



IMPACT OF IMPLEMENTATION OF QUALITY  
MANAGEMENT SYSTEM ON CUSTOMER  
SATISFACTION:A STUDY OF SELECTIVE LAHORE  
BASED COMPANIES

By

Abdul Wahab

A thesis presented to Bahria University, Lahore in partial fulfillment of the  
requirement for the degree of Master

FALL 2014

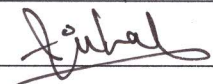
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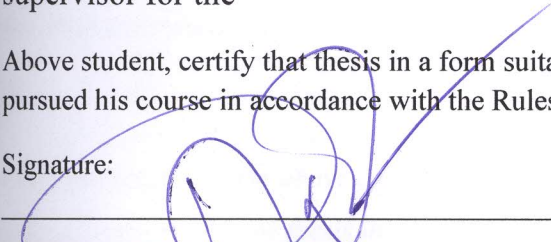
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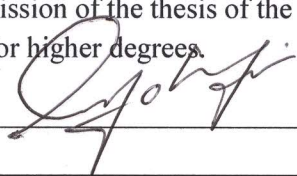
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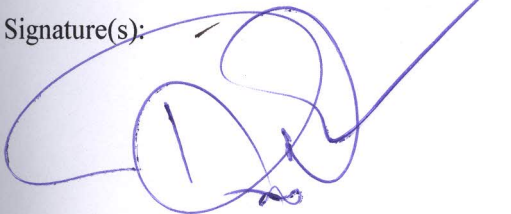
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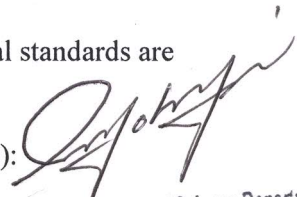
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## **Abstract**

The aim of this study is to examine the Impact of implementation of Quality management System (QMS) on Customer Satisfaction (CS). The variables of Quality management System (QMS) are based upon the framework of total quality management (TQM). So the effect of four variables, Leadership, Relationship with Supplier, Employee involvement and continuous process improvement has been observed on Customer satisfaction (the dependent variable). The study examined the responses of 96 customers of the two organizations of Lahore-Pakistan working in the construction industry, i.e. NESPAK and DESCON. The structured questionnaire was circulated, and the questions asked covered the information about the Leadership, Relationship with Supplier, Employee involvement and continuous process improvement. The outcomes of the research provide support for the anticipated hypothesis; representing that there is a significant relationship between Leadership, Relationship with Supplier, Employee involvement and continuous process improvement in this study. The findings of this study for organizations working in construction industry are quite important, properly designed Leadership program is very important for the Customer satisfaction as well as for the improvement of quality in their service

**Keywords** – Quality Management System, Total quality Management, Customer satisfaction, Construction Industry

## LIST OF ABBREVIATIONS

QMS	Quality management Systems
ISO	International Standards Organization
TQM	Total Quality Management
CS	Customer Satisfaction
RS	Relationship with Suppliers
E	Employee Involvement
CI	Continuous Improvement
L	Leadership

## Contents

Chapter 1 .....	1
1. Introduction .....	1
1.1. Background .....	1
1.2. Problem statement .....	3
1.3. Objectives of Research .....	3
1.4. Research Questions .....	4
1.5. Significance of the study .....	4
Chapter 2 .....	6
2. Literature Review .....	6
2.1. Essence of the characteristics of TQM .....	6
2.2. Customer Satisfaction .....	7
2.3. Leadership .....	10
2.4. Employee involvement .....	11
2.5. Continuous Process Improvement .....	12
2.6. Relationship with Supplier .....	14
3. Methodology .....	16
3.1. Target Population .....	17
3.2. Data Collection .....	17
3.3. Survey Construction .....	17
3.4. Ethical Consideration .....	19
3.5. Sample Unit .....	20
3.6. Sampling Technique .....	20
3.7. Sampling Frame .....	20
3.8. Sample Size .....	21
3.9. Population Framework .....	21
3.10. Data Analysis .....	21
3.10.1. Graphical Representation .....	21
3.10.2. Cronbach's Alpha .....	21
3.10.3. Correlation .....	22
3.10.4. Regression Analysis .....	22

Chapter 4.....	23
4. Analysis and Findings .....	23
4.1. Frequency Analysis .....	23
4.1.1. Demographics .....	24
4.1.2. Leadership.....	28
4.1.3. Employee Involvement .....	30
4.1.4. Relationship with Suppliers .....	33
4.1.5. Continuous process improvement.....	35
4.1.6. Customer Satisfaction .....	38
4.2. Histograms .....	43
4.3. Cronbach's Alpha.....	47
4.4. Correlation.....	47
4.5. Regression Analysis .....	48
Chapter 5.....	52
5. Conclusion and Future Research .....	52
References:.....	55
Appendix A.....	58
Appendix B.....	60
Questionnaire .....	60

## List of Figures

Figure 1 Model of a Process-based quality management system .....	9
Figure 2 Maslow's need theory.....	11
Figure 3 Hypothetical model .....	15
Figure 4 .....	44
Figure 5 .....	44
Figure 6 .....	45
Figure 7 .....	46
Figure 8 .....	46

## List of Pie Charts

Pie Chart 1 Percentage of respondents according to their Organization .....	25
Pie Chart 2 Experience in years of respondents.....	26
Pie Chart 3 Designation of the respondents.....	27

## List of Tables

Table 1 Distribution of Respondents .....	24
Table 2 Experience in Years of the Respondents .....	26
Table 3 Frequency Table of Designation of Respondents .....	27
Table 4 Top Management Commitment to Quality .....	28
Table 5 Existence of Vision and Strategy.....	28
Table 6 Existence of Wide Quality Culture .....	29
Table 7 Existence of objectives for quality performance .....	30
Table 8 Employee Empowerment/Involvement .....	30
Table 9 Existence of organization wide training .....	31
Table 10 Human resource issues.....	32
Table 11 Open and Transparent Communication .....	32
Table 12 Supplier partnership.....	33
Table 13 Supplier Relation Management .....	34
Table 14 Supplier Involvement.....	34
Table 15 Supplier Assessment on Merit .....	35
Table 16 Employee evaluation is based on achieving quality .....	35
Table 17 Reduction of errors .....	36

Table 18 Availability of Quality Data .....	37
Table 19 Existence of Quality improvement measurement system .....	37
Table 20 Encouragement of employee creativity .....	38
Table 21 Information on Services offered .....	38
Table 22 Orientation to Customers .....	39
Table 23 Communication with the Customers.....	40
Table 24 Courtesy with the Customers .....	40
Table 25 Conformance to Specification .....	41
Table 26 Consistency of the Services Provided.....	41
Table 27 Competency of the Services Provided .....	42
Table 28 Timeliness and Responsiveness.....	43
Table 29 Reliability of Variables-Crobanch's Alpha Value.....	47
Table 30 Correlation between Dependent and Independent Variables.....	48
Table 32 Model Summary .....	49
Table 33 ANOVA .....	49
Table 34 Coefficients.....	50
Table 35 Leadership.....	58
Table 36 Relationship with Suppliers .....	58
Table 37 Continuous Improvement .....	59
Table 38 Employee Involvement .....	59

# Chapter 1

## 1. Introduction

### *1.1. Background*

Generally there are two approaches for quality management of product/service. Product quality depends upon the finalized product, whilst the quality of the processes includes the requirement of quality processes to manufacture goods and to provide services. Heizer and his co researcher Render (2009) narrates that people around the world and the companies particularly manufacturing companies have come to a point to that quality is so important that we all should have unity around one standard. Eventually they have found that one standard under the umbrella of international standard organization. Now, they are converging towards one single standard i.e. ISO 9000. The researcher's team, Poksinska et al. (2002) states that International Standard organization is related to Quality management systems and they are gathered under a family, the family of standards. These standards are designed to overcome the flaws in their organization and hence to gain customers' and stakeholders' expectations for their product and services. The definition of quality in ISO 9000 is "The totality of its features and characteristics that bear on its ability to satisfy stated or implied needs". If we consider the entitled needs then these are the needs which are enlisted by customers exclusively or by putting focus on them or we may call them specifications. The implied or unspoken needs are those which are not specifically in detail told by the by the customer although they exist as an extra features or may be gold plating category in the product or the service specifications, (Besterfield, 2015, p-72)

The international standard organization was created in 1947 and the place where it was founded is Geneva. The main purpose of the international standard organization is to provide or align the technical specifications standardization especially in the trade of products as well as services. If we look at the composition of the word "ISO", we came to know that this word is made up of

Greek word. the Greek word “isos” it has a meaning of “equality.

Sousa-Poza et al. (2009) are the researchers who claimed that the first family of standards was published in 1987. The main purpose of the systems of quality management is to help profit organization also non-profitable organizations, the public sector industry and educational departments including institutes. According to ISO there have been 19023 standards published till 31<sup>st</sup> of Dec. 2011. Keeping in view all the activities of any organization for making a product or giving any services the standard has to be selected.

In the ISO 2000 revision there are standards which have been combined to get a new standard. This contained the standards of ISO 9000 and the standards of ISO9004, and then after getting those standards they combined the three standards, the three standards which they combined are 9001, 9002, and 9003. These all the standards have been combined into one standard. After combining all these standards they have named the new standard as ISO 9001:2000. Main benefit after combining these standards were many some of them are: there should be less focus on quality assurance than on quality management system, based on the process approach and the guidelines given by the quality management system customer satisfaction should be the first priority, and the necessity of continuous improvement. Top management loyalty and commitment towards gaining quality in the process of implementing the quality standard is highly required by the organization. The ISO 9001:2008 issue did not include major changes The ISO 9001:2008 was revised on 22nd of September, 2015 by the title of ISO 9001:2015. The major change in this standard is the explicitness of risk and compliance of “risk based thinking” with the quality management system processes.

If we talk about the implementation of these standards in any organization the general impression and the most common thinking is that the framework of total quality management is linked with quality management standards. Although, it is true and this framework is very useful while taking guidelines to implement the

quality standards of ISO. So in this study we will discuss about the dimensions of TQM by implementing the newest version of ISO9001 and its effect on one of the dimensions of TQM, to be more specific on customer satisfaction. This has proven that there are very much linkage and the dimensions of the ISO and TQM are same. However, for the conclusion of this statement and rational explanation is that which is also has been seen in the writings of different researchers (Gotzamani, 2005) that organizations that were certified under ISO would still fall far short of implementing a comprehensive TQM approach to satisfy their customers.

