performed during confirmatory factor analysis to investigate the adequacy of the data for factor analysis.

Kaiser-Meyer-Olkin (KMO) and Barlett's test of sphericity shows fitness level of the factor model. The value of KMO is between 0 and 1. More value close to 1 suggests good sampling adequacy and should be atleast 0.50 is threshold level. If this value is between 0.7 and 0.8 is considered good and value between 0.8 and 0.9 is considered greart and above 0.90 is superb (Hutcheson and Sofroniou, 1999).KMO value shows that factors that have been produced are reliable and distinct because relatively compact pattern of correlations.

Barlett's test is used to verify the null hypothesis which assumes that an identity matrix is the original correlation matrix. For confirmatory factor analysis, R matrix should not be the same as identity matrix that reflects there is some relationship between the variables. It is used to check the significance between the relationship of items or questions of a variable. As rule of thumb, significance value needs to be less than 0.05 which provides evidence against null hypothesis of no correlation.

Those components of a variable are considered to be principle components that have Eigen values higher than 1 and can be used for further analysis. Only one principle component was extracted from 5 independent and 1 dependent variable using PCA and also using varimax rotation method. Threshold value for a factor loading is 0.4 and needs to be greater than this (Straub et al., 2004). Further analysis has been provided to give details of the confirmatory factor analysis for each variable included in the study.

| Variables | KMO Measure of Sample Adequacy | Barlett's Test of Sphericity Significance | Eigen Value | % of Variance Explained |
|---|---|---|---|---|
| Food Quality | .819 | .000 | 3.456 | 57.600 |
| Internal Environment | .728 | .000 | 2.620 | 65.507 |
| Hygiene Condition | .696 | .000 | 2.204 | 44.090 |
| Personal hygiene of the staff | .700 | .000 | 2.594 | 37.052 |
| Facilities | .755 | .000 | 2.914 | 58.286 |
| Consumer Perception | .817 | .000 | 4.074 | 33.949 |

**Table 4.4 Confirmatory Factor Analysis**

From the above table, it can be seen that food quality KMO value is .819 suggests its great sample adequacy with .000 significance level. Eigen value is 3.456 and 57.60 % variance explained by one component extracted using PCA. Similarly, internal environment KMO value is .728 which shows mediocre sample adequacy with .000 significance level. Eigen value is 2.620 which is greater than 1 and 65.507% variance explained by one component extracted using PCA. Hygiene Condition's KMO value is .696 which is again mediocre sample adequacy with .000 significance level. Eigen value is 2.204 which is greater than 1 and 44.09 % variance explained by one component extracted using PCA. Personal hygiene of the staff KMO value is .700 which is again mediocre sample adequacy with .000 significance level. Eigen value is 2.594which is greater than 1 and 37.052% variance explained by one component extracted using PCA. KMO value for Facilities is .755which is considered as good sample adequacy with .000 significance level. Eigen value is 2.914which is greater than 1 and 58.286% variance explained by one component extracted using PCA. Lastly, KMO value for Consumer Perception is.817 which is considered as good sample adequacy with .000 significance level. Eigen value is 4.074which is greater than 1 and 33.949% variance explained by one component extracted using PCA.

Following are the details of the factor loadings of each item or question included for every variable. These table shows factor loading one by one for each variable considered in the study.

Food Quality:

**Component Matrix**

| Indictors | Food Quality |
|---|---|
| fq1: food product delivered is fresh? | .717 |
| fq2: food product is not expired? | .812 |
| fq3: food product presentation is good? | .712 |
| fq4: food product packaging is safe and hygienic? | .803 |
| fq5: food products are protected from contamination? | .744 |
| fq6: food products are cooked/freeze/presented at a safe internal temperature? | .761 |

It can be observed from the above table that factor loading for first question of food quality is .717, second is .812, .712, .803, .744 and last is .761. All the factor loadings are above 0.40 threshold level (Straub et al., 2004). Thus, confirming presence of discriminant validity of the variable.

Internal Environment:

**Component Matrix**

| Indicators | Internal Environment |
|---|---|
| ie1: exterior environment of food premises is clean? | .817 |
| ie2: air ventilation arrangement available? | .868 |
| ie3: food products are protected from sun, dust and wind? | .803 |
| ie4: sinks are unobstructed and clean? | .745 |

It can be seen from the above table that factor loading for first question of internal environment is.817, second is .868, .803 and .745 for the last item of this variable. All the factor loadings are above 0.40 threshold level (Straub et al., 2004). Thus, establishing discriminant validity of the variable.

Hygiene Conditions:

**Component Matrix**

| Indicators | Hygiene Conditions |
|---|---|
| hc1: food premises, floor and carpet is clean? | .410 |
| hc2: windows or windowsills are clean? | .437 |
| hc3: tablecloth is clean? | .773 |
| hc4: food contact surfaces (plates, glassware etc) are clean? | .847 |
| hc5: hand sinks are unobstructed, operational and clean? | .777 |

It can be observed from the above table that factor loading for first question of hygiene conditions is .410 for the first item, second is .437, . 773., .847 and last is. .777. All the factor loadings are above 0.40 threshold level (Straub et al., 2004). Thus, confirming presence of discriminant validity of the variable.

Personal Hygiene of the Staff:

**Component Matrix**

| Indicators | Personal Hygiene of the Staff |
|---|---|
| ph1: operators at food premises dressed up in neat and clean uniform? | .669 |
| ph2: operators wear apron, gloves and masks while preparing and handling food items? | .769 |
| ph3: effective hair restraints are properly worn? | .480 |
| ph4: operators avoid coughing and sneezing while preparing/presenting food products? | .626 |
| ph5: operators avoid smoking at food premises? | .737 |
| ph6: operators handle money while serving food? | .525 |
| ph7: operators wear jewelry? | .448 |

It can be seen from the above table that factor loading for first question of Personal Hygiene of the Staff is.669, second is .769, .480, .626, .737, .525 and .448 for the last item of this variable. All the factor loadings are above 0.40 threshold level (Straub et al., 2004). Thus, establishing discriminant validity of the variable.

