T.C.

ISTANBUL AYDIN UNIVERSITY

INSTITUTE OF GRADUATE STUDIES

IMPACT OF STATISTICAL MEASURES OF QUALITY ON BUSINESS PROJECTS PERFORMANCE

MASTER'S THESIS

MUSA MAHAMMAD MUSA MANSOR

Department of Business

Business Administration Program

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Thesis Advisor: Dr. Ögr.Üyesi. Ali KURT

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ONAY FORMU

T.C.
İSTANBUL AYDIN ÜNİVERSİTESİ
LİSANSÜSTÜ EĞİTİM ENSTİTÜSÜ MÜDÜRLÜĞÜ

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İşletme İngilizce Anabilim Dalı İşletme Yönetimi İngilizce Tezli Yüksek Lisans Programı Y1712.130180 numaralı öğrencisi MUSA MOHAMMAD MUSA MANSOR'un **"Impact of Statistical Measures of Quality on Business Project Performance"** adlı tez çalışması Enstitümüz Yönetim Kurulunun 31.01.2020 tarihli ve 2020/02 sayılı kararıyla oluşturulan jüri tarafından oybirliği/oyçokluğu ile Tezli Yüksek Lisans tezi 11.02.2020 tarihinde kabul edilmiştir.

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ONAY

Prof. Dr. Ragıp Kutay KARACA
Enstitü Müdürü

DEDICATION

I am MUSA MOHAMMAD MUSA MANSOR hereby declare that I am the sole author of this master thesis titled “Impact of Statistical Measures of Quality on Performance of Business Projects “A Study in Istanbul, Turkey”” and that I have not used any sources other than those listed in the bibliography and identified as references. I further declare that I have not submitted this thesis at any other institution in order to obtain a degree.

MUSA MOHAMMAD MUSA MANSOR

This research is dedicated to my father, my mother, my spouse, my brothers, my sisters, and my children's who are the source of inspiration to me throughout the period of my research. I am thankful to Allah and then my family.

FOREWORD

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February.2020 **MUSA MAHAMMAD MUSA MANSOR**

IMPACT OF STATISTICAL MEASURES OF QUALITY ON BUSINESS PROJECTS PERFORMANCE “A STUDY IN ISTANBUL - TURKEY”

ABSTRACT

The purpose and aim of this research are to show and evaluate the relationship and the effectiveness between TQM Practices, Statistical Measures, and Financial, Innovation, and Operational performance respectively in business projects at firms. In addition to finding ways to improve the performance through focuses on how to use TQM Practices and Statistical Measures to improve performance of business projects.Data were collected from 283 respondents in Istanbul, sample of Turkish firms based on the study model data were examined using the Statistical Package for the Social Sciences (SPSS) software by applying frequency distribution tables also bar charts of questionnaire (part A) and further correlation, R-Square, ANOVA and Regression Analysis for questionnaire (part B). Results show that the relationship between TQM Practices, Statistical Measures, and Performance (Financial, Innovation, and Operation) in the firms is positive.This study has analyzed through descriptive approach that was used to study about demographic profile of business in Istanbul, and TQM items have been developed to test the hypothesis. Five-point Likert scale questionnaire has been adopted for data collection, the reliability statistics of all items was 0.998 which is excellent, in order to measure the relationship among variables correlation a test was used, regression analysis R-Square interpretation, ANOVA was used to show the impact of TQM Practices on Financial, Operations, and Innovation Performance of the business projects. Statistical analysis also showed results and suggestions for this model.

Keywords: *TQM Practices, Statistical Measures, Financial Performance, Innovation Performance, Operation Performance, Business Projects*

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İŞLETMELERİN PROJELERİNDEKİ TQM UYGULAMALARI, İSTATİSTİKSEL ÖLÇÜTLER VE PERFORMANS (FİNANSAL, YENİLİK VE OPERASYON) ARASINDAKİ İLİŞKİYİ VE ETKİNLİĞİNİ

ÖZET

Bu araştırmanın amacı, işletmelerin projelerindeki TQM Uygulamaları, İstatistiksel Ölçütler ve Performans (Finansal, Yenilik ve Operasyon) arasındaki ilişkiyi ve etkinliğini göstermek, değerlendirmek ve bu alanlara odaklanarak performansı artırmak için yollar bulmaktır. İş projelerinin performansını artırmak için TQM Uygulamalarının ve İstatistiksel Ölçütlerin kullanılması.İstanbul'da 283 katılımcıdan veriler toplandı. Çalışma modeline dayanarak Türk firmalarında yapılan örneklemelerde Sosyal Bilimler için İstatistik Paketi yazılımı kullanıldı. Bu yazılım ile frekans dağılım tabloları, anket çizelgeleri (bölüm A) ve ayrıca korelasyon, R-Kare, ANOVA ve anket için Regresyon Analizi (bölüm B) kullanarak örneklemeler gerçekleştirildi. Sonuçlar, işletmelerde TQM Uygulamaları, İstatistiksel Ölçütler ve Performans (Mali, İnovasyon ve İşletme) arasındaki ilişkinin olumlu olduğunu göstermektedir.Tanımlayıcı yaklaşımın kullanılarak yapılan bu çalışma, İstanbul'daki işletmelerin demografik profili hakkındadır. Ve hipotezin testinde TQM maddeleri kullanıldı. Veri toplamada Five-Point Likert ölçeği anketi anketi benimsenmiştir ve anket sonucu çıkan 0.998 değeri tüm maddelerin güvenilirlik istatistiklerine gere mükemmeldir. Bu çalışma, İstanbul'daki işletmelerin demografik profilini incelemek için tanımlayıcı yaklaşımın kullanıldığı ve TQM maddelerinin hipotezi test etmek için geliştirdiği, beş puanlık Likert ölçeği anketinin veri toplama için benimsemiş, tüm maddelerin güvenilirlik istatistiklerini mükemmelleştirdiğini ortaya koymuştur. yani, 0.998, değişkenler arasındaki ilişkiyi ölçmek için korelasyon testi kullandı. TQM uygulamalarının işletme projelerinin Finansal, Operasyon ve İnovasyon Performansı üzerindeki etkisini göstermek için Regresyon analizi R-Square yorumlaması, ANOVA kullandı. İstatistiksel analiz ayrıca bu modelin sonuçlarını ve önerileri gösterdi.

Anahtar kelimeler *TQM Uygulamaları, İstatistiksel Ölçütler, Finansal Performans, Yenilik Performansı, İşletme Performansı, İş Projeleri*

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ABBREVIATIONS

CEO : Chief Executive Officer

GM **:** General Manager.

HR : Human Resource.

IT **:** Information Technology.

PMO : Project Management Officer.

SPSS **:** Statistical Package for Social Sciences.

TQM : Total Quality Management.

QA : Quality Assurance.

QM : Quality management.

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I. INTRODUCTION

In the rapidly evolving world of business, the importance of TQM is very great (Blanton & Kegley, 2016). Most of the businesspersons get help of it. Indeed, without proper use of TQM practices it is not very easy for the managers to venture and make accurate calculations. Therefore, almost all managers, business personals and professionals across all corners of the earth adhere to the TQM practices. Firms need to implement some competition strategies and total quality management applications to overcome the fierce competition among others (Kurt & Zehir, 2016).

In the twenty first century of business competition, TQM practices have become a necessity for business projects. TQM practices are widely used to assess the quality of business projects, improve performance and help predict future outcomes, hence introducing TQM practices into the business projects not only improves their quality but also managerial expectations and their realization (Zehir & Sadikoglu, 2012).

A. Problem Definition

There is a lot of research work around the world on almost every topic. But the issue of assessing the impact of TQM practices on business projects goes without much attention. However, the topic is dealt with in some research papers indirectly specially in Turkey which is the hub of business. New companies are venturing in the country. New investors are coming. The government is offering scholarships to international students. All this makes the business world more competitive. Hence, it becomes indispensable for the stakeholders of the country to lend ears to this issue and assist research scholars in this regard.

This technical gap can be overcome by welcoming the research work on it. The outcome would be the best possible way of executing the business projects; to know their efficiency; future predictions and performances, etc. (Phan, et al, 2011). The newcomers would be facilitated, and the student community would also be

accommodated, because they carry out a number of business projects as an assignment in their degree programs. But due to lack of availability of statistical data on the performance of business projects, they get locked up in the vicious cycle of problems. This is the main line of problem. We try to reduce this gap by offering a comprehensive research on the use of TQM practices in the business projects.

B. The Importance of the Study

The significance of TQM has increased many folds (Abusa & Gibson, 2013). It has become a central tool for business projects in the world of business today. Statistical tools generated as a result of TQM applications pave the way for smooth and productive conclusion of business projects undertaken in different conditions by different business-minds. This is the center of our research to know the impacts of TQM practices in the form of statistical measures on project's performance.