### *1.2. Problem statement*

For a project to be successful and to provide unique result or product or service it had to be completed on time, within budget and also it should be fulfilling the scope of the project. But now quality has become the extended objective of the projects. To ensure the quality of the services provided by any organization their measure is customer satisfaction. To enhance the overall quality of the organization's processes and reaching towards final product or the provided service the international standard organization is working since 1947. Most of the companies in Pakistan have implemented the ISO9000 standards. This study will mainly focus on the two Lahore based construction companies who have implemented the quality management system and find out that either implementing these systems in construction industry overall help to improve customer satisfaction. If the implementation of the quality management system effects the customer satisfaction then what are the factors that affect customer satisfaction.

### *1.3. Objectives of Research*

Considering all the factors and the scenarios going on in this region of Pakistan about quality the objective of this research study is clearly to measure the impact

of the implementation of quality management system on the customer satisfaction. The other objectives are related to the factors that are the part of the quality management system and their effect on customer satisfaction.

- a) To highlight the overall impact of factors of quality management system on customer satisfaction
- b) The role of leadership in gaining the customer satisfaction
- c) The effect of the employee involvement on customer satisfaction
- d) The effect of continuous process improvement on customer satisfaction
- e) The effect of supplier relationship with the organization affects customer satisfaction

#### *1.4. Research Questions*

The research objectives of this study are given below but not limited to;

- a) What are the main factors of QMS that affect the customer satisfaction
- b) Up-to what extent the defined factors in the study (leadership, employee involvement, continuous process improvement and relationship with suppliers) effect the customer satisfaction?
- c) Are these factors totally describing the customer satisfaction or are there any other factors?

#### *1.5. Significance of the study*

Different studies in the different areas of the globe have been conducting to measure the level of customer satisfaction by implementing the quality management system. This study is conducted in the construction sector of the Pakistan where there is lack in taking in account the advisory of the customers. The construction industry of the Pakistan has merely adopted this quality management system. If some of them have applied the quality management system they do not know that either this is benefitting the companies or if it is then it what ways. This research will help the companies and policy makers of the companies to think on the scenario that either they have to implement the quality

management system or not while keeping in view their organization abilities and scope of organizations activities. This study will also help the companies who have already implemented the quality management systems and they need to gain more customer satisfaction by improving the factors discussed in this study which impact the customer satisfaction.

## Chapter 2

### 2. Literature Review

#### 2.1. Essence of the characteristics of TQM

For the achievement of the business success, most of the companies imply the ISO Standards through the TQM approach. There is no general definition of TQM but as a concept it is interpreted in different ways. In the ISO Standards TQM has been defined as, it is an approach to organizational management centralized on quality and based purely on the activities of the all member of organization, in the perspective to achieve success through Customer Satisfaction. Customer satisfaction is always been the focus of achieving success in recent years. "Total Quality can be seen as a way to manage business processes in order to achieve total customer satisfaction", (Okland, 1993).

The contribution of Juran, Deming and Corsby (1986) to improve the total quality management, and many other gurus of quality, those who had also contributed had had the most important impact on the top management of the organizations and organizations. (Zairi, 2013)

Besterfield et al. (2015) describes the six elements of the TQM,

- Customer Satisfaction
- Continuous Process Improvement
- Leadership
- Employee Involvement
- Supplier Relationship
- Performance measures

## *2.2. Customer Satisfaction*

Orientation to customer is the foundation to TQM. It means that companies provide the services and the product according to the need of the customers. "The customer needs should be fully integrated into design and development of product and service", (Goldman, 2005).

Eklof (1998) cited in Topalovic (2015) that customer satisfaction has the most important role in implementing the TQM and also it has very effective use in quality management. Implementations of quality management systems have a great impact in a positive way on customer satisfaction. Agus et al. (2011) states, "The fact the implementation of TQM strengthens the organization's customer satisfaction and improves the financial performance." There are more than a million companies; those have attained their quality and also maintaining their quality of product/service in different areas by implementation of ISO 9001. It is clearly demonstrated that to attain a higher quality and services, one organization must compliance with ISO standards. For the functioning of the company the standard prescribes the basic principles for forming basis of quality improvement.

If a company wants to ensure and demonstrate that they are giving the products or services according to the customer requirements and their system is based upon total quality management systems in order to achieve more customers and increase customer satisfaction by successfully implementing the quality system and continuous improvement is their long term focus, then it implement ISO9001, in order to achieve specification requirements for a quality management system.(Dasic, 2010). In order to meet the requirements of the customers it is necessary to implement the quality management system (QMS) which complies with the requirements of ISO9001.

Customer satisfaction attracts many authors in marketing and management industry. The relation between expectations of customers and the perceived performance of the product or service is customer satisfaction. Researchers like Waldman,1994 and the researcher named as Madu et al., 1995 have acknowledged that the key and the basic construct of TQM model is organization performance other than customer satisfaction. Performance can be used to measure the customer satisfaction in any organization. The key source of customer satisfaction is performance management, (McCune, 1989.)

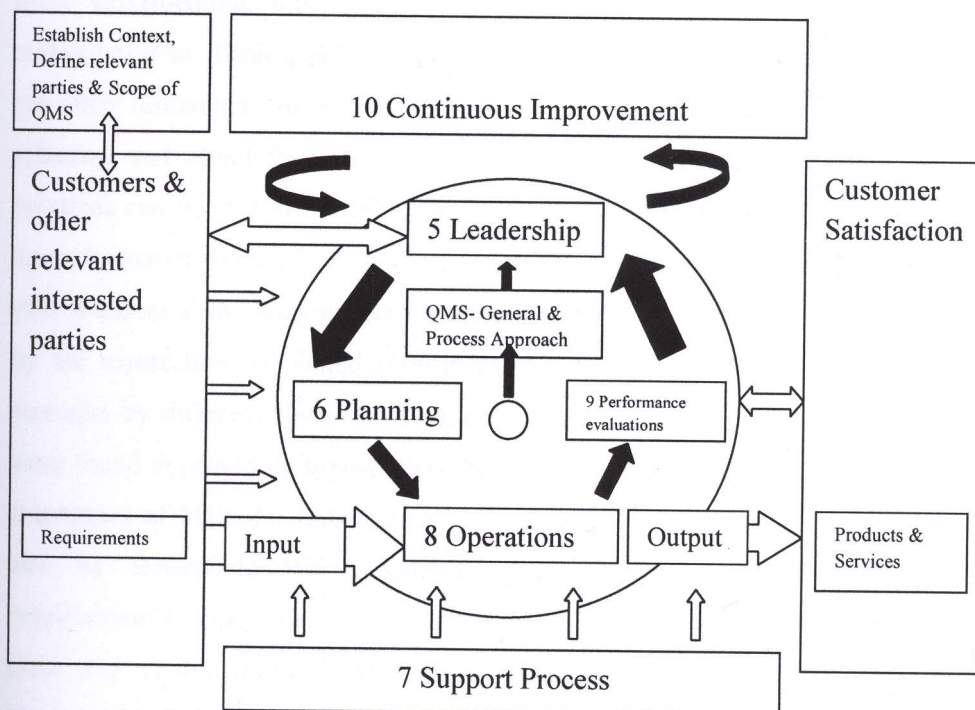
There is a structural model which was being forward by Anderson et al.1994b, they say that quality management practices drive the quality performance outcomes, which at the end leads to gain customer satisfaction. The end point or ultimate goal of TQM is customer satisfaction, (Deming and Juran, 1986). The ultimate target of the firm should be constantly improvement in their product and services for the organization's customers, (Deming, 1986). Juran has in many writings defined quality is the ability of a given or manufactured service/product to fulfill all the said customer's needs.

IBM, Xerox, and 3M are the leading companies of the world and they have been setting examples for world in the area of quality and they have sorted out that customer satisfaction is increased by their TQM efforts. (Ross, 1995) has stated, "TQM aspects certainly improve the customer satisfaction." Many of the authors consider customer satisfaction as a marketing domain. Generally, authors and researchers of marketing literatures have observed and claimed that TQM aspects definitely lead to higher customer satisfaction; this was narrated from the findings of the researchers named as Babich, 1992. Also Rust and Zahorik, 1993 and the researcher Anderson et al, 1994a have discussed about it. As discussed earlier that firm's overall financial health and the customer satisfaction to be the key indicator of market share and profitability. The repeat purchase mechanism will be viewed in the customers if they tend to be satisfied by the services or the product that leads to increase in market share and profits. Zairi et al. (1994) argued that to

improve the foundation results like profits can be acquired by the implementation of TQM practices.

TQM practices are aligned with the international standards that have to be implemented in any organization to improve their quality of services and product and mainly focusing on customer satisfaction and continual improvement. ISO9001:2015 states that standard specifies the requirements of management system for any organization which aims to enhance the customer satisfaction through effective application of this system, including the processes for continual improvement and assurance of conformity to the customers is the main scope of this standard, (ISO DIS 9001:2014 Clause 1(b)).

ISO 9001:2015 emphasizes on the continuous improvement of the processes to attain high customer satisfaction. The importance of the customer satisfaction can be seen through by the self-explanatory figure that has been including in the ISO standard as a benchmark.(Fig-1)



**Figure 1 Model of a Process-based quality management system**

ISO 9001 framework and Malcolm Baldrige Award (MBNQA, 1995) guidelines has limited the number of constituents of TQM. Therefore, the dispute about constituents have no further questions. Since then, a amount of researchers that have been working on the frameworks of the Mallcom Baldrige National Quality Award have suggested the framework which includes the factors of Leadership, strategy and planning, customer focus, information and analysis, human resource management, and process management. Some of the researchers have stated in which the most renowned researcher are Samson and Terziovski in 1999 they have analyzed that to determine the key elements of the Total Quality Management are mostly to success related. Based on many literature reviews some elements of the TQM practices have been modified. The Total Quality Management elements which are related to quality management system are described in the following sections.

### *2.3. Leadership*

The famed Gurus of the quality including Deming, 1986 and Juran, 1986 both of them described that how leadership, which should be taken in view as the most authoritative to Total Quality Management element. Anderson et al. in 1995 and the other researchers Anderson et al. in 1995 tested that Leadership is the most effective that affect the total quality management. Total Quality Management practices can be gained by the top management's passion and their commitment towards quality depicted in organization policy and strategy is essential and it is also is essential in changing organizational culture. The previous thing was said by the researchers as named Hamlin et al., 1997. These values and discussed concepts by different researchers are embedded compassions and behaviors that were found in providing high-performing in any type of organizations. One of the constituents of Malcolm Baldrige national Quality Award is visionary leadership, and as Besterfield(2015) explained the visionary leadership is: "The organization's senior leaders should set directions and create a customer focus, clear and visible values, and high expectations. The directions, values and expectations should balance the needs of all your stakeholders. The leaders should

ensure the creation of strategies, systems and methods for achieving performance excellence, stimulating innovation, building knowledge and capabilities and ensuring organizational sustainability. The defined values and strategies should help guide all of your organization's activities and decisions." therefore, after looking at the previous studies I purpose:

H1: The Leadership is positively and significantly related to Customer Satisfaction.