Facilities:

**Component Matrix**

| Indicators | Facilities |
|---|---|
| fc1: washroom is available for staff and customers? | .663 |
| fc2: garbage is properly disposed off? | .790 |
| fc3: waste disposal facilities available? | .843 |
| fc4: pest control system is placed? | .820 |
| fc5: adequate hand washing facility available? | .683 |

It can be observed from the above table that factor loading for first question of facilities is .663 for the first item, second is .790, .843,.820 and last is. .683. All the factor loadings are above 0.40 threshold level (Straub et al., 2004). Thus, confirming presence of discriminant validity of the variable.

Consumer Perception:

**Component Matrix**

| Indicators | Consumer Perception |
|---|---|
| cp1: Are you satisfied with the hygienic condition at food premises? | .497 |
| cp2: Are you satisfied with the food quality delivered? | .484 |
| cp3: Did you find food operators well trained and knowledgeable about food hygiene? | .557 |
| cp4: Are food operators well supervised? | .490 |
| cp5: Do you prefer safe and hygienic food whenever you purchase food products? | .579 |
| cp6: When you know a food business is certified by Punjab food authority, it positively affects your purchase decision? | .421 |
| cp7: Certification with Punjab food authority increases your trust on food quality? | .671 |
| cp8: Do you often purchase from this food business? | .743 |
| cp9: Will you visit again this food business? | .790 |
| cp10: Are you willing to bear some extra cost because of hygienic arrangements? | .733 |
| cp11: Do you appreciate those businesses who maintained hygienic conditions? | .753 |
| cp:12will you give positive feedback if other ask your opinion about this food business? | .724 |

It can be seen from the above table that factor loading for first question of consumer perception of the Staff is .497, second is.484, .557, .490, .579, .579, .421, .671, .743, .790, .733, .753 and .724for the last item of this variable. All the factor loadings are above 0.40 threshold level (Straub et al., 2004). Thus, establishing discriminant validity of the variable.

Hutcheson G. and Sofroniou N. (1999). The Multivariate Social Scientist: Introductory Statistics Using Generalized Linear Models. Sage Publication Limited.

Straub D., Boudreau M. C. and Gofen D. (2004). Validation guidelines for IS positivist research. Communications of the Associations for Information Systems, 13, 380-427.

## 4.5 Reliability Analysis

**Cronbach alpha values**

| Variable | Nature of Variable | No. of Items | Cron-bach alpha Value |
|---|---|---|---|
| Food Quality | Independent Variable | 06 | .849 |
| Internal Environment | Independent Variable | 4 | .822 |
| Hygiene Condition | Independent Variable | 5 | .772 |
| Personal Hygiene of Staff | Independent Variable | 07 | .823 |
| Facilities | Independent Variable | 05 | .818 |
| Customer's Perception | Dependent Variable | 12 | .841 |

**Table 4.5 Cronbach' Alpha**

Reliability analysis measures to which extent a construct deliver consistent and homogeneous results, for repeated measurements. The analysis which measure reliability of instrument is called reliability analysis. Reliability analysis proposed systematic variation in instrument used; it determined the relationship among the scores received by making different variations in the scale. So, if rate of association under a reliability analysis yields high scores with consistent outcome, the instrument is considered to be reliable.

Christmas and van Aelst (2006) said that for good reliability test, the value of the Cronbach alpha should be .5 The above table shows the Cronbach values of all variables independent variables i.e. Food Quality, Internal Environment, Hygiene Condition, Personal Hygiene of staff, and Facilities, dependent variable i.e. Customer Perception are .849, .822, .722, .823, .818 and .841 respectively. It validates instruments reliability.

**4.6 Regression Analysis**

Simple Linear regression analysis is used to interpret relationship among the independent, dependent variables. A regression analysis is a process to analyze relation between variables involved. Regression analysis helps to learn how desired variable is influenced by one or more independent variables.

SPSS 20 has been used to carry out Regression Analysis and to test the research hypothesis. Results are mentioned in Tables from 4.5.1 to 4.5.6 which is explained one after another.

**4.6.1 Regression analysis to test the association (Relation) of Food Quality and Customer Perception**

To check the influence of Food Quality Regression Analysis is carried out with the help of SPSS 20. Food Quality is independent (predictor) and Customer Perception is dependent (desired) variable. Output of this test is composed on Model Summary, ANOVA and Coefficients table. 4.6.1

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .477[a] | .228 | .225 | .61106 |

a. Predictors: (Constant), AVRGFQ

**Table 4.5.1. Model Summary**

Model summary manifest the value of adjusted R-Square. From the table of model summary the value of Adjusted-$R^2$ is 0.255 which is mentioned in table above. R-Square explains account of change because of independent variable in the dependent variable. As the value is .228 it is inferred that Food Quality is accounting for 22.8 % of variation in Customer Perception.

**ANOVA**

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 27.209 | 1 | 27.209 | 72.870 | .000[b] |
| | Residual | 92.228 | 247 | .373 | | |
| | Total | 119.437 | 248 | | | |

**Table 4.6.1.2 ANOVA**

Dependent Variable: AVRGCP
Predictors: (Constant), AVRGFQ

The next test of regression analysis is ANOVA. It gives the value of F and its significance, if value of P<0.05 we can reject null hypothesis. ANOVA also gives values about regression sum of squares, residual sum of squares and total sum of squares with their DF (degree of freedoms). The Table indicate the value of F= 72.870 and value of p=.000 which shows model is significant and overall fitness of the model is very good.

**Coefficients**

| Model | | Un-standardized Coefficients | | Standardized Coefficients | T | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 1.899 | .248 | | 7.646 | .000 |
| | AVRGFQ | .548 | .064 | .477 | 8.536 | .000 |

**Coefficient Table 4.6.1.3**

Dependent Variable: AVRGCP
h
e third and last table of regression analysis comprise of results about regression coefficients. The above table indicate the value of p, t and β, as it is manifested in table the value of t=8.536 and β=.548, however P=.000 which shows model is significant. The value of β is used to define a unit change in the desired Variable (dependent variable) because of independent variable which is also known as predictor. Here the Table shows that the value of β is .548 which manifest that one unit change in Food Quality will cause .548 unit changes in Customer Perception. In this Table value of T Statistics is t=8.536 which is bigger compared to cut point value of +1.96 or -1.96 which indicate the influence of independent variable on dependent variable is quite significant. The value of P also makes it more confirmed. Findings are in line with the research studies results of Haghighi (2012), Harrington (2012) and Chen (2009), who considered food quality as a

foremost critical factor which influences customers' perception. Yuan, Wu, & Chen, 2009; Sumaedi&Yarmen, (2015).