Statistical tools help us find out the exact calculations for future planning for business tools. For example, correlation test helps us in identifying the validity of the relationship between three hypotheses that the study claims to research. This is one of the statistical tools that assists not only the researchers but also the businessmen in carrying out the business projects (Yeung & Cheng, 2006). For instance, a manager is expecting a profit for a new venture equal to that of last year, but he has no exact calculations. He is scared to launch a new business project, having the similar ingredients of the last one. In this scenario statistical tools of TQM practices are the only viable option to assess the chances of getting the similar profit this year (Kanri, 1991). Correlation technique would help him by determining the relationship of profit of last year and the probability of getting the same profit this year. Other statistical tools such as regression, beta test, reliability test, etc. are also very indispensable in having the positive impact on the business projects.

That is the purpose that we try to highlight the impact of TQM practices in the shape of statistical tools on the business projects.

In Turkey, this question is of immense importance as there is a lack of articulated work on this question (Kaynak, 2003). The country is home to an expanding market of business where a number of new companies are shifting their operations. The new investors would be facilitated in determining the potential of the

market and whether their business projects would be a success story or not.

C. Research Objectives:

- The first and foremost objective of this research work is to use effectively the statistical tools in order to determine the relationship of variables on the performance of business projects. This would add to the knowledge and expertise of the businessman to make the business project more product oriented.
- The second most objective is to find out, with the help of this research work, problems and hurdles faced by the business organizations in Istanbul by using the total quality management practices.
- Afterwards, the relationship between TQM practices and Statistical measures of quality should be pinned out.
- After that, the relationship between TQM practices and financial performances of business projects needs to be bifurcated.
- The work must be carried out towards finding the relationship between the TQM practices and the Innovation performance of the business projects.
- It is also the goal that the relationship between TQM Practices and operation performance of business projects should be highlighted, because most of the business practices are devoid of TQM practices now a days.
- The last objective of this research work is to find out the number of business organizations that adhere themselves to the TQM practices and statistical tools to increase the performance (operation, innovation and financial) life of the business projects.

D. Motivation for the Study:

Below are the reasons that led to the initiation of this study:

- First of all, there is a dire need for this type of research work in Turkey. The problems pertaining to TQM are insurmountable. Therefore, this work would help Turkish businesses to pinpoint the difference and improve the products.
- Although the TQM approaches are being used internationally but less work is

done in the field that is more enough in determining the performance of business projects and implementing it. Once the devoted study becomes published, the researchers would be inclined to carry on further work on the subject or given hypotheses.

- Unlike the developed countries, Turkey lacks in TQM implementation and shortage of literature that contribute to the negative performance of the business projects. Therefore, bringing thoughts to TQM practices via this research is the main motivation so that the TQM practices must be exploited to the benefit of business world in the country.

E. Hypotheses of the Study:

There are many study results showing positive and negative (or non-significant) relationships or correlations between TQM practices and various performance indicators (Kurt & Zehir, 2016). Below all hypotheses of the study:

- **H1**= TQM practices is significantly related to Financial Performance of business projects controlled by statistical measures of quality.
- **H2**= TQM practices is positively related to Innovation Performance of business projects controlled by statistical measures of quality.
- **H3**= TQM practices is directly and indirectly related to the Operation Performance of business projects controlled by statistical measures of quality.

Every hypothesis would be tested with the help of advanced statistical tools as mediator so that the research work must be brought closer to accuracy. A detailed and comprehensive questionnaire would be designed keeping in view all these hypotheses of the survey. Final results of the survey would be checked in the SPSS software before being disclosed here in the research.

It has been the hot issue of today's world that mostly the managers and business thinkers have a great amount of knowledge on TQM practices but when it comes to practice, these techniques are not used properly by them. This results in the negative operational, financial and innovation performance of business projects. TQM practices are the only option for enhancing the operational, financial and innovation performance of business projects.

F. Research Methodologies

Quantitative researches are the most viable options for researchers when it comes to surveying the facts and figures. Most of the researchers opt this method for their research, because the survey done through this method is cost effective. It also saves the time for the researchers as they already face the issue of time during their work (Samson & Terziovski, 1999). This thesis also relies on this type of research methodologies. Almost 283 participants are selected from reputed business institutes in Turkey that are very indispensable in responding to our hypothesis.

The detailed questionnaire would be handed over to them in order to respond and reply to the mentioned questions. They will be contacted through mobile and email messages as well in order to ensure that the communication gap is shortened as much as possible (Nair, 2006). The questionnaire would comprise of almost thirty questions. The questions would be conceived keeping in view the fulcrum of the thesis and the need of investigating presented hypotheses in this study.

It would be our utmost effort to capitalize on the available options while investigating the questions of the research and interacting with the respondents so as to keep the quality as a building of this study. However, the need of improvement is always inevitable.

G. Limitations of the Study

The survey of a research is not an easy task to accomplish. It always faces some hurdles and limitations. Same is the case with our study, it has to encounter various limitations. First, the respondents for this study are the middle and top management of business companies along with educationists related with the business field. They sometimes refuse to cooperate, depending upon their mood. Second, the study is limited within Istanbul. Third, since the researcher is unable to get into direct contact with each respondent, the survey may become limited. However, the efforts would be put in to make the quality essence of research survey.

H. Structure of the Thesis

Chapter 1 Introduction. It contains detail skeleton of the study. A short

glimpse of every important aspect of the study is portrayed in this chapter. It gives a detailed view of every important topic incorporated in this study.

Chapter 2 Literature Review. This chapter deals with the hypotheses in detail. It also presents a holistic view of the background of the study, present contours and future implications. In this chapter we will be discussing on each of the hypotheses so that it can be proved.

Chapter 3 Research Methodologies. It includes research methods. The size of samples, respondents and the area of research all are discussed in detail. It also reflects light on the type of research questionnaire. The work would be done towards knowing the new inclination of respondents and their early responses with respect to the questionnaire handed over to them.

Chapter 4 Results and Discussions. It comprises of all of the results deduced from the survey and acquired through SPSS software. There would be a comprehensive discussion on every single result obtained in context of presented hypotheses and thesis statement. With the help of diagrams and charts results would be portrayed in an effective way in this chapter. Every chart and diagram would be discussed in its entirety in order to keep its face value intact. This would help us in coming up with good results at the end. In this chapter, previous and the present facts would also be brought into account. All the tests applied to this study in order to acquire results would also be discussed such as Regression, Alpha, Crown Batch, Mean and Standard Deviation, etc.

Chapter 5 contains Conclusion and Recommendations. This last chapter presents the entire gist of the study which is called Conclusion. The chapter also carry recommendations, surfaced on account of detail study of this thesis, for future research. Every viable suggest would not be missed. It would be welcomed here in this portion of the research. In this way the study proceeds to its ending.

İ. Scope of the Study:

The findings of this research are mainly concerned with the impacts of TQM practices on business projects, yet it also benefits other stakeholders as well. Following is the outline that describes this:

- As discussed earlier, this study does not only benefit the businessmen but also the students and teachers who are linked with the field of business where the probability of initiating business projects is very high. Turkey is the right place for this study as there are a lot of business entities and investors along with student community whose relation is with business projects (Forza & Filippini 1998). These business projects are of different kind and different magnitude. Therefore, the usually stuck with one single problem of using effectively the TQM practices in order to make their business projects effective. But most of the times they fail to do so because of unavailability of relevant research on the question.
- The study also aims to identify the present condition of Turkish firms and businessmen that whether they use TQM practices in their business projects or not. If used, how effective they were. If not used, what were the obstacles in adhering to the TQM practices. The absence of a formal practice of TQM implantation does not imply that TQM principles are ignored (Prajogo & Hong ,2008). When these questions are being answered with the help of researched work, most of hurdles would be removed in implementing the TQM practices to make business projects effective. Statistical measures would be used as a TQM practices so as to benefit the businesses. Once the results of TQM practices on business projects are positive, the trend would be settled to religiously follow the techniques in business projects.
- The nature of the questionnaire used to study this research also benefits all businesspeople in terms of knowledge. The questions in it are trifurcated. The first part deals with the demographic information and the second part is dedicated to the study of TQM practices and their impact on business projects (Taveira, et al, 2003). The third portion of the questionnaire includes questions that directly correspond to our hypotheses in order to prove them. Together, all of those would benefit the people who are directly or indirectly connected with TQM practices and business projects.
- The five elements or in other words variables are filtered from a comprehensive study from the past literature on TQM implementation on business projects. The successful test of these variables will surely help the businessmen as well as the

educationists in terms of assessing the risks and efficiency of business projects.