#### 2.4. Employee involvement

Besterfield, (2015) in his book of "Total Quality Management" argued the different requirements and needs of the employees from the organization to work more efficiently and effectively in the organization and to achieve better quality of work; Therefore, better quality leading to customer satisfaction of both external and internal customers. Those requirements include but not limited to;

- Motivation
- Employee involvement in decision making
- Understanding functioning and effectiveness of teamwork
- Encouraging employees by proper compensation and recognitions

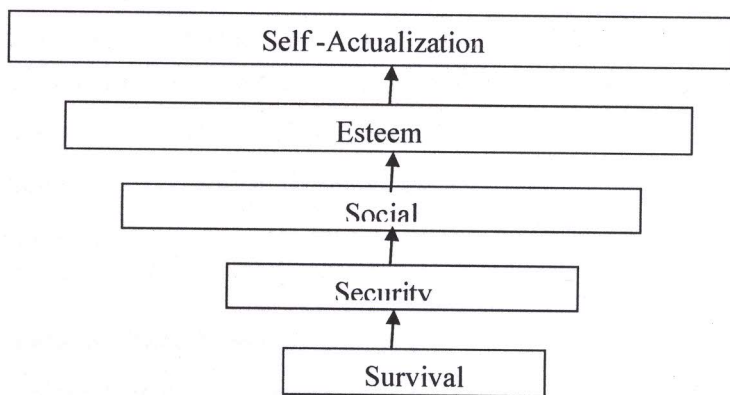


Figure 2 Maslow's need theory

Source: Dale Besterfield et al. "Total Quality Management" (India:Pearson, 2015)

Joo Y. Jung and Yong Jian Wang, (2006) cited that employee involvement has different parameter in which the decision making power of the employees, justified, complete compensation and teamwork and recognition, are influential on the work performances of the firm. This has been said by the researcher named as Ho and his co researchers in 1999. After all empowering the employees and involving team working on them and all employees in enhancing customer satisfaction and making continuous improvement day by day is very much important; under such circumstances, employees tend to work with loyalty and work harder and participate more in the change process (Flynn et al., 1995; Handfield et al., 1998; cf. Kaynak, 2003). "Management must ensure that an organization-wide training program is available in order to equip employees with the proper skills," (Anderson et al., 1995; Flynn et al., 1995; cf. Kaynak, 2003). Employees must be trained in perspective to TQM to participate in quality practice. This was cited by Ho et al., 1999; in the research study done by Kaynak, 2003.

Most of the time the management is forced to think about a good pay for an employee is most important than anything in organization to work effectively and efficiently. Survey results show that this factor is usually in the middle of the ranking Table shows employee wants and manager perceptions of employee wants. Employee wants tend to follow the theories of Maslow and Herzberg.

Thus, I propose the following hypothesis:

H2: Employee involvement is positively and significantly related to customer satisfaction.

### *2.5. Continuous Process Improvement*

Organizations which are based on the Quality, it is important for them that they should continuously improve the business and production processes in order to achieve perfection. Although, we know that perfection cannot be attained because everyone is in the race to improve and this kind of thinking is never over; however, we must do our best and continually strive and work for its attainment.

“Continuous process improvement is designed to utilize the resources of the organization to achieve a quality-driven culture. Individuals must think, act, and speak quality. An organization attempts to reach a single-minded link between quality and work execution by educating its constituents to "continuously" analyze and improve their own work, the processes, and their work group”, (Besterfield, 2015)

The interaction of some combination of people, equipment, materials, method, measurement, and the environment to produce an outcome such as a product, a service, or an input to another process is known as process, (Besterfield, 2015). A process must have value-added activities and repeatability in addition to having measurable input and output. It must be effective, efficient, under control, and adaptable.

“If we see in the perspective of Total Quality Management, product management works with process management together to achieve the quality in the paradox of total quality management. Therefore, they were combined here as one construct. Enhancement made in product design (e.g. standardization) enhances process design (Ahire and Dreyfus, 2000).”Organizational improvement is based on scientific statistical method if they were used for quality data and reporting system (Choi,1995 as cited in the article written by Kaynak, 2003). Also this has been cited by Ahire and Drefus in 2000 that if we provide an accurate and timely the needed data of quality to design a product and process design is the first step. (Ahire and O’Shaughnessy, 1998; cf. Kaynak, 2003) are existence of accurate and timely data. Process is defined by the external and internal customers. Every process and its purpose in the organization and organization itself is defined by the customer. Because the organization exists to serve the customer, process improvements must be defined in terms of increased customer satisfaction in terms of higher quality of product and services. For improvement Besterfield, (2015) has described five ways;

- Reduce resource
- Reduce errors
- Meet and exceed expectations of downstream customers
- Make process safer
- Make the process more satisfying to the person doing it

Thus, we propose the following hypothesis:

H3: Continuous process improvement has positive and significant effect on customer satisfaction.

#### *2.6. Relationship with Supplier*

To satisfy the end user and fulfill their requirements is the main objective of both suppliers and customers. The better the supplier's quality, the better the supplier's long-term position, because the customer will have better quality. Both customer and supplier have to work together in partnership to maximize their return on investment as they both have limited resources, (Besterfield, 2015).

To meet and exceed customer's expectations that results in customer satisfaction falls under the area of customer/supplier relationship management. Circulation of supplier and the related information through the organization i.e the complaints of customer about the services and the product, it has to enable the effective relationship management. "While empowering the employees and involving the employees through increased access to information given to them and resources allocated to the employees so that employees can make timely and according to given time responsive decisions about their quality tasks(J.Y. Jung, Y.J. Wang, 2006). This can also have a positive impact towards the relationship of the customers." If we consider the long-term relationship with the suppliers in a cooperative environment also considering the fewer suppliers of higher quality can be very effective. That is what we called supplier partnership. These are the key elements that are considered as a part of the Total Quality Management. These things were cited by Kaynak, 2003.

Thus, I propose the following hypothesis:

H4: Supplier partnership is positively and significantly related to customer satisfaction.

### 2.7. Hypothetical Model

The hypotheses made in the previous sections lead us to a conceptual model including the leadership, employee involvement, continuous improvement of processes and supplier partnerships have a positive effect on the customer satisfaction. These all constructs have been put in a figurative form for more clarity.

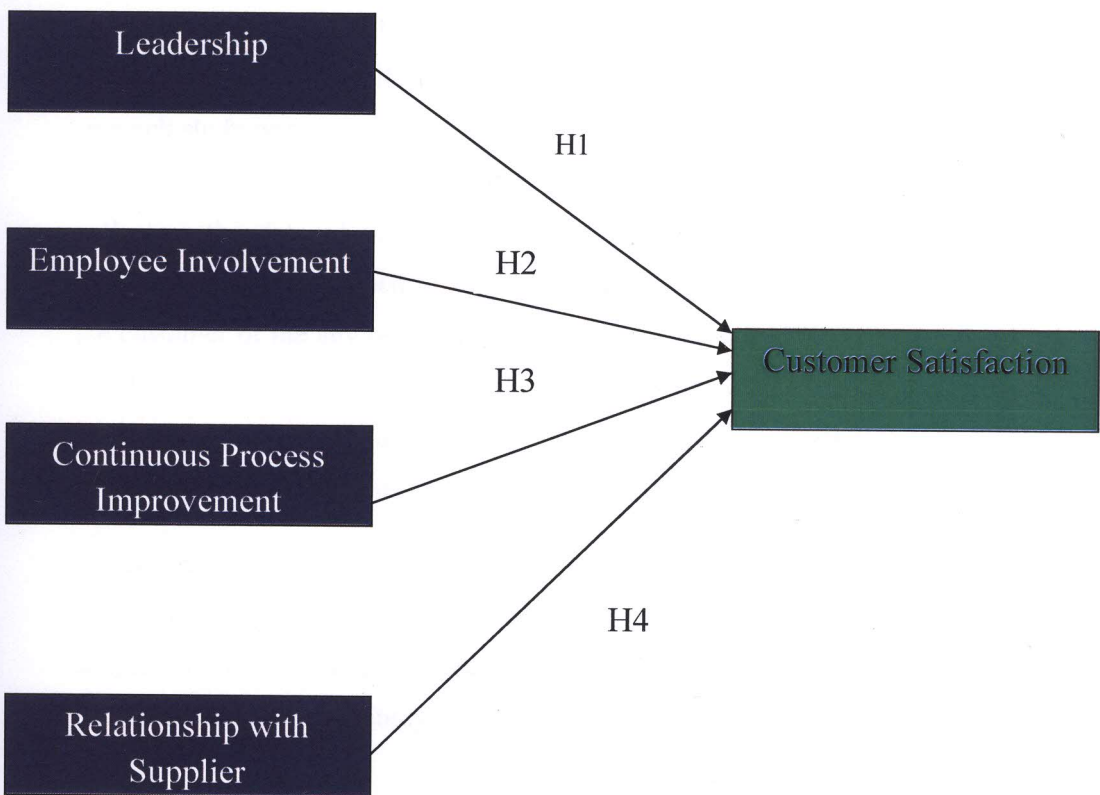


Figure 3 Hypothetical model

## Chapter 3

### 3. Methodology

In this chapter the research methodology, construction of the instrument to measure the theoretical framework and the data collection technique is proposed. To reach to the certain goals of the study a quantitative research was preferred in order to get relative and positive knowledge from the study within the allocated time.

First of all the research design was presented in the industry to determine the flow of the research study. Then the two multinational construction and consultant companies were selected as the target population. The data from these two companies have to be collected for the research study. An instrument for the research study was constructed as per previous studies suggested in United States of America and the other related studies in the other areas of the world. Whilst collecting the data of the survey the ethical considerations were taken care. Sample unit was developed to support the research study. As per research study the customer of the any organization was the sample unit. This survey was fully filled by the customers of the organization. The size of the sample was decided on the available filled sample. The frame work of the population was described in accordance with the research study.

**Instruments:** The survey questionnaire was given to the employees of the two organizations in which quality management system was implemented. I have adopted the research questionnaire form different studies and most of the questions were from the study done by Joo et al. (2006).