## 4.6.2 Regression analysis showing the relationship of Internal Environment and Customer Perception

To check the influence of Internal EnvironmentRegression Analysis is carried out with the help of SPSS 20. Internal Environment is independent (predictor) and Customer Perception is dependent (desired) variable. Output of this test is composed on Model Summary, ANOVA and Coefficients table.4.6.2

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .417 | .174 | .171 | .63205 |

**Model Summary Table 4.6.2.1**
Predictors: (Constant), AVRGIE

Model summary manifest the value of adjusted R-Square. From the table of model summary the value of Adjusted-$R^2$ is 0.171 which is mentioned in table above. R-Square explains account of change because of independent variable in the dependent variable. As the value is .174 it is inferred that Internal Environment is accounting for 17.4 % of variation in Customer Perception.

**ANOVA**

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 20.764 | 1 | 20.764 | 51.976 | .000 |
| | Residual | 98.673 | 247 | .399 | | |
| | Total | 119.437 | 248 | | | |

**Model Summary Table 4.6.2.2**
Dependent Variable: AVRGCP
Predictors: (Constant), AVRGIE

The next test of regression analysis is ANOVA. It gives the value of F and its significance, if value of P<0.05 we can reject null hypothesis. ANOVA also gives values about regression sum of squares, residual sum of squares and total sum of squares with their DF (degree of freedoms). The Table indicate the value of F= 51.976 and value ofp=.000 which shows model is significant and overall fitness of the model is very good.

| Coefficients | | | | | |
|---|---|---|---|---|---|
| Model | Un-standardized Coefficients | | Standardized Coefficients | T | Sig. |
| | B | Std. Error | Beta | | |
| 1 (Constant) | 2.462 | .216 | | 11.399 | .000 |
| AVRGIE | .404 | .056 | .417 | 7.209 | .000 |

**Coefficient Table 4.6.2.3**
Dependent Variable: AVRGCP

The third and last table of regression analysis comprise of results about regression coefficients. The above table indicate the value of p, t and β, as it is manifested in table the value of t=7.209 and β=.404, however P=.000 which shows model is significant.

The value of β is used to define a unit change in the desired Variable (dependent variable) because of independent variable which is also known as predictor. Here the Table shows that the value of β is .404 which manifest that one unit change in Food Quality will cause .404 unit changes in Customer Perception. In this Table value of T Statistics is t=7.209 which is bigger compared to cut point value of +1.96 or -1.96 which indicate the influence of independent variable on dependent variable is quite significant. The value of P also makes it more confirmed. Study results are in congruence with the research studies findings of Reimer, Kuehn, (2005) and Moore, (2005), mentioned in literature review section of this study.

### 4.6.3 Regression analysis showing the relationship of Hygiene Condition and Customer Perception

To check the influence of Hygiene Condition Regression Analysis is carried out with the help of SPSS 20. Hygiene Condition is independent (predictor) and Customer Perception is dependent (desired) variable. Output of this test is composed on Model Summary, ANOVA and Coefficients table. 4.6.3

| **Model Summary** | | | | |
|---|---|---|---|---|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .304 | .092 | .089 | .66355 |

**Model Summary 4.6.3.1**
Predictors: (Constant), AVRGHC

Model summary manifest the value of adjusted R-Square. From the table of model summary the value of Adjusted-R2 is 0.089 which is mentioned in table above. R-Square explains account of change because of independent variable in the dependent variable. As the value is 0.092 it is inferred that Hygiene Condition is accounting for 9.2 % of variation in Customer Perception.

| **ANOVA** | | | | | | |
|---|---|---|---|---|---|---|
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| | Regression | 11.016 | 1 | 11.016 | 25.019 | .000$^b$ |
| 1 | Residual | 108.314 | 246 | .440 | | |
| | Total | 119.330 | 247 | | | |

**ANOVA Table 4.6.3.2**
h Dependent Variable: AVRGCP
Predictors: (Constant), AVRG

the next test of regression analysis is ANOVA. It gives the value of F and its significance, if value of P<0.05 we can reject null hypothesis. ANOVA also gives values about regression sum of squares, residual sum of squares and total sum of squares with their DF (degree of freedoms). The Table indicate the value of F= 25.019 and value of p=.000 which shows model is significant and overall fitness of the model is very good.

**Coefficients**

| Model | Un-standardized Coefficients | | Standardized Coefficients | T | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| 1 (Constant) | 3.180 | .168 | | 18.932 | .000 |
| AVRGHC | .211 | .042 | .304 | 5.002 | .000 |

**Coefficient Table 4.6.3.3**
Dependent Variable: AVRGCP

The third and last table of regression analysis comprise of results about regression coefficients. The above table indicate the value of p, t and β, as it is manifested in table the value of t=5.002 and β=.211, however P=.000 which shows model is significant.

The value of β is used to define a unit change in the desired Variable (dependent variable) because of independent variable which is also known as predictor. Here the Table shows that the value of β is 0.211 which manifest that one unit increase in Hygiene Condition will cause 0.211 unit increase in Customer Perception. In this Table value of T Statistics is t=5.002 which is bigger compared to cut point value of +1.96 or -1.96 which indicate the influence of independent variable on dependent variable is quite significant. The value of P also makes it more confirmed. Result of hygiene practices on customer perception is in aligned with study's findings of Jang, Liu (2009); & Kisembi, Muinde,(2010). A good Hygiene condition helps in building positive Customers' Perception. In a Chinese study, restaurant cleanliness was evaluated as the overall images of the restaurant (Jang and Liu 2009).