- Three main aspects of business projects are dealt with in detail in this research such as operational performance, financial performance and innovation performance. A detailed study on these objects surely helps us in implementing the TQM techniques to benefit business projects.
- The study is useful for carrying out the further research on the given topic and enhances confidence of the students and businesspeople to venture on the business projects. As the risk factor and all other indicators of successfully implementing the business projects are discussed in depth in this study.

J. The Relevance of TQM Techniques:

TQM has been widely used in the world of business today. Its techniques are of immense importance when it comes to determining the efficiency and effectiveness of the business projects (Prajogo & Hong ,2008).

TQM techniques help us in forecasting the outflow of funds. It also assists us in maintaining the quality of the raw material so that the material can be saved from damage. Different techniques are employed in order to motivate team members. Their retention is the soul of a project to make its way to the completion. Most of the business projects do not get successful due to this issue.

TQM practices are frequently used in the short-term projects for enhancing the marketing of the projects. A good market value is engineered through TV commercials and aids along with the social media platform.

TQM implementation brings innovations in the business projects. Managers are subject to regular scrutiny. They had pressure from the top management to retain quality in their projects. Therefore, they take full care of all the assets and commodities. They try to maintain their warehouses so that the stocked material does not get obsolete.

The projects that rely on TQM practices get faithfulness of their team members. Because TQM practices promises some new methods of rewarding employees. Through handsome rewarding techniques, the team members show through full support and dedication to make the projects work. As a result, the

efficiency or Operational Performance of the business projects is improved to a greater degree.

TQM practices also help us in managing the roots or group issues that are more common in business projects. The managers are directed to focus on the quality. They start observing minutely. They try to resolve every problem that arises in the group so that the quality of the work should not be compromised. With the dedication and strong will of managers to resolve any issue, these group problems start to fade away (Perdomo-Ortiz, et al, 2006). The reason behind that is most of the unresolved issues are due to lack of interest of managers to solve them, and their existence negatively affects the quality of a business project. Therefore, it goes without any doubt that the TQM implementation in business projects is of great significance.

K. Performance Measurement Practices:

Performance is termed as the capacity to perform and complete certain tasks. And that performance is measured in terms of accuracy, time, speeds, etc. (Voss, 2005). Operational performance that is being gauged and measured is a real performance on which efforts are being put in line with the organization's settled goals and objectives (Moulin, 2012). These goals are sometimes common for business organizations for example they include, liquidity, financial growth and improved performance of the firm in stock markets. Performance measurement practices are widely used in the world of business today. Different techniques have got birth due to advancement in science and technology which, in turn, has speeded up business transactions world-wide.

These different performance measuring techniques are used together to develop a performance framework which is substantial and effective. This framework along with its components provides necessary knowledge to the management of an organization for its smooth working. The framework includes following techniques:

.1.1.1 Approaches: Measuring Reporting Efficiency, Structuring Performance Targets, Selecting Feedback Systems and so on.

.1.1.2 System Tools: Developing a chain of reporting from managers to bottom

level employees so as to gauge the performance of every person involved in the organization. Customers must be included in the chain to measure the performance of an organization effectively. Their feedback can be used as a tool to measure performance.

Performance Measuring Processes: Different processes in the form of short tasks be given to the managers to check the efficiency of the work being assigned to their department.

When all of these components are streamlined and or relied upon, the burden on managing body of an organization is reduced and work efficiency is improved. Because the performance measurement framework is very helpful and evaluate and structure effective working policies by which individual performance of a business firm is improved. Improving individual performance means improving operational, financial and innovation performance together at one time of an organization. Because these components are interlinked with one another; improving any one element leads to the improvement in rest of the elements.

For instances, developing performance targets improves the capacity of managers to identify and distinguish between the current and the past performance. They will be able to set a benchmark of the performance by evaluating the past targets and setting new ones. They will also be able to recognize the gap in the previous and the current performance and improve it (Voss, 2005).

L. TQM Definitions and TQM Development

Over the years, the term TQM has emerged from the term inspection. When sojourned into the history, we find that it was Egyptians who started inspection and made it a tool of testing and checking quality. The need of testing quality emerged when the Egyptians were engineering pyramids. During the Second World War, the inspection technique became more costly and difficult to impart due to complexion in aircraft technology. Then, started the shift from inspection to TQM (Kanji & Yui, 1997).

When the shift was complete, following elements were incorporated and utilized:

- Quality recording manuals
- Complete Documentation of the record
- A framework for self-inspection of employees and managers
- Product testing along using statistics to improve quality

These elements became part and parcel to ensure quality control and quality retention. The first stage was to move ahead from emphasizing on quality to Quality Assurance or Quality management. Emphasizing on QA or QM means focusing holistically on quality system. This includes every aspect of quality and tools to achieve quality. At first, only one or a few other aspects of quality were taken into account. When the system was transformed into TQM, auditing the accounts, processing controls, improving poor quality and reducing cost, are used as tools (Kanji, 2002).

Hence, Quality was to be taken into a defined way. Now, it was to be studied and achieved through some specified principles and practices. Since the definitions of Quality are numerous so is the case with TQM definition, is also varies with different perspectives.

One of the Scholars have defined TQM as ‘‘fitness for use’’. This became relevant in the world of business as the firms were able to understand its dimensions and bring it into practice. This definition was given (Juran, 1974). His concept of Quality is built upon trilogy. That trilogy is: quality planning, quality control and quality improvement. Now different tools and techniques are to be employed to achieve these elements of Gryna & Juran’s (1974) trilogy. Achieving one of them, pushes you up to the next one. In this way, the cycle of quality is accomplished.

Contemporarily, TQM has become a full-fledged quality system that helps an organization in many ways in establishing Quality and its control. It assists policy-makers in devising relevant strategies to help them achieve quality. When quality is ensured, the life of a business is enhanced. Market value of that organization is increased. Business projects efficiency is ensured when you are having a quality control.

M. Views of Different Authors on TQM Implementation:

A great many scholars of TQM agree that TQM is a new concept and a new model that for businesses to implement, maintain and retain Quality in their business projects. The aim is to direct all the benefits of Quality to all the customers that emanate from the use of TQM. All the activities and processes of a product must be speeded up that help not only business organization but also the clientele.

According to Dumond (1994), TQM is a business philosophy whose main aim is to achieve customer satisfaction with varying ways and varying degrees. This satisfaction is to be achieved through Quality demonstration of whole the organization.

As per Koller (1995), TQM is a system that manages an organizations inputs, outputs and results. TQM is a blend of new techniques, changings in internal environment of the organization, techniques to forge deeper cooperation among members and customers, and capacity to entertain customers suggestions to continuously improve Quality.

Oess (1994) define TQM as a two-dimensional system. One is technical aspect and other is social. The former includes systematic and technical dimensions and the latter is a socially interlinked relationship. That relationship is forged when TQM system of maintaining quality is implemented. It caters to the need of each component of the organization. It benefits general employees from top to bottom. It guides the top management to achieve their goals by maintaining Quality through TQM. It gives customers a say in improving product's Quality.

TQM is conceived and implemented as a tool to complement Quality standards not only in the product but also in the normal functioning of the organization. This is the main point where the use of TQM relates to our hypothesis.

N. Role of Employees in Ensuring Quality Implementation:

Over the years, researchers and intellectuals have presented a number of different frameworks and models for the implementation of Quality systems. Because a suitable quality system such as TQM drives policy-makers to the path of perfection and glory. Their calculations are rightly supported and accurately hedged

when you are using a quality system model.

However, implementing or implanting a quality system in an organization does not necessarily mean to blindly follow the system. But that organization needs to blend those standards of a quality system with its internal environment. In other words, the use of any quality system needs to be consistent with its goals and objectives. Only in this way, the performance of business projects can be improved and relied upon. It is generally acceptable fact that without imparting quality system or introducing statistical measures of quality, neither the performance of company nor its business projects can be improved.

When it comes to determining the role of employees that they can play in ensuring Quality, their role becomes insignificant when the implementation is carried out at the top level and in strategic terms. But when the implementation process is carried to the bottom level and needs employees' involvement, then their role is of great importance (Dumond, 1994).

According to Mr. Dumond (1994), Performance measurement techniques are used to help organization achieve its agendas and mission. Its use not only improves organizational decision-making but also individual decision-making power as well. Statistical Measures of quality are employed to achieve that aim along with other suitable tools.