### *3.1. Target Population*

The target population was the Customers of the two companies, the companies who have implemented the quality management system and upgrading their quality management system according to the emergence of the era. These companies are one of the biggest countries in construction industry of Pakistan. There also many small companies who have also implemented the QMS but they are working on small scale.

### *3.2. Data Collection*

The data was collected from the junior, senior and principle engineers to evaluate the effect of the research study. Based on random method data was collected. After the collection of the data the data was analyzed on the statistical programming software named as SPSS. Different validity tests were done on the data to validate the hypothesis of the research study.

### *3.3. Survey Construction*

As per discussed earlier the research questionnaire was adopted from the study of Joo Y. Jung (2006). The purpose of that study was to evaluate the effect of TQM aspects on the continuous improvement of international project in construction industry and to gain customer satisfaction.

They concluded that the leadership, employee involvement, relationship with supplier and continuous process improvement has a positive and significant effect on the customer satisfaction.

One limitation of the study was that it was done in the local environment and all the aspects of the TQM except the performance measure and their effect on the customer satisfaction was evaluated.

Furthermore no study done in accordance to implementation of quality management system in construction industry and its effect on customer satisfaction. Moreover the main focus in this study customers.

Keeping in view the aimed research carefully, the different factors were selected that effect the customer satisfaction due to implementation of quality management system. All the variables were described in the theoretical framework and the factors are discussed below.

a) Leadership

- i. Top management Commitment to quality
- ii. Existence of vision and Strategy
- iii. Existence of organization wide quality culture
- iv. Existence of objectives for quality performance

b) Relationship with Supplier

- i. Supplier relationship Management
- ii. Supplier Partnership
- iii. Supplier Involvement
- iv. Selection on Merit

c) Employee Involvement

- i. Employee Empowerment/Involvement
- ii. Humana Resource Issues
- iii. Open and transparent Communication
- iv. Existence of Organization wide training culture

d) Continuous Process Improvement

- i. Part of employee evaluation is based on achieving quality
- ii. Reduce errors in processes
- iii. Availability of Quality data
- iv. Encouragement of employee creativity and improvements in processes
- v. Existence of quality improvement measurement system

e) Customer Satisfaction

- i. Information on services offered
- ii. Orientation to customer
- iii. Communication with the customers
- iv. Courtesy;

- v. Competence
- vi. Conformance to specifications
- vii. Consistency
- viii. Timeliness, responsiveness

**Dependent Variable:**

Customer Satisfaction

**Independent Variable:**

Leadership

Relationship with Suppliers

Continuous Process Improvement

Relationship with Employee

Taking all these factors into account the questionnaire was prepared for the survey to support the research study and it divided into two parts:

PART 1: Demographics

PART 2: Variables Related

Questionnaire was filled through hard medium. All of them were filled in printed hard form. All the question that were asked from the respondent was on Likert Scale of 1 to 5 except the demographics questions.

*3.4. Ethical Consideration*

Integrity as well as the objectivity of the research work was ensured at the higher level. The research should not harm or create any hindrance in the work of the participant. Any kind of harm like physical, social or career should not be done to the participant. Also the use of provided data by the respondent without the

consent of respondent is not ethically good. The privacy of the respondent should be the top most priority. The proposed time for the completion was three months.

### *3.5. Sample Unit*

Sampling unit is the customers of the companies in Lahore who have implemented the quality management system. There is no list of the companies of Lahore who have implemented quality management system. So only two known companies working in construction industry were selected who have implemented the quality management system. Both the companies are working on national and international Level.

### *3.6. Sampling Technique*

As this research is related to measure the level of satisfaction of customers of any organization so only two companies were selected due to time constraints but it could be helpful for the companies working in construction industry if they had not implemented the quality management system.

In case of target population as there was no specific list of companies who were working under the quality management system so I selected two famous and biggest companies in the construction industry and as their head offices resides in Lahore.

So non-probability sampling was done which was the most convenient way of sampling. This is the most suitable way for sampling owing to unavailability of specific list of companies using Quality management System in Lahore and in construction industry as discussed above.

### *3.7. Sampling Frame*

Two companies had chosen for the sampling frame. Both the companies are working in construction industries. One company work as a contractor and the other one is working as a consultant of civil works. Both companies have

implemented quality management system 9001 in their organization. The names of the companies are given below;

- a) National Engineering Services of Pakistan (NESPAK)
- b) DESCON Engineering

### *3.8. Sample Size*

As there were only two companies in my consideration so due to less time I have collected the sample of the survey from only those two companies. As my sampling technique was non-probability technique so I did not use any relevant formula to calculate the sample size.

### *3.9. Population Framework*

From the above two mentioned companies I have rotated the survey of 120 sample size and out of 120 surveys only 96 responded. The response percentage was 80%.

### *3.10. Data Analysis*

IBM SPSS V20.0 Statistics was used to evaluate the collected data through questionnaires. SPSS software has the provision to perform the tests for measuring the impact of the implementation of Quality Management System on customer Satisfaction.

#### *3.10.1. Graphical Representation*

As discussed earlier that all the questions were asked according to a Likert Scale from the respondents on numeric basis. So to include all the data mean was taken. Also to observe the spread of the data

#### *3.10.2. Cronbach's Alpha*

For the measurement of different variables including dependent as well as independent variables, we check the internal reliability of scales of each and every

variable by applying the method of scale reliability analysis and the basics of this analysis is calculation of Cronbach's alpha coefficient.

The result of this test can vary between 0 and 1 i.e. very less internal reliability to very high internal reliability, but it should be above 0.7 for the assurance of internal reliability of scale used (Nunnally, 1978).

### 3.10.3. Correlation

The bi-variant relationship is to be examined between all the variables dependent and independent. The relationship should be significant as for 2-tailed significance analysis. The value of the coefficient varies between 0 to +1. From low relation to high relation between two variables.

### 3.10.4. Regression Analysis

By applying the regression analysis, the correlation strength between variables can be calculated. The value of this coefficient varies between 0 and +1. By getting help from the values of this coefficient, the percentage of the variant in a dependent variable and can simply be put into numeric independent variables. If the dependent variable can be described only by the independent variable in query then the regression coefficient will be 1. With the help of this analysis, the impact of Quality management system including all the variables i.e Leadership, Relationship with suppliers, Employee involvement and continuous process improvement and the customer satisfaction can be evaluated.

Linear regression analysis has to be conducted to identify the level of significance of each and every independent variable as well as of dependent variable.

## Chapter 4

### 4. Analysis and Findings

In this chapter, in detail the findings of this research study will be presented. First of all the frequency analysis of all the descriptive questions asked in the questionnaire. There were three questions about demographics the name of organization, the experience in years and the designation of the respondent. Then the frequency analysis of the scale variables to measure that how much was the spread of the data. After analyzing the frequencies then the reliability of scales has to be checked from the Cronbach's alpha test. The Cronbach's alpha test was implemented on all the scale variables to determine the internal reliability of the variables.

After confirming the reliability of scales, frequencies of independent variables, dependent variables and all questions have been presented. Pie charts of independent and dependent variables have been developed on the basis of collected data.

Also the correlation test and the result of correlation between the dependent and independent variables is done and results extracted from SPSS has been shown in the form of table to understand it. At the last, regression analysis has been made along with the sub tests of regression analysis. Different tests of SPSS apparatus were utilized, with the assistance of this theory, for the investigation of the reactions needed in this study.

#### *4.1. Frequency Analysis*

The frequencies of the data collected were analyzed and plotted in a pie chart. Frequencies were checked for all variables (dependent and independent variables). This test can create summary measures for all out variables in different forms, for example, frequency tables, bar or pie diagrams. At the point when the outcomes are assessed of the frequency methodology test the first table in the

frequency methodology test is the insights which indicates what number of variables are missing and what number of variables are not missing while watching the dataset gave.

#### 4.1.1. Demographics

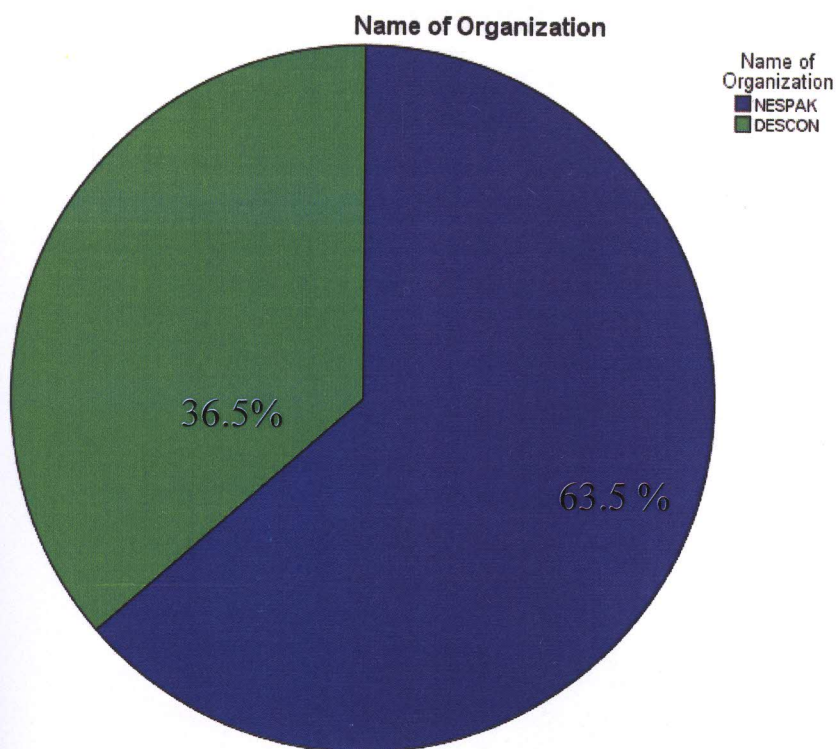
The first question in the demographics part was about the name of organization and it is described in the table below;

**Table 1 Distribution of Respondents**

Statistics		
Name of Organization		
N	Valid	96
	Missing	0

Distribution of Respondents					
	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	NESPAK	61	63.5	63.5	63.5
	DESCON	35	36.5	36.5	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*



**Pie Chart 1 Percentage of respondents according to their Organization**

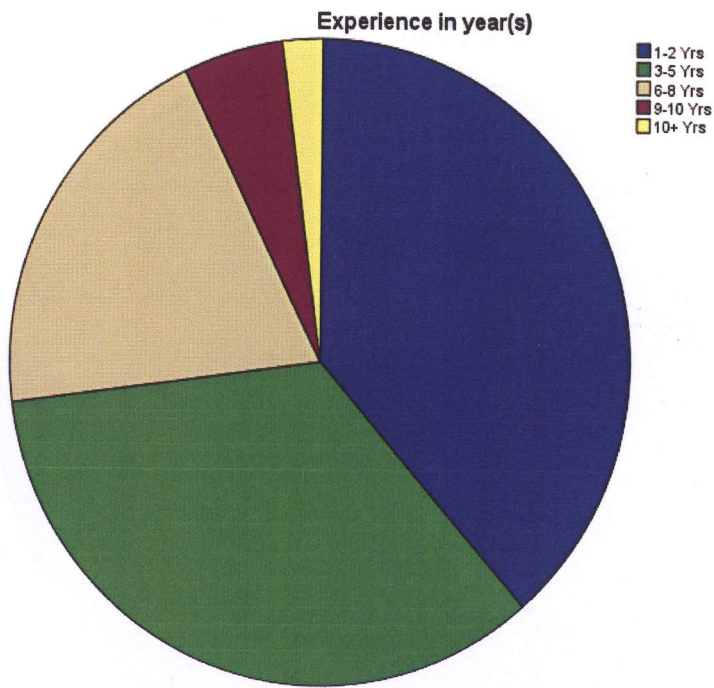
The total numbers of the respondents were 96. Out of all 96 the 35 were from the DESCON and the 61 were from the NESPAK. So their percentage was 36.5% and 63.5% for DESCON and NESPAK respectively.