## 4.6.4 Regression analysis showing the relationship of Personal Hygiene of Staff and Customer Perception

To check the influence of Personal Hygiene of Staff Regression Analysis is carried out with the help of SPSS 20. Hygiene Condition is independent (predictor) and Customer Perception is dependent (desired) variable. Output of this test is composed on Model Summary, ANOVA and Coefficients table. 4.5.4.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .376 | .141 | .138 | .64432 |

Model Summary 4.6.4.1

Predictors: (Constant), AVRGPH

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del summary manifest the value of adjusted R-Square. From the table of model summary the value of Adjusted-$R^2$ is 0.138which is mentioned in table above. R-Square explains account of change because of independent variable in the dependent variable. As the value is 0.141 it is inferred that Personal Hygiene of Staff is accounting for 14.1 % of variation in Customer Perception.

**ANOVA**

| Model | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Regression | 16.894 | 1 | 16.894 | 40.695 | .000 |
| Residual | 102.542 | 247 | .415 | | |
| Total | 119.437 | 248 | | | |

ANOVA Table 4.6.4.2

Dependent Variable: AVRGCP

Predictors: (Constant), AVRGPH

The next test of regression analysis is ANOVA. It gives the value of F and its significance, if value of $P<0.05$, we can reject null hypothesis. ANOVA also gives values about regression sum of squares, residual sum of squares and total sum of squares with their DF (degree of freedoms). The Table indicate the value of F= 40.695 and value of p=.000 which shows model is significant and overall fitness of the model is very good.

**Coefficients**

| Model | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| (Constant) | 2.550 | .230 | | 11.100 | .000 |
| AVRGPH | .401 | .063 | .376 | 6.379 | .000 |

Coefficient Table 4.6.4.3

Dependent Variable: AVRGCP

the third and last table of regression analysis comprise of results about regression coefficients. The above table indicate the value of p, t and β, as it is manifested in table the value of t=6.379 and β=.401, however P=.000 which shows model is significant.

The value of β is used to define a unit change in the desired Variable (dependent variable) because of independent variable which is also known as predictor. Here the Table shows that the value of β is 0.401 which manifest that one unit increase in Hygiene Condition will cause .401 unit increases in Customer Perception. In this Table value of T Statistics is t=6.379 which is bigger compared to cut point value of +1.96 or -1.96 which indicate the influence of independent variable on dependent variable is quite significant. The value of P also makes it more confirmed. Study findings are in confirmation with previous studies of Chuang & Chen (2011), Mattila (2016) and Aida, (2010).The findings suggest employers dealing with hospitality business to use appropriate uniform for their business advantage. Employee physical appearance is an important component of brand identity. Employee physical appearance adds grace to the environment. A formal dressing of staff adds beauty to the atmosphere and professional impression to customers for dinning out experience. It allows customers to recognize employees conveniently in case of any inquiry or complain. It facilitates customers to perceive product or service quality idea and help customer in decision making (Vegas & Anna, 2016).

**4.6.5   Regression analysis showing the relationship of Facilities and Customer Perception**

To check the influence of Facilities on Customers' Perception, Regression Analysis is carried out with the help of SPSS 20. Facilities is independent (predictor) and Customer Perception is dependent (desired) variable. Output of this test is composed on Model Summary, ANOVA and Coefficients table. 4.5.5

## Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .352 | .124 | .120 | .65100 |

**Model Summary 4.5.1**

Predictors: (Constant), AVRGFC

Model summary manifest the value of adjusted R-Square. From the table of model summary the value of Adjusted-$R^2$ is 0.120 which is mentioned in table above. R-Square explains account of change because of independent variable in the dependent variable. As the value is 0.124 it is inferred that Facilities is accounting for 12.41 % of variation in Customer Perception.

## ANOVA

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 14.759 | 1 | 14.759 | 34.826 | .000[b] |
| | Residual | 104.677 | 247 | .424 | | |
| | Total | 119.437 | 248 | | | |

**ANOVA Table 4.5.2**

a. Dependent Variable: AVRGCP

b. Predictors: (Constant), AVRGFC

The next test of Regression analysis is ANOVA. It gives the value of F and its significance, if value of $P<0.05$ we can reject null hypothesis. ANOVA also gives values about regression sum of squares, residual sum of squares and total sum of squares with their DF (degree of freedoms). The Table indicate the value of F= 34.826 and value of p=.000 which shows model is significant and overall fitness of the model is very good.

## Coefficients

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 2.708 | .222 | | 12.221 | .000 |
| | AVRGFC | .346 | .059 | .352 | 5.901 | .000 |

h a. Dependent Variable: AVRGCP

third and last table of regression analysis comprise of results about regression coefficients. The above table indicate the value of p, t and β, as it is manifested in table the value of t=5.901 and β=.346, however P=.000 which shows model is significant.

The value of β is used to define a unit change in the desired Variable (dependent variable) because of independent variable which is also known as predictor. Here the Table shows that the value of β is 0.346 which manifest that one unit increase in Hygiene Condition will cause .346 unit increases in Customer Perception. In this Table value of T Statistics is t=5.002 which is bigger compared to cut point value of +1.96 or -1.96 which indicate the influence of independent variable on dependent variable is quite significant. The value of P also makes it more confirmed. Research study results are aligned with previous research studies findings mentioned in literature review section. This shows that the poor facility will result in poor customer satisfaction.Rasila, Gelsberg, 2007 study also confirmed that Facility maintenance is an important aspect of customer' perception.

## 4.7 Multiple Regression

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | R Square Change | F Change | df1 | df2 | Sig. F Change |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Change Statistics | | | | |
| 1 | .723[a] | .573 | .528 | .59649 | .273 | 18.338 | 5 | 244 | .000 |

**Table 4.6.1 Multiple Regression Model Summary**

a. Predictors: (Constant), PH_1, HC_1, FC_1, FQ_1, IE_1
b. Dependent Variable: CP_1

Model summary manifest the value of adjusted R-Square. From the table of model summary the value of Adjusted-$R^2$ is 0.723 which is mentioned in table above. R-Square explains account of change because of independent variable in the dependent variable. As the value is 0.573, it can be inferred that Facilities, Internal Environment, Food Quality, Hygiene Conditionand Personal Hygiene of Staffare accounting for 57.30 % of variation in Customer Perception.