Employees can help maintain Quality system in the following ways:

- Effective implementation of tasks given by or assigned by the top management
- Internal atmosphere of the organization remains cool and calm which forges employee to employee cooperation
- Employee motivation is achieved when their opinion is entertained. Consequently, organizational culture becomes friendly and effective for growth
- Inventory management is improved. Because satisfied employees do not waste inventory while using it
- Flow of information remains smooth and quick from top to bottom

O. Impacts of Using Statistical Measures of Quality:

Undoubtedly, using statistical measures to ensure quality affects most of the aspects of an organization. Its business projects are the real beneficiaries. It not only improves Quality of manufacturing process but also the process of initiating different business projects- both short-term and long-term- to ensure quality and the use of TQM. Below is the list that demonstrate the impacts of the use of statistical measures of quality:

- Quality Assurance Cell's capacity to monitor things minutely is enhanced. Statistical measures of quality help QAC's in-charge to observe things closely with available facts and estimations. His competency is enlarged through providing him speedy calculations and estimations to save his energy and time. Consequently, the quality maintaining process of an organization or a business project is improved by leaps and bounds.
- Checks & Balances system is improved. Top management is assisted by the standards of checks and balances provided by statistical measures and other quality retaining tools to assess each and every activity. Any misadventure or wrongdoing is vigilantly arrested because the framework of monitoring is already given in the form of checklists. The task of every employee is evaluated. His performance is measured, and he is rewarded on his outclass performance. These things help business projects succeed. And these tools are provided by statistical measures of quality through TQM.

Concludingly, statistical measures of quality offered in the form of TQM are always helpful towards the realization of business projects. They offer a number of tools that help managers implement Quality Assurance, checks and balances, gauge employee performance, find out fault lines and articulating strategies to overcome them, customer satisfaction, an approach to extract suggestions from customers and visitors, and to observe and evaluate to what extent the goals of the organization are achieved.

II. LITERATURE REVIEW

A. Introduction:

For the purpose of going into the depth of the concepts of TQM practices and their impact on the business projects, this chapter has been designed. This includes a bird eye view of all the new concepts with regard to this study (Kaynak, 2003). For example, TQM practices in Turkey; its effectiveness in the field of business; new drivers and so on. The chapter deals with each variable of this study in detail and provides relevant findings so as to substantiate the stance. (Kaynak, 2003).

B. What is Quality?

Though there are a lot of definitions on the word quality, yet no single definition is applied worldwide. Every firm defines it on the basis of its own perspective. Yet, there are a few scholars whose given definitions are widely accepted. They include Crosby, Deming, Feigenbaum and others. Quality is what that fulfils all the requirements or criteria of a product or services, all of its essentials are satisfied (Crosby, 1979a).

The customer is subjected to receive all the features that a manufacturer claims to incorporate in its product or receive services that a service-provider claims to provide to his customers (Crosby, 1979b).

1. Deming's view of quality is given below:

- Quality is nothing if it does not conform to the customer's requirements (Deming, 1986).
- Quality, when it comes to defining it, is not a one-dimensional. It is multifaceted. Therefore, it is very difficult to define it from the view of one single characteristic. It cannot be universalized (Deming, 1986).
- Quality is summed up as an agent that equates with the customer's

expectations. The customer has various expectations when he thinks of a product. Now, if the conceived product conforms to all the customer's demands, it becomes quality product (Deming & Edwards, 1982).

2. Feigenbaum's thoughts on quality are also noteworthy.

- Quality does not mean quality when it fails to comply the requirements of a customer (Feigenbaum, 1983).
- Since the characteristics of quality cannot be universalized (applied to every country), it must be taken into account comprehensively, entertaining the difference of countries' priorities (Feigenbaum, 1983).
- Quality is not static owing to the fact that customer's needs, wants and expectations are not static. They change from time to time. Therefore, quality is dynamic (Feigenbaum, 1983).

The thought employed by him means that quality is deeply linked with satisfying the customer's needs. Hence, the manufacturers are to place themselves closely to their customers so as to make quality complete with regard to its definition.

C. TQM Practices and the Relevance of Quality:

In order to study TQM practices and their profound impact on the business projects, their operational, innovation and financial performance, it was very important to reflect light on the term ‘‘quality’’. That was the reason that we started our second chapter with defining the word quality from the definitions of prominent scholars.

To move ahead, quality means to satisfy customer's needs. And, customer's needs are dynamic. They change from time to time. Owing to this fact, we cannot fix the standards of quality for a particular product or services. We need to keep these standards of quality on open end to entertain the changes (Carlos Pinho, 2008). The TQM practices are the essential tools for doing this. But the irony is that since the standards by which quality is measured are different from country to country, one single literature of TQM is insufficient for all the countries of the world. This was the need that co pled us to study TQM practices in detail for Turkey.

Once TQM practices are implemented with full zeal, the positive impacts are recorded on business projects. In practice, most firms that claim to implement TQM in their business projects lack modern techniques. There is also deficiency of relevant literature (country-wise). Lack of training of the staff further deteriorates the situation (Carlos Pinho, 2008). This all, in turn, affects the financial, operational and innovation performance of a business project. The prime object of this study is to help Turkish community in this regard. The findings of this study once published will serve the purpose of presenting an outlook of TQM practices that positively affect the overall performance of business projects.

D. Impact of Statistical Measures of Quality on Business Projects Performance.

Statistical measures of quality positively affect the performance of business projects (Yong & Wilkinson, 2001). Statistical measures of quality are one of the major tools of TQM techniques currently pursued in the field of business. Statistical measures such as Frequency Distribution among the items, Regression tests, Probability, Forecasting, etc. all are the main ingredients by which quality is maintained and retained.

E. Quality Assurance System and TQM:

Since beginning, a number of times the doubts and disagreements blanketed the initiation of ISO 9000 in order to satisfy customers internal, external, and changing needs with regard to products and services (Vouzas & Psychogios, 2007). The main objective of ISO 9000 is to maintain and retain the quality of a product and services by introducing such qualitative measures (Kartha, 2002). Most of the authors and scholars admit that the ISO 9000 lacks in implementation. It operates as a paper driven work in some cases (Curkovic & Pagell, 1999). In order to maintain its standards of quality, human resource must be given to it.

This was the reason that the second version of it became a necessity. In its new version (ISO 9000:2000) an attempt is made to reinvigorate its document and meet its deficiencies (Najmi & Kehoe, 2000). In the new version there is nothing negative, but the benefits are seeming less than the previous one (Vousaz &

Gotozamani, 2005).

The issue is that the organizations that are ISO certified enter half into the quality standards i-e TQM practices. This is due to many demographic changes in the business organizations from country to country. Still the ISO is under consideration for further improvement (Laszlo, 2000).

Owing to ISO certification, the most important benefit that accrues is sustainability of business. It came to those firms which heartedly implemented quality standards. Due to this implementation, there were fewer customer loss, customer complaints, and product wastage (Chittenden, et al, 1996).

For small business, ISO certification also holds some fruits. As they were able to evaluate their progress with modern techniques. They got a comprehensive idea of their employees working, and this information enabled them to a greater understanding of their company's overall functioning (McTeer & Dale, 1996).

Keeping in view the above viewpoints of scholars, it can be deduced that QAS is an ISO tool for maintaining and retaining the quality of products and services. However, there were a lot of challenges in the way of ISO 9000 to implement its standards across the board. Yet some firms implemented it and got benefited from it. The QAS provided them with greater insights into their operational patterns along with future planning and orientation of their business projects. With the help of QAS- a TQM practice or tool- these firms were able to get deeper insights of their operational, financial and innovation performance. This, as a result, benefited them in terms of greater market value.

F. Business Excellence - A TQM Technique:

Relying on Business Excellence as mean to achieve quality for products and services has become a worldwide pursuit in today's life (Hakes, 1997). Quality has become an obsolete phenomenon and now it has been transformed into 'Excellence' (Peter, 2000). Business Excellence and Quality can work together to achieve greater harmony in order to excel in the world of business.

Afterwards, it seems that the word TQM and Quality have been replaced by the new word Excellence in most of its facets (Dale, 2000). This transformation is

because of the new developments in the field of business and its literature.

The term Excellence is more developed on the TQM principles than on Quality Management techniques. QM techniques were used specifically. But the term Excellence has avoided this narrowness and goes farther deeper into the TQM principles to bring out most complimenting tools of Quality (Adebanjo, 2001).

Business Excellence is one of the basic tools of TQM techniques that aims to transform a business or its projects into Excellence. The word Excellence, as discussed above, has assumed a greater meaning in the world of business as it absorbs QM techniques, TQM principles and the concept of Quality in itself. This enhances its scope and efficiency to benefit the business through its vast principles.

With the help of Business Excellence, businesses come to know the worth of time, the faithfulness of their employees, and the retention of customers. They also come to know various techniques by which the quality of a product or service is improved (Rahman, 2004). With lesser input they get larger output. This all comes with the blessings of Business Excellence. Business Excellence promises to deliver quality that motivates and attracts customers (Hakes & Reed, 1997). Most of the time, the products quality is changed when it goes restructuring or updating. When new editions of a product are made, its quality is compromised. Because the businesses are motivated by monetary gains. They try to better the product's outer look while ignoring its quality. Therefore, BE is one of the essentials tools of TQM practices to maintain and retain Quality in products or services.