After the evaluation of the percentage of the respondents according to the organization the next question was about the experience level of the respondents in the relative field. The table and the distribution of the experience of respondents is shown pie chart below;

**Table 2 Experience in Years of the Respondents**

		Experience in year(s)			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-2 Yrs	37	38.5	38.5	38.5
	3-5 Yrs	33	34.4	34.4	72.9
	6-8 Yrs	19	19.8	19.8	92.7
	9-10 Yrs	5	5.2	5.2	97.9
	10+ Yrs	2	2.1	2.1	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*



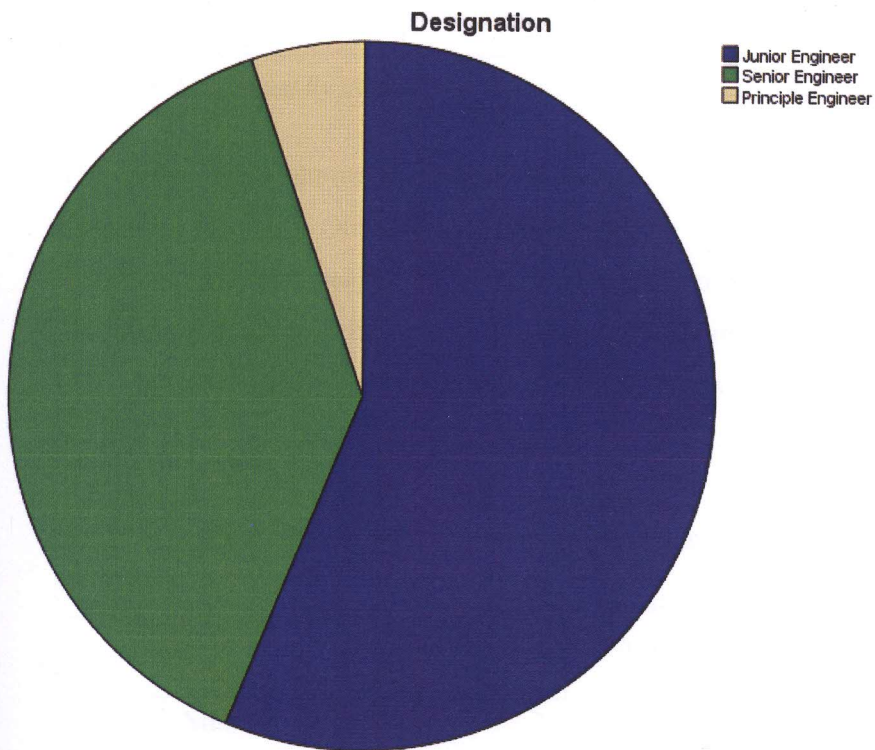
**Pie Chart 2 Experience in years of respondents**

The next question was about the designation of the respondents and it is as it is depicted in the table below and the distribution in the pie chart

**Table 3 Frequency Table of Designation of Respondents**

		<b>Designation</b>			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Junior Engineer	54	56.3	56.3	56.3
	Senior Engineer	37	38.5	38.5	94.8
	Principle Engineer	5	5.2	5.2	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*



**Pie Chart 3 Designation of the respondents**

#### 4.1.2. Leadership

**Table 4 Top Management Commitment to Quality**

Top Management Commitment to Quality					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	7	7.3	7.3	7.3
	Disagree	22	22.9	22.9	30.2
	Neutral	35	36.5	36.5	66.7
	Agree	27	28.1	28.1	94.8
	Strongly Agree	5	5.2	5.2	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*

The above table shows that organization's top management is very much committed to quality. Out of total of 96 respondents 7.3% of the total respondents marked strongly disagree, 22.9% of the total respondents checked disagree, 36.5% are those respondents who believe in neutral, 28.1% respondents are those who agree on it and with 5.2% respondents are strongly agree with this statement that top management is committed to quality.

**Table 5 Existence of Vision and Strategy**

Existence of vision and strategy					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	2.1	2.1	2.1
	Disagree	14	14.6	14.6	16.7
	Neutral	29	30.2	30.2	46.9
	Agree	39	40.6	40.6	87.5
	Strongly Agree	12	12.5	12.5	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*

The above table shows that there is existence of vision and strategy in the organization. Out of total of 96 respondents 2.1% of the total respondents marked strongly disagree, 14.6% of the total respondents checked disagree, 30.2% are those respondents who believe in neutral , 40.6% respondents are those who agree on it and with 12.5% respondents are strongly agree with this statement that vision and strategy exist in organization.

**Table 6 Existence of Wide Quality Culture**

Existence of wide quality Culture					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	3.1	3.1	3.1
	Disagree	19	19.8	19.8	22.9
	Neutral	36	37.5	37.5	60.4
	Agree	26	27.1	27.1	87.5
	Strongly Agree	12	12.5	12.5	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*

The above table shows that most of the respondents think that there is existence of wide quality culture in the organization. Out of total of 96 respondents 3.1% of the total respondents marked strongly disagree, 19.8% of the total respondents checked disagree, 37.5% are those respondents who believe in neutral , 27.1% respondents are those who agree on it and with 12.5% respondents are strongly agree with this statement that wide quality culture exist in organization.

**Table 7 Existence of objectives for quality performance**

Existence of objectives for quality performance					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	6	6.3	6.3	6.3
	Disagree	17	17.7	17.7	24.0
	Neutral	38	39.6	39.6	63.5
	Agree	29	30.2	30.2	93.8
	Strongly Agree	6	6.3	6.3	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*

Most of the respondents think that there is lack of existence of objectives for quality performance. Out of total of 96 respondents 6.3% of the total respondents marked strongly disagree, 17.7% of the total respondents checked disagree, 39.6% are those respondents who believe in neutral , 30.2% respondents are those who agree on it and with 6.3% respondents are strongly agree with this statement that objectives for quality performance exist in organization.

#### 4.1.3. Employee Involvement

**Table 8 Employee Empowerment/Involvement**

Employee Empowerment/Involvement					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	8	8.3	8.3	8.3
	Disagree	21	21.9	21.9	30.2
	Neutral	39	40.6	40.6	70.8
	Agree	21	21.9	21.9	92.7
	Strongly Agree	7	7.3	7.3	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*

**Table 10 Human resource issues**

<b>Human resource issues</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	4	4.2	4.2	4.2
	Disagree	20	20.8	20.8	25.0
	Neutral	43	44.8	44.8	69.8
	Agree	23	24.0	24.0	93.8
	Strongly Agree	6	6.3	6.3	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*

The above table shows that human resource issues managed up to some extent in the organization. Out of total of 96 respondents 4.2% of the total respondents marked strongly disagree, 20.8% of the total respondents checked disagree, 44.8% are those respondents who believe in neutral , 24.0% respondents are those who agree on it and with 6.3% respondents are strongly agree with this statement that organization resolve human resource issues properly.

**Table 11 Open and Transparent Communication**

<b>Open and Transparent Communication</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	6	6.3	6.3	6.3
	Disagree	17	17.7	17.7	24.0
	Neutral	40	41.7	41.7	65.6
	Agree	26	27.1	27.1	92.7
	Strongly Agree	7	7.3	7.3	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*

The above table shows that there is less open and transparent communication in between customer and organization. Out of total of 96 respondents 6.3% of the total respondents marked strongly disagree, 17.7% of the total respondents

checked disagree, 41.7% are those respondents who believe in neutral, 27.1% respondents are those who agree on it and with 7.3% respondents are strongly agree with this statement that open and transparent communication is done between employees and customers in the organization.

#### 4.1.4. Relationship with Suppliers

**Table 12 Supplier partnership**

Supplier partnership					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	6	6.3	6.3	6.3
	Disagree	15	15.6	15.6	21.9
	Neutral	34	35.4	35.4	57.3
	Agree	26	27.1	27.1	84.4
	Strongly Agree	15	15.6	15.6	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*

The above table shows that the organizations do encourage the supplier partnership. Out of total of 96 respondents 6.3 % of the total respondents marked strongly disagree, 15.6% of the total respondents checked disagree, 35.4% are those respondents who believe in neutral , 27.1% respondents are those who agree on it and with 15.6% respondents are strongly agree with this statement that supplier partnership managed properly in the organization.

**Table 13 Supplier Relation Management**

Supplier Relation Management					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	14	14.6	14.6	14.6
	Disagree	14	14.6	14.6	29.2
	Neutral	35	36.4	36.4	65.6
	Agree	19	19.8	19.8	86.4
	Strongly Agree	13	13.6	13.6	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*

The above table shows that the supplier relation managed properly in the organizations. Out of total of 96 respondents 14.6% respondents are strongly disagree, 14.6% respondents are disagree, 36.4% are neutral respondents, 19.8% respondents are agree and with 13.6% respondents are strongly agree with this statement that supplier relationship managed properly in the organization.

**Table 14 Supplier Involvement**

Supplier Involvement					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	6	6.3	6.3	6.3
	Disagree	15	15.6	15.6	21.9
	Neutral	34	35.4	35.4	57.3
	Agree	26	27.1	27.1	84.4
	Strongly Agree	15	15.6	15.6	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*

The above table shows that organizations do involve suppliers in their services. Out of total of 96 respondents 6.3% of the total respondents marked strongly disagree, 15.6% of the total respondents checked disagree, 35.4% are those respondents who believe in neutral , 27.1% respondents are those who agree on it

and with 15.6% respondents are strongly agree with this statement that supplier are involved in the services the organization provide.