**ANOVA[a]**

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 32.623 | 5 | 6.525 | 18.338 | .000[b] |
| | Residual | 86.814 | 244 | .356 | | |
| | Total | 119.437 | 249 | | | |

**Table 4.6.2 ANOVA**
a. Dependent Variable: CP_1
b. Predictors: (Constant), PH_1, HC_1, FC_1, FQ_1, IE_1

**Coefficients**

| Model | Un-standardized Coefficients B | Un-standardized Coefficients Std. Error | Standardized Coefficients Beta | T | Sig. |
|---|---|---|---|---|---|
| (Constant) | 12.192 | 12.397 | | .983 | .326 |
| FQ_1 | .354 | .077 | .354 | 4.570 | .000 |
| IE_1 | .207 | .647 | 2.212 | 3.127 | .002 |
| HC_1 | .303 | 1.191 | .121 | 3.932 | .001 |
| FC_1 | .236 | .068 | .018 | 2.634 | .003 |
| PH_1 | .168 | .074 | .030 | 2.129 | .004 |

**Table 4.6.3 Coefficients**

The third and last table of regression analysis comprise of results about regression coefficients. The above table indicate the value of p, t and β, as it is manifested in table, the value of t=5.901 and β=.346, however P=.000 which shows model is significant.

The value of β is used to define a unit change in the desired Variable (dependent variable) because of independents variable which is also known as predictors. Here, the table shows values for Food Quality. The value of β is 0.354 which manifest that one unit increase in Hygiene Condition will cause .346 unit increases in Customer Perception. In this Table value of T Statistics is t=4.570 which is greater compared to cut point value of +1.96 or -1.96 which indicate the influence of independent variable on dependent variable is quite significant. The value of P which is 0.000 also makes it more confirmed. Similarly, Internal Environment the value of β is 0.354 provides evidence that one unit increase in internal environment will cause .207 unit increases in Customer Perception. In this Table value of T Statistics is t=3.127 which is greater compared to cut point value of +1.96 or -1.96 which indicate the influence of independent variable on dependent variable is quite significant. The value of P which is 0.002 also confirms its significance.

Hygiene Conditions have also significant impact on the consumer perceptions in the restaurants as proved by the beta value of .303 which shows that one unit increase in Hygiene Condition will cause .303 unit increases in Customer Perception. T value of 3.932 and p value of .001 makes it clear. Faculties have also positive and significant affect on the consumer perceptions in the restaurants as indicated by the beta value of .236 which shows that one unit increase in Hygiene Condition will cause .236 unit increases in Customer Perception. T value of 2.634 and p value of .003 makes it clear.

Lastly, Personal Hygiene of Staff also significantly and positively affects consumer perceptions of the customers in the restaurants industry. The value of β is .168 which manifest that one unit increase in , Personal Hygiene of Staff will cause . .168 unit increases in Customer Perception. The value of T Statistics is t=2.129 and p value of .004 whichconfirms its significance.

# CHAPTER NO.5

# CONCLUSION, DISCUSSION AND RECOMMENDATION

## 5.1 Conclusion

This study exhibits the relationship between food safety practices and customers' perception. In this research study customers perception about food safety practices implemented in restaurants of five major cities of Punjab is evaluated. According to the analysis, all hypotheses are accepted and all findings are in agreement with literature survey mentioned in previous chapters. Finding indicates that Implementation on food safety practices will build positive customers' perception. Customer perception is what potential customer's think about an organization or product. This positive perception will be beneficial for food businesses in economic point of view as expressed by previous studies. A positive correlation has been found between all sub food safety practices (food quality, internal environment, hygiene condition, personal hygiene of staff and facilities) and customers' perception. It is evident from results that food quality has considerable and positive impact on building customers' perception. Haghighi (2012), Harrington (2012) and Chen (2009) also considered food quality as a critical factor which influences customers' perception. Results indicate that internal environment, hygiene condition, personal hygiene of staff and facilities also have positive and profound effect on customers perceptions. Enhancement in all food safety practices will enhance customers' perception positively which make customers more satisfied, loyal and confident. Positive perception is helpful for business in attaining their monetary goals. It indirectly conveys a message to the customers that food operators give serious consideration to customers' health as well as complying with food regulations. Healthy life style also demands implementation on food safety practices. Food safety practices should be adopted for developing positive customers' perception and for the uplift of service standard.

**Discussion**

The purpose of this research study was to explore the impact of Food Safety Practices on Customers' Perception. Most of the Food Business Operators claims that why they bear extra cost associated with implementing food safety practices at their work place? Although it is legal responsibility of each food business to serve safe and hygienic food to the customers yet it was investigated in this research that what is the relationship between food safety practices and Customers' Perception.

Finding proves that Food Quality has significant influence on Customers' Perception. For a significant relationship (P<0.05), as the value is P = .000 which indicate model is fit and there is positive and significant relationship between independent and dependent variable. Increase in Food Quality helps in building positive Customers' Perception.

Findings are in line with the research studies results mentioned in literature review section of this study. However Parasuraman regarded perceived food quality as a contrast between customer' assumption and his perception (Parasuraman et al., 1988). Likewise Braddy and Robertson asserted perceived quality as a magnitude of employer income (Brady and Robertson, 2001)". Quality is perceived as a customer assessment of service delivery, appraisal and general intention toward buying (Grunert, 2005). JooeonHa studied the effects of dining atmospherics on behavioral intentions through quality perception and find out that perceived quality of food has influential impact on customer behavioral patterns. Quality is recognized as a customer evaluation, appraisal and general behavior toward buying decision (Grunert, 2005).Quality is known to be having two specific aspects. The first one is objective and second one is subjective. Objective quality concerned with intrinsic properties which are supervised by food technologists. However subjective quality is perceived by customers (Klaus, 2005).  The research under study concentrates on subjective evaluation of quality which is assessed by customers."Clark and Wood also admitted that food quality accounted for choosing a restaurant by customer and a major constituent of customer loyalty.  Namkung and Jang (2007) also found a positive relationship between food quality and satisfaction. Post consumption behaviors like recommendation and intentions are also get affected by it.  Cronin et al. (2000) studied perceived quality and expressed it as directly proportional to customers'

pre and post purchase behavior". Haghighi (2012), Harrington (2012) and Chen (2009), who considered food quality as a foremost critical factor which influences customers' perception,. Yuan, Wu, & Chen, 2009; Sumaedi &Yarmen, (2015); Susskind & Chan expressed food quality as major factor for the enhancement of customers' satisfaction and loyalty.