G. Gauging the Organizational Performance:

Apart from practicing daily tasks, businesses need to restructure their mechanism for measuring the organizational performance for the purpose to assume excellence (Kanji, 2002). TQM practices have introduced methods that are very helpful in measuring the organizational performance. These methodologies modify performance reporting methods that obviously benefit organizational performance.

TQM gives a long life to businesses as it provides them with quality, assurance, sustainability, growth and customer care which all are essential for good organizational performance (McDonald, et al, 2002).

In order to ensure that all defects and shortcomings are diagnosed, timely monitoring and reporting is very indispensable. And TQM provides these techniques through monitoring strategies. According to that monitoring report, business initiate training programs and work for improvement. At the end of the day organizational performance is improved (Palo & Padhi, 2003).

Most of the high-ranking companies of the world have implemented TQM strategies for the reason to continuously work for improvement (Abbas & Yaqoob, 2009).

Traditional practices are inadequate to provide a comprehensive solution for improvement. Since they only provide information to an organization's past performance. They do not cater for the daily operational information (Dale, et al, 2001).

From the above-mentioned references, it becomes clear that organizational performance cannot be improved if a business is unable to implement modern techniques provided by TQM principles. Getting past data only does not mean cracking the problem. However, viable solutions deduced from the use of modern TQM techniques are very important. Only then, the organizational performance can be directed to the right path.

Antiquated methods of measuring the organizational performance have become an unfit in this modern age of globalization where the weak is victim and the strong is on the driving seat. Many methods of beating a rival firm's business have come to light that leave old practice-based businesses far behind (Lee, et al, 2003). That is the reason that TQM practices acquire central role in providing standards of measurement. With these standards, organizational performance is enhanced. From the above discussion following facts are derived.

H. Obstacles to Organizational Performance despite Using the TQM Practices

Table 1: Literature Review

	Behind the Scenes Psychological setbacks of the Employees	If employees are not psychologically relaxed, they do not give their hundred percent in their work. In today's world where a lot of new problems regarding health, wealth and technology have emerged, employees receive psychological shocks that do not allow them to work effectively despite receiving trainings how to implement TQM principles.
2	Personal enmity or peer pressure insecurity.	TQM implementation is also disturbed when employees have disagreements between one another for personal reasons. Professional jealousy or peer pressure does not allow them to share knowledge or expertise with each other.
3	Regional divergence in compliance of the employees.	The backwards areas of usually do not provide morally strong employees for an organization. They don't show full allegiance to the organization for moral shortcoming. This also hinders TQM implementation. Because employees don't change their behavior despite receiving many moral trainings. They are ingrained with their regional customs; no matter they are right or wrong. Therefore, regional blend of employees affects organizational performance.
4	Employee switching from one organization to another.	In most of the cases, employees keep on switching. This becomes their routine. Companies do provide them trainings on implementing TQM but all in vain as they leave one firm after another. In some particular areas where firms operate, this is a custom.

İ. Conceptual Framework

After having a very comprehensive discussion over TQM practices, their implementation and their relevance to the business projects, we come to the conceptual framework here. There are three dependent variables and one independent variable that conform to our thesis statement. The former three variables are: Financial performance, operational performance and innovation performance and the dependent variable is statistical measures of TQM.

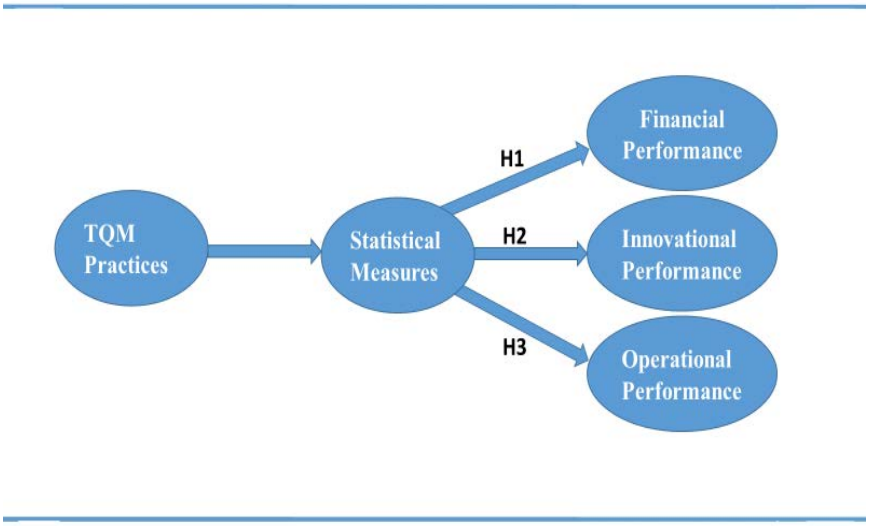

Figure 1: Conceptual Framework

J. Initiation of A Business Project and Statistical Measures:

When a business team or any organization is willing to initiate a project, it has to apply some techniques in order to test the probability of generating profit and minimizing the risk of loss (Huq & Stolen, 1998). To get accurate calculations of this, businessmen are given Probability test in TQM as a statistical measure. The probability test is the element by which the estimation of profit and loss is done. This estimation reduces the risk of planners. As a result of this TQM technique, business projects are positively benefited. Because when this technique is applied, the risk is reduced, cost is minimized, and the time is saved. This, in turn, adds to the efficiency of a business project.

K. Past Practices and Business Projects:

When there was no concept of TQM or its standards of maintaining quality, doing business was not that much easy. There was a lot of risk attached to it. There was a high cost of venturing. Estimation was not usually achieved. As a result, the efficiency and realization of a business venture was ineffective and full of risk. But with the inception of TQM and statistical measures of quality led to their efficiency.

When the statistical measures of TQM were brought into action, the efficiency of business projects developed by leaps and bounds. The investors were

able to make estimation of risk and opportunity. They now had a number of new techniques of improving the productivity of their business. The operational performance was improved. Motivating the employees by providing fringe benefits and health cover enhanced their integrity which in turn added to the business' benefit (Wind & Mahajan, 1997). New techniques of inventory management were introduced which improved the efficiency of the business projects.

New methods of preserving stock increased the productivity of business projects. For example, maintaining the warehouses' room temperature, boarding and off-load of inventory with full care, statistical measures such as frequency distribution table help the management to record the inventory data effectively. The maintenance of inventory record brings financial stability that establishes a longer life of a business project.

L. TQM Practices and Statistical Measures:

The main concern of TQM is to enhance the quality of product and services. For that reason, different standards of TQM are followed and applied. Statistical measures are one of them.

TQM practices and statistical measures of quality go hand in hand with each other (Osuagwu, 2002). Both of them complement each other for the fulfilment of quality. In isolation of TQM practices, statistical measures of quality are of no use. That is the reason we try to explore the significance of statistical measures in company with the TQM standards in this research. Their in-depth study will make businesspeople utilize their expertise of business projects in a good and effective manner.

For example, one of the standards of TQM is the satisfaction of customers' needs and expectations. This objective cannot be achieved without using statistical measures of quality such as Budgeting techniques, Frequency Distribution, Regression tests, probability tests, Charts, etc. these tools help a pioneer advance his project with relative ease. Time is saved. Not too much quantity is required for recording and analyzing the financial data. This task is easily done.

1. Redundancy Analysis:

It is one of the important statistical tools that aim to increase the quality of business projects by checking the relationship among the set of variables. In other words, this test eliminates repeating or conflicting variables. Their relevance and diversity are acknowledged. It is carried out by picking up the one variable from a set of variables and contrasting it with the other variables in other sets of variables. The Redundancy Analysis was first applied by (Coleman & Douglas, 2003).

This test improves the quality of business projects by a great deal. When a project is launched, it entirely hovers around new assumptions, new predictions and new variables that are often conflicting or having similarities. This is a universal case. Therefore, it becomes very difficult for the newly budding business to have quality and efficiency. Hence, the redundancy test weighs each variable, each forecast and each expectation regarding the process of maintaining and retaining quality (Dale**,** et al, 1998). The test measures closely the similarities between the variables. It consolidates the harmonious relationship between them. Noting gets repeated or overvalued. In this way, the Redundancy Test of statistical measures of quality positively affects the business projects.

2. Diversity Test:

The second important aspect connected to Redundancy test is diversity test. Quality is comprised of different components that are diverse from each other. Each project must contain elements that are different, their difference is upheld. When this principle is applied, the quality of the projects improves. Every manager tries to bring authentic elements and data that is diverse enough and capable of producing quality. Financial procedures are dealt with effective tools and techniques. Operational performance is gauged by different models of management. Innovation performance is enhanced when you have diversified minds with you having diverse experience and expertise. After all, the quality of business projects is improved along with their efficacy.