**Table 15 Supplier Assessment on Merit**

Supplier Assessment on Merit					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	9	9.4	9.4	9.4
	Disagree	15	15.6	15.6	25.0
	Neutral	27	28.1	28.1	53.1
	Agree	29	30.2	30.2	83.3
	Strongly Agree	16	16.7	16.7	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*

Most of the respondents think that organizations do assessment of the suppliers on merit. Out of total of 96 respondents 9.4% of the total respondents marked strongly disagree, 15.6% of the total respondents checked disagree, 28.1% are those respondents who believe in neutral , 30.2% respondents are those who agree on it and with 16.7% respondents are strongly agree with this statement that supplier’s assessment is done on merit by the organization.

4.1.5. Continuous process improvement

**Table 16 Employee evaluation is based on achieving quality**

Employee evaluation is based on achieving quality					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	2.1	2.1	2.1
	Disagree	15	15.6	15.6	17.7
	Neutral	27	28.1	28.1	45.8
	Agree	40	41.7	41.7	87.5
	Strongly Agree	12	12.5	12.5	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*

The above table shows that Employee evaluation is based on achieving quality. Out of total of 96 respondents 2.1% of the total respondents marked strongly disagree, 15.6% of the total respondents checked disagree, 28.1% are those respondents who believe in neutral , 41.7% respondents are those who agree on it and with 12.5% respondents are strongly agree with this statement that Employee evaluation is based on achieving quality in the organization.

**Table 17 Reduction of errors**

Reduction of errors					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	5	5.2	5.2	5.2
	Disagree	17	17.7	17.7	22.9
	Neutral	24	25.0	25.0	47.9
	Agree	38	39.6	39.6	87.5
	Strongly Agree	12	12.5	12.5	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*

The above table shows that the organizations put effort in reducing the error every time. Out of total of 96 respondents 5.2% of the total respondents marked strongly disagree, 17.7% of the total respondents checked disagree, 25.0% are those respondents who believe in neutral , 39.6% respondents are those who agree on it and with 12.5% respondents are strongly agree with this statement that organization tries to reduce errors in their services.

**Table 18 Availability of Quality Data**

Availability of Quality Data					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	4	4.2	4.2	4.2
	Disagree	12	12.5	12.5	16.7
	Neutral	26	27.1	27.1	43.8
	Agree	41	42.7	42.7	86.5
	Strongly Agree	13	13.5	13.5	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*

Most of the respondents think that organizations have decent data available with them about quality according to above table. Out of total of 96 respondents 4.2% of the total respondents marked strongly disagree, 12.5% of the total respondents checked disagree, 27.1% are those respondents who believe in neutral , 42.7% respondents are those who agree on it and with 13.5% respondents are strongly agree with this statement that sufficient data on quality and quality procedures is available in the organization.

**Table 19 Existence of Quality improvement measurement system**

Existence of Quality improvement measurement system					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	9	9.4	9.4	9.4
	Disagree	15	15.6	15.6	25.0
	Neutral	28	29.2	29.2	54.2
	Agree	28	29.2	29.2	83.3
	Strongly Agree	16	16.7	16.7	100.0

*Source: Computed by author*

The above table shows that there is existence of quality improvement measurement system in the organizations. . Out of total of 96 respondents 9.4% of the total respondents marked strongly disagree, 15.6% of the total respondents checked disagree, 29.2% are those respondents who believe in neutral , 29.2%

respondents are those who agree on it and with 16.7% respondents are strongly agree with this statement that there is existence of quality improvement measurement system in the organizations.

**Table 20 Encouragement of employee creativity**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	6	6.3	6.3	6.3
	Disagree	19	19.8	19.8	26.0
	Neutral	35	36.5	36.5	62.5
	Agree	28	29.2	29.2	91.7
	Strongly Agree	8	8.3	8.3	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*

The above table shows that the organizations are not more likely to encourage the creativity of the employees. Out of total of 96 respondents 9.8% of the total respondents marked strongly disagree, 19.8% of the total respondents checked disagree, 36.5% are those respondents who believe in neutral , 29.2% respondents are those who agree on it and with 8.3% respondents are strongly agree with this statement that organization encourages the creativity of the employees.

#### 4.1.6. Customer Satisfaction

**Table 21 Information on Services offered**

Information on Services offered					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	5	5.2	5.2	5.2
	Disagree	22	22.9	22.9	28.1
	Neutral	13	13.5	13.5	41.7
	Agree	39	40.6	40.6	82.3
	Strongly Agree	17	17.7	17.7	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*

The above table shows that most of the time the information provided to the customer by the organizations was not complete. Out of total of 96 respondents 5.2% of the total respondents marked strongly disagree, 22.9% of the total respondents checked disagree, 13.5% are those respondents who believe in neutral, 40.6% respondents are those who agree on it and with 17.7% respondents are strongly agree with this statement that most of the time the information provided to the customer by the organizations was not complete.

**Table 22 Orientation to Customers**

Orientation to Customers					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	10	10.4	10.4	10.4
	Disagree	29	30.2	30.2	40.6
	Neutral	17	17.7	17.7	58.3
	Agree	33	34.4	34.4	92.7
	Strongly Agree	7	7.3	7.3	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*

Most of the respondents think that the organizations approach was customer oriented. Out of total of 96 respondents 10.4% of the total respondents marked strongly disagree, 30.2% of the total respondents checked disagree, 17.7% are those respondents who believe in neutral , 34.4% respondents are those who agree on it and with 7.3% respondents are strongly agree with this statement that the organization shows orientation to customers.

**Table 23 Communication with the Customers**

Communication with the Customers					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	3.1	3.1	3.1
	Disagree	18	18.8	18.8	21.9
	Neutral	24	25.0	25.0	46.9
	Agree	43	44.8	44.8	91.7
	Strongly Agree	8	8.3	8.3	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*

The above table shows that the organizations communication with the customers was good. Out of total of 96 respondents 3.1% of the total respondents marked strongly disagree, 18.8% of the total respondents checked disagree, 25.0% are those respondents who believe in neutral , 44.8% respondents are those who agree on it and with 8.3% respondents are strongly agree with this statement that most of the time the organizations' communication with the customers was good,

**Table 24 Courtesy with the Customers**

Courtesy with the Customers					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	6	6.3	6.3	6.3
	Disagree	28	29.2	29.2	35.4
	Neutral	19	19.8	19.8	55.2
	Agree	34	35.4	35.4	90.6
	Strongly Agree	9	9.4	9.4	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*

The above table shows that the organizations show courtesy towards customers. Out of total of 96 respondents 6.3% of the total respondents marked strongly disagree, 29.2% of the total respondents checked disagree, 19.8% are those

respondents who believe in neutral , 35.4% respondents are those who agree on it and with 9.4% respondents are strongly agree with this statement that most of the time the organization shows courtesy towards customers.

**Table 25 Conformance to Specification**

Conformance to Specification					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	6	6.3	6.3	6.3
	Disagree	12	12.5	12.5	18.8
	Neutral	12	12.5	12.5	31.3
	Agree	50	52.1	52.1	83.3
	Strongly Agree	16	16.7	16.7	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*

Most of the respondents think that the organizations conform to the specifications provided by the customers. Out of total of 96 respondents 6.3% of the total respondents marked strongly disagree, 12.5% of the total respondents checked disagree, 12.5% are those respondents who believe in neutral , 52.1% respondents are those who agree on it and with 16.7% respondents are strongly agree with this statement that the organizations conform to the specifications provided by the customers.

**Table 26 Consistency of the Services Provided**

Consistency of the Services Provided					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	12	12.5	12.5	12.5
	Disagree	34	35.4	35.4	47.9
	Neutral	11	11.5	11.5	59.4
	Agree	27	28.1	28.1	87.5
	Strongly Agree	12	12.5	12.5	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*

**Table 28 Timeliness and Responsiveness**

<b>Timeliness and Responsiveness</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	8	8.3	8.3	8.3
	Disagree	18	18.8	18.8	27.1
	Neutral	14	14.6	14.6	41.7
	Agree	39	40.6	40.6	82.3
	Strongly Agree	17	17.7	17.7	100.0
	Total	96	100.0	100.0	

*Source: Computed by author*

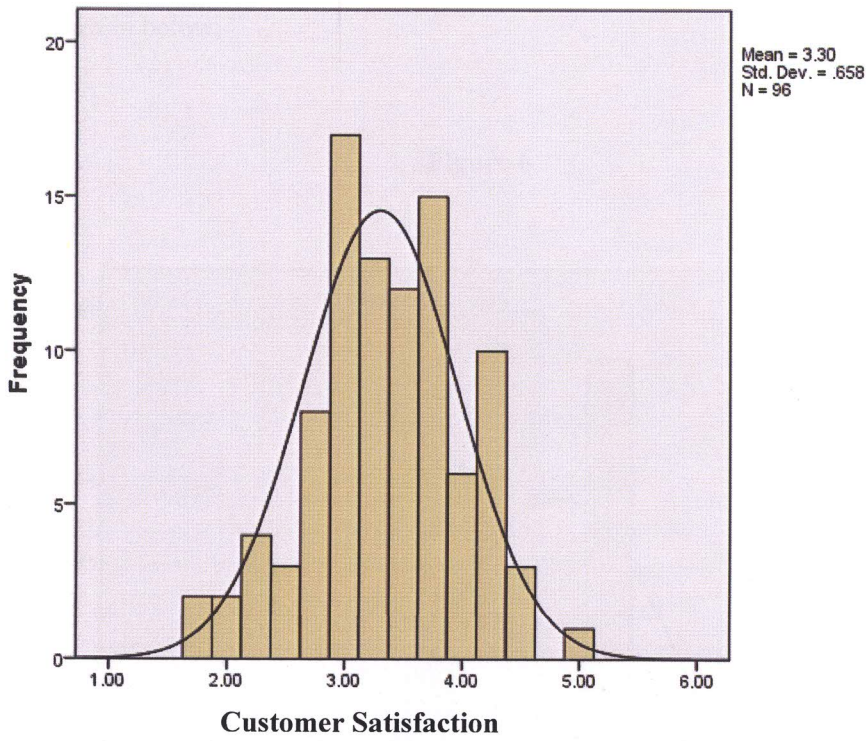
The above table shows that the organizations are responsive to the customers and in timely manner. Out of total of 96 respondents 8.3% of the total respondents marked strongly disagree, 18.8% of the total respondents checked disagree, 14.6% are those respondents who believe in neutral , 40.6% respondents are those who agree on it and with 17.7% respondents are strongly agree with this statement that are responsive to the customers and in timely manner.