Result show that Internal Environment has positive impact on Customers' Perception. For a significant relationship (P<0.05), as the value is P = .000 which indicate model is fit and there is positive and significant relationship between independent and dependent variable. A good Internal Environment helps in building positive Customers' Perception in term of positive customer satisfaction, repeat purchase buying decision, positive brand image and trust. Chang, K. (2000) studied Impact of Perceived Physical Environments on Customers' Satisfaction and Return Intentions and found strong positive correlation between them, Which confirm our findings. Study results are in congruence with the research studies findings of Reimer, Kuehn, (2005) and Moore, (2005), mentioned in literature review section of this study. Positive perception leads toward delight experience, which definitely impact customer perception positively (Martin and Pranter, 1989; Moore et al., 2005). Reimer, Kuehn, (2005) studied the impact of services cape on quality perception and concluded that services cape is not only a predictor of perceived service quality but also help in intangible evaluation of a product or service. Hence physical environment has dual effect (positive and indirect effect) on the perceived quality. According to their finding environment has considerable role for interpreting customer intention and evaluation toward a product. It is evident from this research that special consideration should be given to internal environment. Various reports published in environmental psychology suggest that internal environment is not limited to tangible aspects but also intangible one. Finding presented that customer experience will be more pleasant provided environmental stimuli are more affirmative. Studies also show that each segment of the environment serves customers' psychology and his satisfaction differently. Studies also confirm that service environments play major role in building positive customers' perception and future intentions toward a product.According to the Center for Science in the Public Interest (2008), restaurant cleanliness is an important factor in deciding restaurant quality and their satisfaction levels. Jiun-Sheng Chris Lin,

Haw-Yi Liang, (2011) described in their research work that Environment positively correlated with customers' emotions and their satisfaction.

The next practice hygiene condition is also significantly related with Customers' Perception. The coefficient table under regression analysis shows the value is P = .000 which indicate model is fit and there is significant association between independent and dependent variable. Aarnisalo (2005) affirmed that customer' satisfaction is an outcome of food hygiene quality at restaurant. Result of hygiene practices on customer perception is in aligned with study's findings of Jang and Liu (2009) and Kisembi, Muinde,(2010). A good Hygiene condition helps in building positive Customers' Perception. In a Chinese study, restaurant cleanliness was evaluated as the overall images of the restaurant (Jang and Liu 2009).

Bharwani (2012) considered hygiene as a risk which should be taken seriously by its operators in hospitality industry. To maintain high level standards of hygiene while preparing and serving food is crucial for attaining organization commitment. He further emphasized on physical safety of swimming pool, gymnasium and other facilities at hotel. According to his view point kitchen staff can play important role toward food safety and hygiene practices. Al Yousuf (2015) and Sanlier N (2010) asserted that should restaurants should adopt food safety practices to control food hazards. Employees should pay more attention to personal hygiene and hygiene condition while dealing with food products while preparation, distribution and storage. According to Darko S (2015) visitors acknowledge efforts of restaurants operators for the implementation of food safety and hygienic practices. Several other studies differentiate the perception base on gender related with hygiene and safety issues in hospitality industry. Results concluded females are more conscious toward hygiene as compared to male.

Personal Hygiene of staff has significant effect on Customers' Perception. The results indicate that the value is P = .000 which prove model fitness and there is positive and significant relationship between independent and dependent variable. Study findings are in confirmation with previous studies of Chuang & Chen (2011), Mattila (2016) andAida,( 2010). Personal hygiene in restaurants and implementation of hygiene standards and procedures for staff is the best way to gain the trust of customers. Each

person working with food must maintain a high degree of cleanliness and a tidy external appearance. Personal hygiene in restaurants is extremely important in order to maintain food health standards (Aida, 2010).

Personal hygiene of staff and implementation of hygiene standards is a positive step toward gaining customer trust. Each food business operator should adopt higher standard of hygiene and a tidy employee physical appearance. Personal hygiene of staff is a first step toward maintaining food safety standards" (Aida, 2010). Chuang & Chen (2011) conducted research to investigate how employee uniforms influence customers' perceptions and general image of serve quality in a restaurant and found appositive correlation between employee physical appearance and their job performance. Significance relation was also existed between physical appearance and customers' perception in a restaurant setting.

Vegas & Anna (2016) investigated how customer's perception change base on dress code of staff, specifically in restaurant industry. The findings suggest employers dealing with hospitality business to use appropriate uniform for their business advantage. Employee physical appearance is an important component of brand identity. Employee physical appearance adds grace to the environment. A formal dressing of staff adds beauty to the atmosphere and professional impression to customers for dinning out experience. It allows customers to recognize employees conveniently in case of any inquiry or complain. It facilitates customers to perceive product or service quality idea and help customer in decision making.

Similar association has been found between Facilities and Customers' Perception. Regression Analysis proves significant relationship between independent and dependent variables. Research study results are aligned with previous research studies findings mentioned in literature review section. This shows that the poor facility will result in poor customer satisfaction.

Facility maintenance is an important aspect of customer' perception (Rasila, Gelsberg, 2007). Eddie (2010) investigated the impact facilities on customer satisfaction, in shopping mall (sector). Under this study a longitudinal customer satisfaction survey was conducted. Multiple regression analysis was used as statistical test and after that

compare regression outcome of 5 years. His study conclude that administration of facilities and its maintenance is an important element which determine customer satisfaction; condition of sanitation and washrooms is also affect customer' perception.

Although food menu and its quality is considered to be most important factor for customer choice of a restaurant yet restaurant ambient environment and prompt facilities are other more significant components which affect customer perception (Auty, 1992). Kim & Huh (1998) proposed  10 components which account for positive customers' perception and their overall service quality and these are maintenance of hygienic condition, food quality and taste, range of menu, indoor and outdoor facilities, facilities for children, comfortable environment and price in restaurant service.