M. Financial Performance:

The financial performance of a business project is very critical. Every business depends on its financial performance. The better the financial performance of a business, the better the chances of growing. A business's lifecycle is dependent on the financial performance. Therefore, its maintenance is worth mentioning.

Financial performance of a business is affected by two main factors. One is old techniques of recording and forecasting the financial data and the other is incompetent management. Firstly, most of the businesses resists changes (Adebanjo, 2001). They are very slow when it comes towards sticking to the change offered by new trends. The methods on which financial performance is based are not updated. They remain antiquated. As a result, the financial performance of a business projects remains drowsy and dull despite spending much on its improvement.

For example, most of the SME rely on manual work. Some banks also have not adhered themselves to technology. They keep their financial track record on generals and notebooks. This old technique of recording data is eligible in this modern world. Therefore, the businesses which apply this technique leg behind the other firms in terms of financial performance.

When the financial record is maintained manually, audit is not carried out easily. Employees are unable to compare the current financial progress with that of the previous year's (Ahire, et al, 1996). Because the pages on which the financial record is spanned are too many to be analyzed. Usually the practice of audit and comparing previous performance goes missing and the financial performance of that business project gets badly affected.

Secondly, the incompetent management adds fuel to fire. When a business is up to date with the modern technology and modern techniques of recording and analyzing the financial data, the management deteriorates its quality. In some businesses or firms, the staff is accustomed to status quo. They don't want to streamline themselves to new techniques. They don't want to transform their way of doing things (Al-khalifa & Aspinwall, 2000). This attitude sometimes proves lethal for the business entities. Because in the financial matters, change is inevitable. New rival firms cannot be competed when you rely on old techniques. And to change the ingrained psyche of employees is almost an impossible task. When this attitude is

found in the people who are connected with the financial sector, then the performance of a project becomes bleak and cheerless (Al-Shamali & Denton, 2000). Hence, if a businessman wants to make his project successful, he has to capitalize on the available statistical measures to improve quality and efficacy of his project.

1. Change Management:

Under TQM principles, change management is important one. It is the technique that reminds all the stakeholders of business world to make themselves habitual of entertaining new changes in the system. It awakens them to introduce new trends and methods of doing financial work so that the financial viability of a project can be made stronger and long-lasting. Change management educates the managers how a change can be welcomed in the undergoing financial system (Agus, 2001).

How the hardened employees can be streamlined. How the overall financial performance of a business project is to be improved. This can be done with following steps:

Table 2: Change Management

Using Statistical Software's to record Financial Data.	To avoid manual functioning, new accounting software's can be relied upon such as Peachtree. It will make the financial analysis easy and finding the track record within a few seconds. In turn, the quality of financial operations will be increased.
Financial Certifications and Bonuses.	Financial employees must be motivated to pursue different financial short courses to enhance their financial skills and expertise by fixing an additional allowance to their salaries.
Frequent Exchange of Financial Information	Lack of cooperation among the employees badly affects the financial performance of a project or a firm. The flow of information is the only source by which organizational performance can be improved in all fronts. Therefore, businesses have to make their employees share necessary financial information with each other to increase overall growth of the firm in general and financial performance in particular.

N. Operational Performance:

The second variable of this study is operational performance that is triggered by the use of statistical measures. TQM techniques also play their part in this regard. Without TQM implementation, statistical measures cannot achieve positive operational performance (Baidoun, 2003). Both the TQM principles and statistical measures go hand in hand when improving the operational performance of business projects.

There are many hurdles in the way of achieving satisfactory operational performance.

Today, most of the businesses are struck with this issue of how to get satisfactory operational performance **(**Baidoun, 2004). But there are four main hurdles in improving operational performance of a firm. After going in depth of these issues, determining their nature, these hurdles would be removed with the help of TQM principles and statistical measures of quality. The following are the main blockades in the way of achieving higher satisfactory operational performance:

- Lack of demarcation of Responsibility of short tasks
- Dearth of funding or late in disbursing funds
- Personal Relationship
- Undue influence on profit making

1. Lack of demarcation of Responsibility of short tasks:

There must be a clear line between the responsibilities of each employee. The clerk should not be allowed to interfere into the matters of accountant, nor the accountant be left independent to repeat the same. The supervisors should not be allowed to meddle in the work of managers nor the laborers into the work of supervisors (Beer, 2003). But when the tasks are short and they can be performed by anyone, without requiring the delicate skills or expertise, the management delegate the task to anyone under them. This mixes up the tasks of clerk with that of accountant and the task of laborers with the managers. As a result, the overall operational performance of the firm is badly damaged.

For instance, Mr. A is an inventory manager. He has a good personal in the

whole firm. Each member of the project which that firm has launched respects him. He has an advantage of acquiring the services of anyone from the entire project team, he has to spend only a few words (Bhat & Rajashekha, 2009). Almost 15 men work under him as stationery management staff. But he needs 4 persons more. He requests the construction workers to come and assist his team. Owing to his good image in the project team, the workers cannot reject his request and they rush to provide Mr. A required service. The task is done and Mr. A is very happy.

But the irony is that the construction workers have no idea of managing the inventory. They don't know how to lift a cartoon filled with inventory, what precautions are to be done, how to unload it and so on (Brown, et al, 1998). They do it in the same way they perform construction work, with ruthless hands. As a result, the inventory cartoon gets damaged. No one form the top management knows how this happened. They all were focusing on the completion of task not on the method that how the task would be completed.

Such types of incidents are rampant in business projects. They usually have hurry to complete them. Thus, they don't care of the demarcation of responsibility in terms of expertise and experience and the operational performance is badly affected.

2. Dearth of funding or late in disbursing funds

The second hurdle is this. In most of the cases, funds are the main culprits of failing the business projects. Small business projects are launch by almost every firm. The same is the practice of companies here in turkey. The top management conceives a business plan and allocate some funds for it. The project team is hired. The project is practiced into reality. But from time to time, the top management gets busy and the level of determination for the conceived projects dwindles (Chang, 2006). Their interest in the project's finalization also whisks away to the present business opportunities. They provide funds to the project team with lukewarm interest. In other cases, a little amount is initiated at the start of the project and rest of the amount is not disbursed at the required time.

In this situation, project team doesn't get salaries on time. They do late in the finalization of the project since they have dearth of money or they try to minimize the operational cost by reducing the quality which in turn affects the operational performance of a business project.

3. Personal Relationship

Another major stumbling blocks. Every organization has some distinctive goals, visions and missions. It structures its policies accordingly which are distinctive in nature. It, then, makes its employees aware to adhere themselves to the organization's vision, mission and its policies (Chang, 2006). These policies and procedures, afterwards, make a distinctive organizational culture. But this culture is destroyed when personal relations among the employees are consolidated.

Employees build friendships. They even embark on marriages when the staff comprises male and female. Organization's goals become far, and the personal relation comes closer. They, the, surpass organization's rules to salvage their relation. When so is the case with any organization, its operational performance cannot be improved? It remains a distant dream for it.

For example, there are two friends working in the same project as team members. One day, one of them is late inn coming to office. He asks his friend to make attendance on behalf of him. This deteriorates the individual's determination level to an organization's mission. In other case, a friend is lazy in his work (Chow & Lui, 2003). He is likely to be fired but is not fired so far because he gets help from his friend who is competent enough. When the management points finger to the lazy friend's performance, the competent friend comes to his salvage and helps the lazy friend complete his task. The competent friend does not care of quality. He is concerned with the completion of task. And, the presence of lazy friend in the team also remains. Thus, the overall operational performance is disturbed.

In other case, there are two life partners in the project team. They complete their tasks with their own style. They support and complement each other. The husband's work is completed by the wife and the wife's work is supported by the husband. This is positive thing in business ethics because both are working with cooperation and collaboration (Claunch, 1993). But when this cooperation is between husband and wife then it is not cooperation, but order passed by the lazy husband to complete his task. He doesn't help his wife. He only eyes on the completion. Now, wife whose has no expertise or any experience in the work of her husband completes the task but without maintain its quality. In this way, personal relations destroy and damage operational performance.

4. Undue influence on profit making

Every business starts with aim of earning a handsome amount of profit. Profit is the sole purpose of business (Abdullah Hokoma, et al, 2008). But some firms or business projects give undue importance to profit making. Their policies and methods become material in nature which do not uphold the welfare of the employees as well that of the customers. When the top management repeatedly insists on profit taking, employees also become profit oriented. In the midst of profit making, they become prone to pressure (Coleman & Douglas, 2003). Top management applies pressure to employees to achieve their targets because they need profit only. This has a psychological side-effect. Employees get hurt psychological. They don't give their hundred percent. A firm having employees who are psychologically weaker cannot achieve satisfactory operational performance.