#### *4.2.Histograms*

After the frequency analysis of the variable the histograms were made for all the variables. The histograms with the normal curve distribution were gained from the statistical program SPSS and their normality has been discussed. The histograms are given below for each independent and dependent variable with their total number of respondents and mean value for each variable data collected.

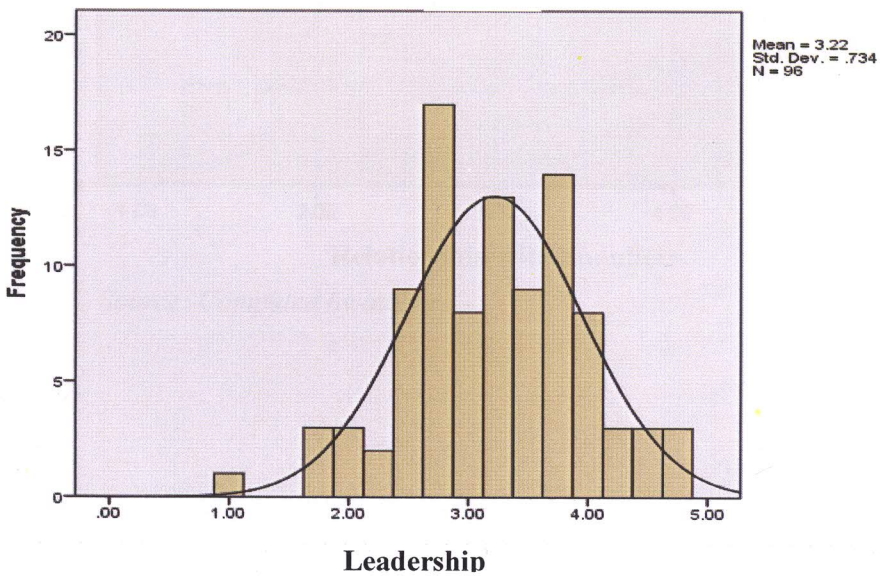
The below histogram is of customer satisfaction which is also the dependent variable in the study. From the above histogram it can be seen easily that the data is normally distributed in the bell curve.

**Figure 4**



*Source: Computed by author*

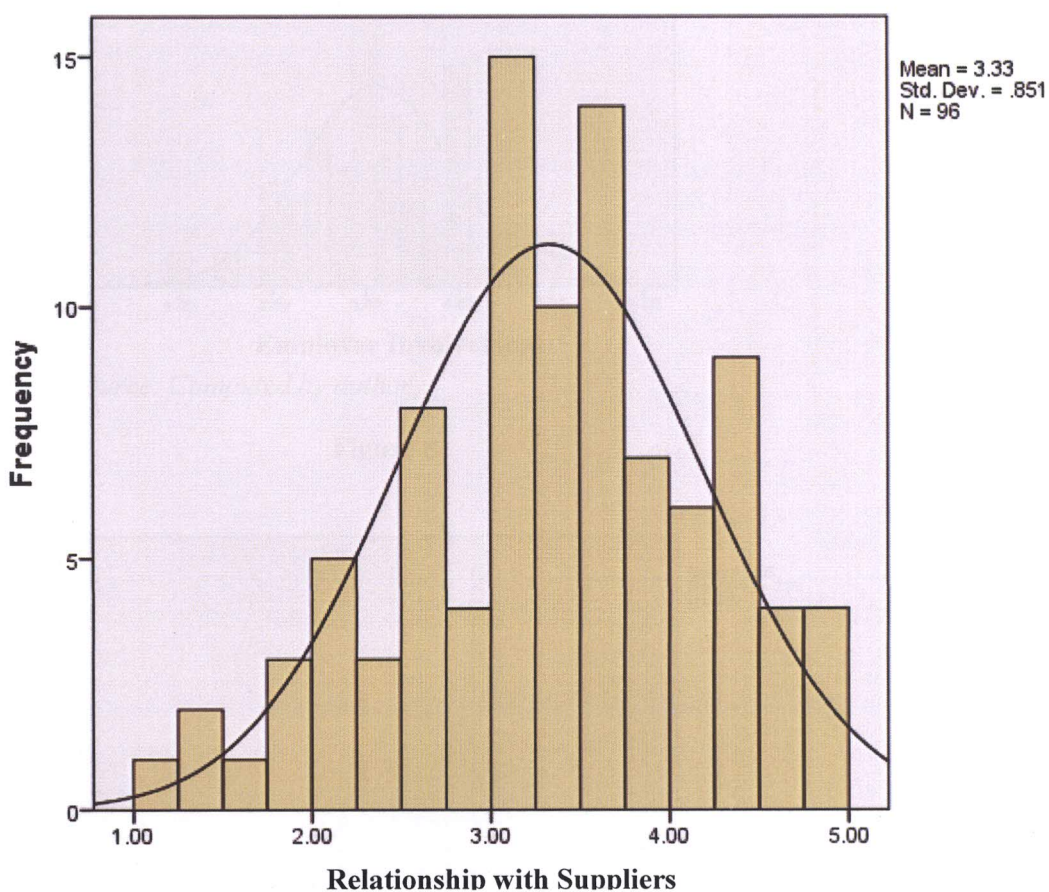
**Figure 5**



*Source: Computed by author*

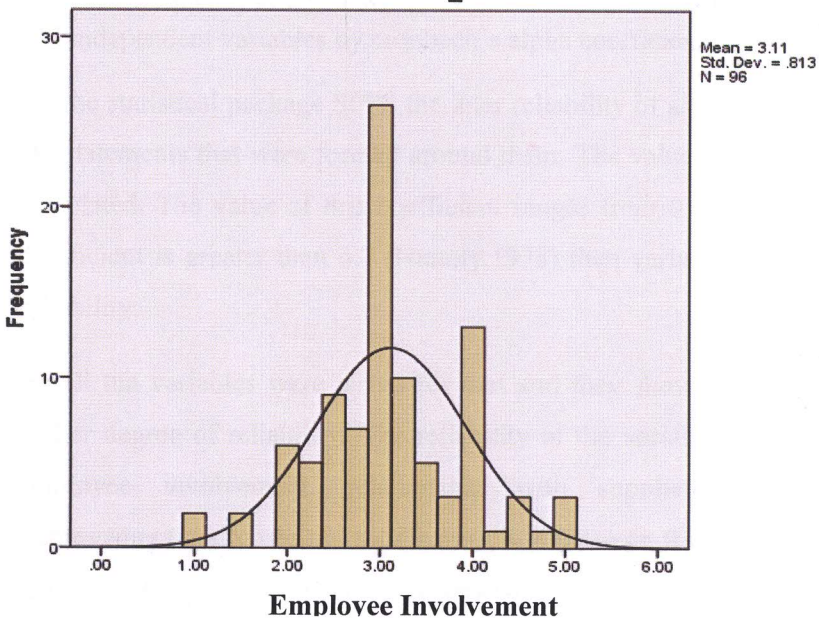
The above histogram is of leadership which shows some skewed a little to the right but it is within the acceptable limits. All the histograms of other variables are shown in below;

**Figure 6**



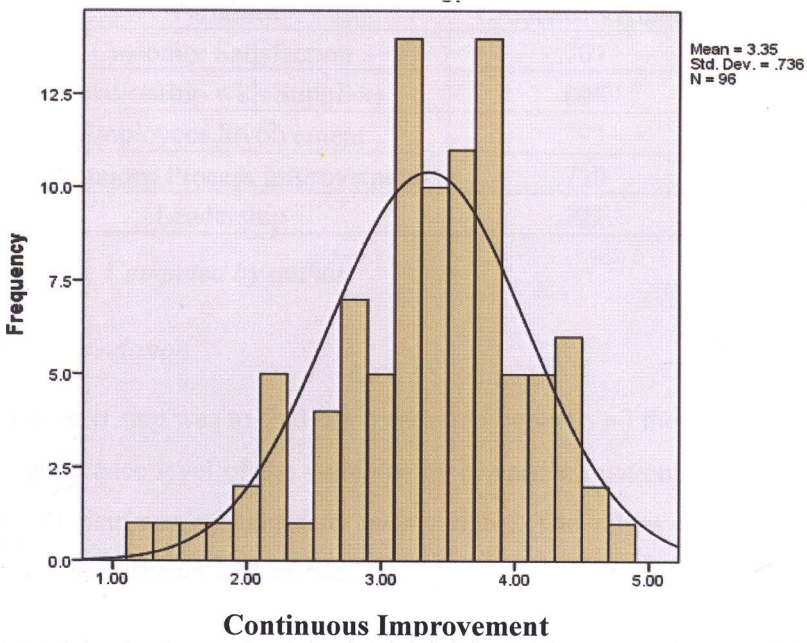
*Source: Computed by author*

**Figure 7**



*Source: Computed by author*

**Figure 8**



*Source: Computed by author*

### 4.3. Cronbach's Alpha

After the frequency analysis we come to the internal reliability of the dependent and independent variables by cronbach's alpha coefficient.

On the statistical package SPSS the inter reliability of all the variables because of the statements that were formed around them. The value of cronbach's alpha was calculated. The value of this coefficient ranges from 0 to 1. If the value of this coefficient is greater than 0.7 (Nunnally, 1978) then variables have high degree of reliability.

As all the variables were tested for that and they show positive and significant higher degree of reliability. The reliability of the variables including leadership, employee involvement, relationship with suppliers, continuous process improvement and customer satisfaction was between 0.701 to 0.808. The values of cronbach's alpha for all the variables have been shown in the table-28 below;

**Table 29 Reliability of Variables-Cronbach's Alpha Value**

Reliability Statistics		
Variables	Cronbach's Alpha	N of Items
Customer Satisfaction	.701	8
Relationship with Suppliers	.808	4
Employees Involvement	.793	4
Continuous Process Improvement	.730	5
Leadership	.722	4

*Source: Computed by author*

### 4.4. Correlation

The next step was to find the correlation between all the variables and to find the significance level of the variables by bi-variate relation. The Pearson correlation coefficient was calculated for each variable. The values of the Pearson correlation have been shown in the table-29.