All findings and results are in connection with the previous researches.A large and growing literature in environmental psychology has shown that the built environment has many significant influences on human psychology and behavior (Darley & Gilbert, 1985; Holahan, 1986). Mehrabian & Russell, 1974, Chang, K. (2000), Bitner (1992) researchers also confirm the impact physical environment on customer perception.

Cronin et al. (2000) proclaimed that perceived quality has directly accounted for pre and post purchase behavioral intentions. According to Bell et al. (2005) service quality and food quality, are two major components of quality perception which have dominion impact customer perception in restaurant settings. Jang and Liu 2009 and Seung Ah Yoo(2012) research studies confirmed influence of hygiene condition on customer's perception. Likewise Aida (2010), Richardson and Stevens (2003), Rasila, Gelsberg, 2007 assured the influence of personal hygiene of staff and facilities on customers' perception.

Bruns (2002) suggested that customer perceptions about food safety influence their choice and selection in numerous ways.  It shows that food safety perception have significant role toward two types of customers behavior which are approach and avoid. The first behavior (approach) result in choosing a product and the second behavior is manifested through avoidance of particular food product or brand. Bienstock (2003) also investigated food safety and hygiene practices influence customer perceptions in the

following aspect eating place cleanliness, resting place cleanliness and food safety. According to their study result food safety and cleanliness was found to be a significant factor for the evaluation of service quality (Bienstock, DeMoranville l. 2003). Threevitaya(2003) sujjested that hygiene and cleanliness as most important factors which customer considered while deciding to dine out.

All Food Safety Practices (Food Quality, Internal Environment, Hygiene Condition, Personal Hygiene of staff and Facilities) are significantly related with Customers' Perception. Which means that if Food Safety Practices are implemented it help in building positive Customer Perception.  It will lead to enhancement in Perceived Product Quality, Relational Benefits likeSocial benefits, Special benefits and Trust, Perceived Customer Satisfaction, Customer's Intention like retention and positive feedback (Xu, 2010).

Customer perception shows a major role in constitution of a positive or negative customer experience (Brocato, 2012). It is an important aspect for management consideration as it count for customer satisfaction and brand positioning (Batra , 2012; Carroll and Ahuvia, 2006; Bergkvist and Bech-Larsen, 2010). Brocato (2012) and Anderson (2008) described customer perception of an individual customer as a reflection of other consumers though in the same restaurant setting. Customer satisfaction induces positive feelings however dissatisfaction induce negative feelings for a particular product or service (Pizam, 2016).

Findings help to answer following research problems:

**1. What is the impact of Food Safety Practices on Customers' Perception?**

Food Safety Practices having 5 sub practices (Food Quality, Internal Environment, Hygiene Condition, Physical Hygiene of staff and Facilities) are found to have a profound and significant effect on Customers' Perception. Customers' Perception is our desired dependent variable. Rise in Food Safety Practices will lead to enhance Customers' Perception; however ignoring Food Safety Practices at food premise will negatively affect Customers' Perception. In other words we can say that implementation of Food Safety Practices will result in positive image of business in Customers' Perception.

**2. What is the strength of relationship between Food Safety Practices and Customers' Perception?**

Results indicate that relationship between food safety practices and customers' perception is positive. Positive improvement (increase) in food safety practices will improve (raise) customers' perception in a positive way. A positive customer perception is exhibited through following customers' behavior. Like Customer Perception of quality, their perceived satisfaction, loyalty  (buying decision, repeat purchase, trust) and publicity (generating positive words of mouth and feed back). Finding shows that Food Safety Practices are correlated with Customers' Perception.

 **3. What are beneficial implications for a Food Business Operator if food safety practices are implemented?**

A positive customer perception is highly beneficial for a business. As positive customer perception is evident through customers' intentions and behavior.  A positive customer perception enhances satisfaction level and make customer loyal, which further  result in positive buying decision, repeat purchase and more trustful.  Results and findings suggest a food safety practices and customers' perception are interconnected and correlated aspects.  Results prove that food safety practices if implemented help in developing positive Customers' Perception.

## 5.3 Managerial Implications

This study proves that Food Safety Practices are strongly related with Customers' Perception. The results substantiate that to build positive customer' perception, managers or food business operators should focus on improving Food Safety Practices at their work place. They should increase their budget for the implementation of Food Safety Practices. Food items should be handled, prepared, served and stored according to safety procedures. It is not only their moral and legal duty but it is helpful to create a brand image.

A positive customer perception is highly beneficial for a business. As positive customer perception is evident through customers' intentions and behavior. A positive customer perception enhances satisfaction level and make customer loyal, which further result in positive buying decision, repeat purchase and more trustful relations. Results and findings suggest a food safety practices and customers' perception are interconnected and correlated aspects. Results prove that food safety practices if implemented help in developing positive Customers' Perception.

Mangers should consider it as an opportunity rather than a burden. It is legal responsibility of each business to provide safe and hygienic food to the public, whom deals with food products. Xu (2007) also emphasized that Customers' Perception is an indicator of loyalty and results in economic benefit.

Implementation on food safety practices will convey a message to the customers that food operators give serious consideration to customers' health as well as complying with food regulations. As customers are going more health conscious, implementation on food safety practice will add to their trust on food business/operator. Government departments are also taking food safety issues seriously. So it is recommended to food business operators and mangers to ensure implementation of food safety practices at their premises.

## 5.4 Recommendations

By careful examination of literature, collected data and its statistical analysis, we reached the following recommendations;

The findings of the above study suggest food business operators and restaurant managers to focus more on implementation of food safety practices for the developing positive customers' perception, because customers' positive perception contribute toward long term success of any business.

Secondly implementation of food safety practices at food businesses is not socially and ethically important but also a legal responsibility of each food operating business. According to Punjab Food Authority Act, 2011, it is necessary for each food business operator to implement on food safety practices. If food business operators adopt food safety practices, it will develop a good about their business in government department and will also save them from future litigation problems. Moreover, findings help the academia to understand the variables which positively affect customers' perception. For future study the larger sample size can be considered to evaluate relationship between variables.