5. Towards Improving the Operational Performance:

- Statistical tools such as redundancy analysis can help us wipe out the very first hurdle of demarcation of responsibility. Mixing of tasks is the main blockade that blocks the way of operational performance towards upliftment.
- Lack of funding cannot be improved by relying on the probability tests. Managers first need to check the chances of realization and then invest so that the flow funds should not be blocked.
- Personal relationship can be converted into cooperation. This can be done by taking hep of statistical tools. For example, designing the questionnaire and checking the relevance of questions with the issue that can be useful to diagnose the personnel relationship and their harmful impact.

6. Performance Measurement and Operational Performance:

Operational performance is enhanced when a firm uses effective performance measurement techniques. Without having sound performance measurement tools, a company can never rise. It is this measurement that determines an organization's place. If the operations of a firm are not effective and efficient, it will never achieve its goals and objectives (Deming, 1986). In order to achieve higher organizational goals, effective performance measurement tools are to be employed to check quality, effectiveness and all other indicators of operational performance (Oakland, 1989).

Statistical measures can also be employed to improve an organization's operational performance. For example, Redundancy Analysis, regression analysis, work on SPSS, etc.

Performance measurement comprises of various elements (Voss, 2005). A brief sketch of them is given below.

- Flow of information
- Target setting
- Forging good feedback mechanism
- Point out flaws
- Technical test of planning to know whether the planning is poor or good.

Performance measurement tools if implemented with full zeal, the fruits are numerous. Operational performance would be increased. Every employee from top management to bottom layer would be well acquainted with the information necessary for smooth working. Owing to performance measurement tools, there checks on every person working in an organization or in project team.

Every person is given a set of targets according to his job responsibility. He is motivated to accomplish his targets. For that, he is given fringe benefits and other rewards. He strives hard to achieve them (Dering, 1998).

Apart from this, different assessment phases are initiated to check the working of the all departments. Day to day operations are tested by top management by using Performance Measurement tools such as Flow of information, Target setting, forging good feedback mechanism, point out flaws, Technical tests of planning to know whether the planning is poor or good. By this, overall operational performance of a firm or business project is increased.

O. Innovation Performance:

Innovation is a thing that makes a firm's business develop by leaps and bounds. It brings new things that help business machinery and business minded people do their task with relative ease. Employees are facilitated by technology. Their skills are enhanced and the way of performing tasks become easy and comfortable (Conti, 1999). Every business entity works on introducing innovation in its products, the way of doing things, and facilitating its employees. Some of them become successful while others do not. Firms face two main issues when they measure innovation performance: cost of switching and the difficulty in streamlining.

Different business projects are launched by every business firm in order to bring innovation in their products and methodology of working. The aim is to improve quality and increase the chances of earning handsome profit (Curry & Kadasah, 2002a). For that purpose, they change their products features, color and design to attract the customers. To ensure efficiency, they bring modern machinery and techniques for their working. Usually, the less popular or newly born firms switch to innovation. They need something unique to popularize their product that is the case with the old firms having great market value and customer chain.

Firstly, the new firms rush towards bringing innovation. They feel insecure having old features or static features. They tend to change their products features, coloring and design in order to attract maximum number of customers (Dale, 2000). In this pursuit they do not measure their capacity of sustaining the innovation or change, their employee's skill level to master innovative techniques, and their market value to motivate the customers not to switch on account of having changed product of the same company.

Sometimes the management abruptly brings innovation which instead of producing fruits invites numerous operational issues. Customers are lost, employees get difficulty in mastering the new techniques, when such abrupt change is brought.

Secondly, the old firms hesitate in bringing innovation. They are preoccupied with the cost of switching product's features, design, color and texture. They feel that they have no need of this because they already have a good market value and customers. They opine that innovation is brought to increase the market value of new firm while the old firms don't have such need. They bring innovation as change only

to race with the rival firms. This innovation is sometimes brought in name only.

The reason behind this approach is to save the cost of switching from old techniques to newer ones. Once innovation is brought, the staff needs trainings. The firm has to bear the losses incurred by the staff during their learning. The company also has to pay them for extra trainings they receive. All these costs preoccupy the top management and they decide to bring necessary changes not innovation at all.

1. Statistical Measures and Innovation Performance:

Table 3: Statistical Measures and Innovation Performance

#	Measure	Description
	Forecasting	Forecasting can be used as a tool to determine the potential need of bringing innovation. There probability and other statistical tests that helps us in this regard. When the results are positive, old firms will change their approach and bring innovation.
	Reliability Test	Innovative techniques being employed under the banner of innovation are to be checked by this test. The test will show results against each element/ variable. Their validity is diagnosed, and the firm is motivated to retain innovation by discouraging the cost element.
	Frequency Distribution	It can help us in recording the data and representing it in charts and diagrams. Data portrayed in charts and diagrams is easy to analyze and interpret. Timely analysis of data improves innovation performance and the firm or business projects gets fruits out of this.

III. RESEARCH METHODOLOGIES

A. Introduction

This chapter is purely dedicated to present a brief sketch of research methods, data collection means, size of sample and their analysis. The research questionnaire, its types and nature. The research plan is stated as: establishing research model, researching for the survey questions in the literature, constructing the best fitting survey from the alternatives, reaching the participants and informing them for the survey, gathering the data and measuring and analyzing the data to test the hypothesizes (Kurt & Zehir, 2016).

B. Research Design

The study is based on descriptive form of research. It is largely followed in theses work in order to check validity of the data and present a more holistic presentation of analyzed data. The descriptive study is the form of research that has some objectives for a population, its size and certain ingredients (Malhotra, et al, 1996). The descriptive form of study is applied in order to study each demographic elements of this study in detail and to determine its reasons and potential impacts.

C. Target Population

Since the main focus of our study is upon the use of statistical measures on business projects performance in Istanbul - Turkey, we have target population of businesses operating in Istanbul - Turkey that frequently initiate short term and long-term business projects.

Each firm is taken into account in order to make the results effective. The 283 middle level managers and executive level managers from 68 firms of Turkey have been asked to complete the survey. Each firm's credentials have been deeply considered before handing over to its employee the survey questionnaire. With this,

both the credibility of the theses and reliability of the respondent are ensured. The credentials of a firm were asked as following:

- Number of employees. What number of employees a firm has: 1to 19, 20 to 100 or 100 hundred plus?
- Years in operation. How many years have been past the firm has existed since? Whether it is below 10 years, or it is in between 11 to 25 years, or more than twenty-five years.
- People trained. How many people in a firm has been trained to retain quality? Without quality approach, the data extracted cannot be reliable. Because of the fact that a person from whom you extract facts is not having pro-quality approach.
- Staff Development. Does the company encourage staff development? It includes moral training. Most of the employees contacted do not give positive response to the surveyor. It is because of their hectic job and lack of top management's interest in training them to help others. In our case most of the firm's employees contacted were good at giving us positive response. This is a blessing in disguise.

D. Research Methodology:

On behalf of past study all variables measured by Index of total quality management evolved by (Sadikoglu & Zehir, 2010) these questionnaires measured independent variables TQM Practices, Statistical measures, Strategic Quality Planning and Performance of Business Projects, and dependent variable evolved by (Terziovski, et al, 2003) which measured Performance of Business Projects. This scale also used by other scholars also in China and other several countries, (Taveira, at el, 2003) also used this scale to measure the scales. The whole questionnaires are composed of 30 that measures all independent variables and 22 items measures the performance of business projects.

E. Sampling:

The sample will be collected from Business organizations in Istanbul from both European and Anatolian sides. Simple and random sampling will be used for the

collection of data. The data will be collected from 284 managers of those organizations.

F. Sampling Size:

A survey, questionnaire, and sampling help the researcher to generalize finding and answers about the population.

A sample refers to subset of population, but this subset is only useful if it portrays and depict the larger population accurately (Cox, 2008). In a survey, the sample size is the number of findings, answer, or replicates to be included in a researcher statistical sample (Holloway & Wheeler, 2002).

According to Turkey Union of Chambers and Commodity Exchanges (TOBB), announced in December 2018 and established the last year-liquidated company statistics (URL-1). Accordingly, the number of companies in Turkey is 85,279. And based on (URL-2) the percentage of Istanbul companies 29.5%, that is mean the approximately number of companies in Istanbul is 25,075.

By using the below equation, the sample size required for this study is 268 responds.

$$\text{Sample size, } n = N * \frac{\frac{Z^2 * p * (1-p)}{e^2}}{[N - 1 + \frac{Z^2 * p * (1-p)}{e^2}]}$$

Where N (Population Size) =25,075, Z (Confidence level) =1.645, e (Margin of Error) =0.05, and P (Sample Proportion - uncertain) =0.5.