**Table 30 Correlation between Dependent and Independent Variables**

		Correlations				
		CS	RS	CI	E	L
CS	Pearson Correlation	1	.606**	.285**	.606**	.679**
	Sig. (2-tailed)		.000	.005	.000	.000
	N	96	96	96	96	96
RS	Pearson Correlation	.606**	1	.124	.554**	.622**
	Sig. (2-tailed)	.000		.228	.000	.000
	N	96	96	96	96	96
CI	Pearson Correlation	.285**	.124	1	.087	.193
	Sig. (2-tailed)	.005	.228		.398	.059
	N	96	96	96	96	96
E	Pearson Correlation	.606**	.554**	.087	1	.693**
	Sig. (2-tailed)	.000	.000	.398		.000
	N	96	96	96	96	96
L	Pearson Correlation	.679**	.622**	.193	.693**	1
	Sig. (2-tailed)	.000	.000	.059	.000	
	N	96	96	96	96	96

\*\* . Correlation is significant at the 0.01 level (2-tailed).

*Source: Computed by author*

The leadership, Relationship with suppliers and employee involvement show higher degree of correlation with customer satisfaction. Continuous process improvement show lower degree of correlation with the dependent variable, customer satisfaction.

#### 4.5. Regression Analysis

At the end regression analysis was run on all the variables. There were sub tests in regression analysis. The results of regression analysis have been shown in the below tables including the model summary:

Explanatory strength of defining the variables is being summarized in the model summary. The value of Adjusted R Square is is .544 which is 54%. It means that 54% variation in the dependent variable is explained by independent variable used

in the model and 46% variation in the dependent variable is due to the other variables.

**Table 31 Model Summary**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.751 <sup>a</sup>	.563	.544	.44413
a. Predictors: (Constant), L, CI, RSC, E				

*Source: Computed by author*

Table of ANOVA shows that F statistics is below than .05 and even .01 level of significance as it is 29.35F . The following table shows the regression analysis is the ANOVA model. The F value shows the F value is greater so which is good sign. It means results are significant.

**Table 32 ANOVA**

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23.159	4	5.790	29.351	.000 <sup>b</sup>
	Residual	17.950	91	.197		
	Total	41.109	95			
a. Dependent Variable: CS						
b. Predictors: (Constant), L, CI, RS, E						

*Source: Computed by author*

In the regression analysis, coefficient and the co-linearity diagnostics are the next analysis. If the value of t is greater than +2 and less than -2 the result is significant.

In the given table below the value of “t” for the “Relationship with the Suppliers” has the value of 2.82 so it has a positive and significant result on the dependent variable i.e. “Customer satisfaction.”

In the given table below the value of “t” for the “Continuous Improvement” has the value of 2.39 so it has a positive and significant result on the dependent variable i.e. “Customer satisfaction.”

In the given table below the value of “t” for the “Employee Involvement” has the value of 2.18 so it has a positive and significant result on the dependent variable i.e. “Customer satisfaction” but less than all the other variables.

In the given table below the value of “t” for the “Leadership” has the value of 3.19 so it has a positive and significant result on the dependent variable i.e. “Customer satisfaction.”

The values of co-linearity diagnostic test was run and after that test the value of VIF or all the variables evaluated. The VIF value for all the variables were greater than .10 (Hair et al., 1998) and also less than 5 (Field, 2000 ).

**Table 33 Coefficients**

Coefficients <sup>a</sup>								
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.619	.280		2.210	.030		
	RS	.197	.070	.255	2.817	.006	.584	1.712
	CI	.151	.063	.169	2.393	.019	.958	1.044
	E	.174	.080	.215	2.178	.032	.492	2.032
	L	.303	.095	.338	3.190	.002	.426	2.347

a. Dependent Variable: CS

*Source: Computed by author*

All the unstandardized beta coefficients are positive and are statistically significant which shows that each independent variable has a positive and significant relationship with the dependent variables. For example, Relationship

with suppliers has the beta value of 0.197 which shows that one unit change in relationship with suppliers will result in almost 0.20 unit change in the Customer Satisfaction. Similarly, Continuous process improvement has the beta value of 0.151 which shows that one unit change in Continuous process Improvement will result in almost 0.15 unit change in the Customer Satisfaction. Employee involvement has the beta value of 0.174 which shows that one unit change in Employee involvement will result in almost 0.17 unit change in the Customer Satisfaction. Leadership has the beta value of 0.303 which shows that one unit change in Leadership will result in almost 0.30 unit change in the Customer Satisfaction. Standardized Beta Coefficients shows that L is the most significant factor for Customer Satisfaction and Continuous process Improvement is the least significant factor in explaining Customer Satisfaction

## Chapter 5

### 5. Conclusion and Future Research

The research work shows that the selected independent variables have a significant effect on the dependent variable. It also depicts that the implementation of the quality management system has a positive impact on customer satisfaction. By applying quality management system in any organization related to construction industry can have a positive effect on the customers and then the organization can gain more and relatively satisfied customers. Therefore, implementation of the quality management system is highly recommended but it also be upgraded with the up gradations of the quality management system standards.

All the statements of hypothesis have accepted according to these studies which are given below;

H1: Leadership is positively and significantly related to customer satisfaction.

The above hypothesis was accepted according to results shown in previous chapter. The leadership has a positive and significant on customer satisfaction. The impact of this hypothesis is that top management commitment and existence of vision and strategy in top management to achieve quality is mandatory. This type of thinking can be developed in leaders by working on leadership programs in organization as many of the industries other than construction industry do so. The performance objectives for quality can provide a significant role in achieving customer satisfaction.

H2: Employee involvement is positively and significantly related to customer satisfaction.

The second hypothesis was also accepted. Organizations involve employee in decision making and up to some extent empower the employees. Employee should be trained to make correct decisions in order to profit organization. Employee should also be trained about handling human resource issues and as well as customers in order to satisfy them.

H3: Continuous process improvement has a positive and significant effect on customer satisfaction.

Acceptance of this hypothesis reveals that organization should organize more of quality trainings in order to reduce errors, maintain quality data and to improve the quality measurement system. So that organizations can get higher customer satisfaction.

H4: Supplier partnership has a positive and significant effect on customer satisfaction.

The impact of the acceptance of above hypothesis mostly concern with the long term relationship with the suppliers in order to maintain your quality stable while satisfying the customers. It is only done if and only of the organization enforce suppliers to maintain their quality as per the requirement and periodic inspection of that supplier done by organization. This could lead to improvement and customer satisfaction of the supplier's company also.

Moreover, the future research work and practical implication of this research is wide. One can use this research work to find out the factors in which an organization is lagging behind in satisfying their customers if they already had implemented the quality management system.

Thus those factors can be improved in an organization to enhance customer satisfaction and to gain more customers. The theoretical addition in this research can be the finding of other elements that effect the customer satisfaction in the construction industry.

In the future one can go for the qualitative analysis of this research and find out the other factors that affect the customer satisfaction in by implementing the quality management system or any other factors that are not related to quality management system that can be discovered in the qualitative research in construction industry.

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## Appendix A

**Table 34 Leadership**

<b>Item-Total Statistics</b>				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Top Management Commitment to Quality	9.93	4.953	.570	.597
Existence of vision and strategy	9.45	5.955	.363	.720
Existence of wide quality Culture	9.63	4.974	.527	.625
Existence of objectives for quality performance	9.81	5.312	.526	.627

**Table 35 Relationship with Suppliers**

<b>Item-Total Statistics</b>				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Supplier Relation Management	10.04	6.003	.673	.705
Supplier Involvement	9.87	7.995	.748	.717
Supplier partnership	10.01	7.154	.543	.771
Supplier Assessment on Merit	10.02	6.736	.552	.771

**Table 36 Continuous Improvement**

<b>Item-Total Statistics</b>				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Employee evaluation is based on achieving quality	13.27	10.115	.401	.716
Reduction of errors	13.38	9.079	.509	.677
Availability of Quality Data	13.25	8.632	.650	.623
Existence of Quality improvement measurement system	13.46	8.314	.552	.659
Encouragement of employee creativity	13.60	10.115	.360	.732

**Table 37 Employee Involvement**

<b>Item-Total Statistics</b>				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Employee Empowerment/Involvement	9.47	5.873	.721	.711
Existence of organization wide training	9.17	6.877	.421	.861
Human resource issues	9.38	6.868	.579	.780
Open and Transparent Communication	9.33	5.677	.824	.660

## Appendix B

### Questionnaire

### Impact of Implementation of (QUALITY MANAGEMENT SYSTEM) on Customer Satisfaction

This survey is being carried out to collect data for my MS research study as a requirement of MS degree in Project Management at Bahria University Islamabad (Lahore Campus). Based on your experience with quality management system and its impact on customer satisfaction, you are requested to answer these questions on the basis of your last completed project. Thank you.

#### PART-1: Demographics

Name of Organization: \_\_\_\_\_ Designation: \_\_\_\_\_

Contact No.(Optional): \_\_\_\_\_ Total Experience (years): \_\_\_\_\_

#### PART-2: Leadership

	Strongly Disagree	Mode. Disagree	Neutral	Mode. Agree	Strongly Agree
1. Top management is committed to quality.					
2. Existence of vision and strategy in organization.					
3. Existence of organization wide-quality culture.					
4. Existence of quality performance objectives in organization.					

#### PART-2: Relationship with Suppliers

	Strongly Disagree	Mode. Disagree	Neutral	Mode. Agree	Strongly Agree
1. Organization relation with suppliers managed properly.					
2. Organization involves suppliers.					
3. Supplier partnership is done by organization.					
4. Supplier Assesment done on Merit by organization.					

## PART-2: Employee Involvement

	Strongly Disagree	Mode. Disagree	Neutral	Mode. Agree	Strongly Agree
1. Organization empowers/involves Employee in decision making.					
2. Existence of organization wide training in organization.					
3. Human resource issues managed properly in organization.					
4. Open and Transparent Communication between employees.					

## PART-2: Continuous Improvement

	Strongly Disagree	Mode. Disagree	Neutral	Mode. Agree	Strongly Agree
1. Part of employee evaluation is based on achieving quality.					
2. Organization tries to reduce errors every time.					
3. Organization has availability of quality data.					
4. Organization uses any quality improvement measurement system.					
5. Organization encourages employee for the creativity and improvements					

## PART-2: Customer Satisfaction.

	Strongly Disagree	Mode. Disagree	Neutral	Mode. Agree	Strongly Agree
1. Information on Services offered was adequate by the organization.					
2. Orientation to Customers was main focus of organization.					
3. Communication with the Customers was good.					
4. Organization Showed Courtesy towards the Customers in providing services.					
5. Conformance to Specification					
6. Organization has Consistency in the Services Provided.					
7. Competency of the Services provided is good by the organization.					
8. Timeliness and Responsiveness of organization was good.					