## 5.5 Limitations

The research study contribute a good knowledge highlighting importance of food safety practices in building positive customers' perception, however it has limitation as well. It is limited to sample size as only customers of five big cities of Punjab are selected as a respondent for this study, whose feedback is measured against a questionnaire. Future studies can examine customers' perception with different sample size.

The current study examines subjective aspects (food quality, internal environment, hygiene condition, personal hygiene of staff and facilities) of food safety practices which can be evaluated by customers, however future researchers can study objective aspects of food safety practices which are evaluated by experts' testing.

In order to measure relationship between independent and dependent variables correlation and regression analysis is used in this study. Future researchers can use structure equation modeling for the same variables. This study uses a cause and effect design to study variable under study. A longitudinal or other research design can be used by new researchers.

Data is collected in the form of questionnaires in the period of just 3 months. However more time can be allocated by new researchers to study attributes under their study. Open-ended question are not included in the instrument, used under this study. Future researcher can use quantitative and qualitative data for their research. Study used only in-person delivering of instruments (questionnaires) to customer who visited restaurants; however internet survey tool can also be used for measuring response of customers in future studies. Internet survey tool, telephonic interviews can also be used as an alternative method of in-person survey. Most importantly other independent and dependent variables, moderating and mediating variable can be included in future study.

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# Impact of Food Safety Practices on Customer's Perception

**Survey Questionnaire**

This Survey is designed to evaluate the Impact of Food Safety Practices on Customer Perception. Please indicate to what extent you are agree/disagree about the Food Safety Practices followed at Food Premises.

## Demographic Information

| Customer Name: | Optional | | | |
|---|---|---|---|---|
| 1.  Gender: | Male | Female | | |
| 2.  City of Residence | Lahore | Faisalabad | Multan | Rawalpindi | Gujranwala |
| 3.  Age | 20-29 | 30-39 | 40-49 | 50-59 | 60-69 |
| 4.  Education Level | Metric | Intermediate | Under-graduate | Graduate | Post-Graduate |

## Food Quality

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|
| 5.   Food Product delivered is Fresh. | 1 | 2 | 3 | 4 | 5 |
| 6.   Food product is not expired. | 1 | 2 | 3 | 4 | 5 |
| 7.   Food product presentation is good. | 1 | 2 | 3 | 4 | 5 |
| 8.   Food product packaging is safe and hygienic. | 1 | 2 | 3 | 4 | 5 |
| 9.   Food Products are protected from contamination. | 1 | 2 | 3 | 4 | 5 |
| 10. Food products are cooked/freeze/presented at safe internal temperature. | 1 | 2 | 3 | 4 | 5 |

## Environment

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|
| 11. Exterior environment of food premises is clean | 1 | 2 | 3 | 4 | 5 |
| 12. Air ventilation arrangement available | 1 | 2 | 3 | 4 | 5 |
| 13. Food Product are protected from sun, dust and wind | 1 | 2 | 3 | 4 | 5 |
| 14. Sink are unobstructed and clean. | 1 | 2 | 3 | 4 | 5 |

## Hygienic Condition

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|
| 15. Food Premises floor and carpet is clean | 1 | 2 | 3 | 4 | 5 |
| 16. Windows or windowsills are clean | 1 | 2 | 3 | 4 | 5 |
| 17. Tablecloth is clean | 1 | 2 | 3 | 4 | 5 |
| 18. Food contact surfaces (plates, glassware etc) is clean | 1 | 2 | 3 | 4 | 5 |
| 19. Hand sinks are unobstructed, operational and clean. | 1 | 2 | 3 | 4 | 5 |

## Personal hygiene of staff

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|
| 20. Operator at food premises dressed up in neat and clean uniform | 1 | 2 | 3 | 4 | 5 |
| 21. Operator wears aprons, gloves and masks while preparing and handling food items. | 1 | 2 | 3 | 4 | 5 |
| 22. Effective hair restraints are properly worn | 1 | 2 | 3 | 4 | 5 |
| 23. Operators avoid coughing and sneezing while preparing/presenting food products. | 1 | 2 | 3 | 4 | 5 |
| 24. Operator avoids Smoking at food premises. | 1 | 2 | 3 | 4 | 5 |
| 25. Operator handles money while serving food. | 1 | 2 | 3 | 4 | 5 |
| 26. Operator wear jewelry | 1 | 2 | 3 | 4 | 5 |

## Facilities

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|
| 27. Washroom is available for staff and customer and employees | 1 | 2 | 3 | 4 | 5 |
| 28. Garbage is properly disposed off at food premises. | 1 | 2 | 3 | 4 | 5 |
| 29. Waste disposal facilities available | 1 | 2 | 3 | 4 | 5 |
| 30. Pest Control System is placed | 1 | 2 | 3 | 4 | 5 |
| 31. Adequate hand washing facilities available. | 1 | 2 | 3 | 4 | 5 |

## Customer's Perception

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|
| 32. Are you satisfied with the food safety practices implemented at food Business? | 1 | 2 | 3 | 4 | 5 |
| 33. Are you satisfied with the food quality delivered? | 1 | 2 | 3 | 4 | 5 |
| 34. Do you find food operators well trained and knowledgeable about food safety? | 1 | 2 | 3 | 4 | 5 |
| 35. Are food operators well supervised? | 1 | 2 | 3 | 4 | 5 |
| 36. Do you prefer safe and hygienic food whenever you purchase Food Products? | 1 | 2 | 3 | 4 | 5 |
| 37. If you notice good food safety practices implemented at food business, will it positively affect your purchase decision? | 1 | 2 | 3 | 4 | 5 |
| 38. Do food safety practices increases your trust on food quality? | 1 | 2 | 3 | 4 | 5 |
| 39. Do you often purchase from this food business? | 1 | 2 | 3 | 4 | 5 |
| 40. Will you visit again this food business? | 1 | 2 | 3 | 4 | 5 |
| 41. Are you willing to bear some extra cost because of food safety arrangements? | 1 | 2 | 3 | 4 | 5 |
| 42. Do you appreciate those businesses who maintained food safety practices? | 1 | 2 | 3 | 4 | 5 |
| 43. Will you give positive feedback if other ask your opinion about this food business? | 1 | 2 | 3 | 4 | 5 |