G. Analysis:

Firstly, the collected data will be analyzed by SPSS, and descriptive statistics will be used for all demographic questions by showing mean points and deviation points. Fir checking the validity among questionnaires using reliability statistics, regression analysis, ANOVA, R Square will be used to measure the significance level of variables and hypothesis testing, and finally, co-efficient Co-relation will be used to check relationship among variables.

H. Data Collection:

Data collection is the most important aspect of any research. The results of every research lie on this very important aspect. Most of the researchers do not adhere much importance to this phase which is why they fail in producing desired results through their researches. For that purpose, we have given a special attention to this phase of our journey so as to keep the research's results intact and effective for future use. In order collect data effectively we have used an all-embracing questionnaire that deals every aspect of our theses and hypotheses. Researcher use primary data collection, that means the whole data is collected by researcher via questionnaire's Performa having Likert type Scale. This questionnaire is distributed among the respondents to extract information from them.

İ. Extent of Manufacturing Process:

In the questionnaire, the statement was given that to what extent the firms in Turkey have manufacturing process. Some firms have little extent while the others heavily rely on their own manufacturing process, having manufacturing process of its own, the firm needs much the TQM standards to maintain quality in its manufacturing products (Deming, 1993). During the survey 283 firms' employees responded that their firms have full manufacturing process while other firms' employees said that they have subcontractor manufacturing process.

J. Nature of Questions Asked in the Survey:

Questions incorporated in the questionnaire are well-structured and well-conceived so as to complement the research work. Each question is an all-embracing statement that aims to deal with our hypothesis and tries to prove it with relevant data.

The entire questionnaire consists of two-parts Part A and Part B. **In Part A** The questionnaire consists of twenty-five detailed statements that deal with different aspects and hold different claims that are to be substantiated by the respondents. The statements backed by or rejected by respondents give us results accordingly and make our study complements. All of the statements included in the questionnaire

basically support and complement each other for the greater good of producing final results of this thesis that can be used, relied, implemented and retained for future use.

In Part B thirty questions incorporated and each question is followed by options. The options in turn have different values discussed above. We hereby give a brief outlook of the nature of each question. The Likert scale questionnaire is more authentic when it comes to collecting information with accuracy. It has one detailed statement. The statement, then, is followed by six options with number like 1,2,3,4, 5 and 6. The numbers are coded as following:

- Choice 1 comprises of the option **‘‘Strongly Disagree’’**
- Choice 2 holds the option **‘‘Disagree’’’**
- Choice 3 contains the option **‘‘Neutral’’**
- Choice 4 consists of **‘‘Agree”**
- Choice 5 contains the option **‘‘Strongly Agree”**
- Choice 6 contains the option **‘‘Don’t Know”**

Part B questionnaire is use for hypothesis testing and check relationship among variables. First eight items are concerns with TQM practices, next five items will measure the statistical measure that is mediator, other seven items are represents operational performance, next six items are measures the financial performance and last four items will measure the innovation performance. For example, question one deals with the number of employees; how many employees the firm has. Knowing this figure is very important as this makes us belief that the firm with higher number of employees will provide us satisfactory data and is also likely to implement TQM standards.

Rests of the questions are discussed below in the :

Table 4: Questionnaires Table

#	Question Type	Question Nature
	Extent of manufacturing Process.	This solidifies the truth of implementing TQM and statistical measures of quality. Firms with full time manufacturing process use TQM. The survey is extended only to these firms to get relevant data.
2	Operational Experience.	This question is intended to know the operational experience of a firm. The more experienced firm is the more operational techniques it has to effectively implement TQM.
3	Quality System	It has also been asked in the questionnaire that which type of quality system the firms use in Turkey. The purpose is to extract relevant information regarding TQM and statistical measures of quality.
4	Implementation Process	It was also asked that the process of implementing TQM was easy or a challenging one. This was asked to make the sense why some firms are failing to cope up with administrative issues and why some firms distance from TQM techniques.
5	Training of Employees	What is the strategy of the firms that adhere to TQM when it comes to retaining the quality? In turkey the response was positive. Most of the firms responded that they have trained individuals to look after the implementation process.
6	Employee Motivation	When the employees are not satisfied, they will surely not give their hundred percent. Therefore, TQM techniques asks the businesses to motivate their employees first so that they don't hesitate in implementing the TQM techniques.
7	Top Management and Implementation of TQM.	As discussed earlier, top management do not pay regular attention on quality standards only. It has a lot of distractions in the form of numerous tasks to be performed. With their lukewarm interest in implementing the TQM standards, quality cannot be retained. Therefore, it was necessary to know that what the level of commitment in Turkish firms is in this regard.
8	Customer Retention and Satisfaction.	The second most important aspect is this. Quality can be best judged from the level of customer satisfaction and the degree of customer retention. If a firm is losing its customers, it means it runs short on the quality standards

given by TQM standards.

Table 4: (con) Questionnaires Table

9	Communication Gap.	Is there any communication gap between employees, not because of medium of exchange but because of personal conflicts? If there is any possibility of communication gap, quality cannot be retained. It is very indispensable to make internal communication strong for maintaining quality.

As a result, we can say that the survey part of any research is a most crucial part. The hypotheses are built on it. The presented discussions are substantiated by this survey (Crosby, 1979). We have three main variables in this thesis. Each variable and its potential roots are discussed in detail. To present any hypothesis or statement is not an issue. But the main problem is its authentication, relevance and suitability. We have worked on that dearly. Detailed statements are conceived keeping in view the main artifact of the thesis. Each question is dealt in its entirety. The purpose is to substantiate each statement that is new and is inserted to bring new facts into light.

For example, in the above table, the type of question and its nature is presented to facilitate the new readers to know how our research methodology conforms to our theses and hypotheses.

The questionnaire would be analyzed using SPSS software. The data received against the questionnaire would be put in the SPSS. The software in turn would generate results along with tables to facilitate the readers with vision-based reading. Each element in the questionnaire would be separately studied and dealt with. The results would also be separately discussed and presented in the visual form (figures, charts, graphs, etc.). The main benefit of whole this process is to substantiate our claims that have been vehemently incorporated in this study. The topic is TQM and quality are maintained as well.

IV. RESULTS AND DISCUSSIONS

It is very much necessary to substantiate your claims with most-widely used tools and techniques. This has been the core value of research for a handful of years **(**Easton & Jarrell, 1998). We also adhere to this principle and have tried our best to substantiate our claims with SPSS techniques. In this chapter, results have been generated through SPSS software. These results are discussed and described in their entirety so as to facilitate the readers and stockholders of this research study.

A. Analysis of the Questionnaire:

The questionnaire contained variety of information regarding the respondents. It gave us a detailed and in-depth analysis of working of the firms, employees' experiences and their feelings that were very important, at least for us, to capitalize on the information for the best possible results to obtain. It also contained demographic information of the employees and companies so as to facilitate the readers and make our results more transparent and easier to understand.

B. Demographic Discussion:

The respondents who were contacted for this study numbered 283 (two hundred and eighty-three). Their level of commitment to cooperate with us was very encouraging. The information they provided led this study to enter its second of phase of analysis and discussions.

1. Number of Employees

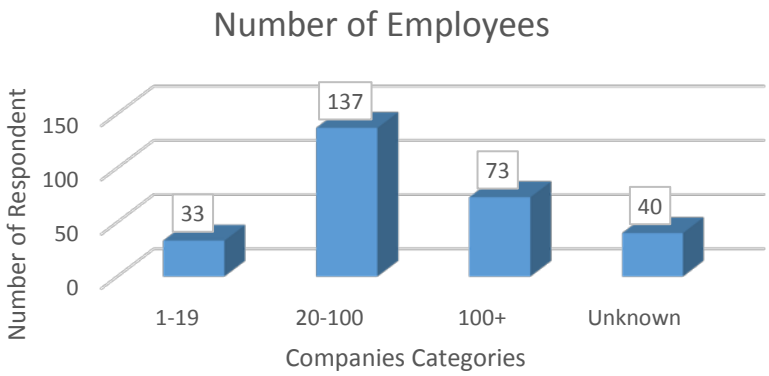

Figure 2: Number of Employees

Table 5: Number of Employees

	Frequency	Percent	Valid Percent	Cumulative Percent
1-19	33	11.7	11.7	11.7
20-100	137	48.4	48.4	60.1
100+	73	25.8	25.8	85.9
Unknown	40	14.1	14.1	100.0
Total	283	100.0	100.0	

This is the table that shows substantiation that we have collected genuine information and on that we are going to proceed ahead. The frequency of employees between 20-100 is 48.4 percent which is very impressive percentage. The valid percentage is 50 and ours is closed to fifty. It means in this respective we have reached the accuracy level.

2. Position in the Company:

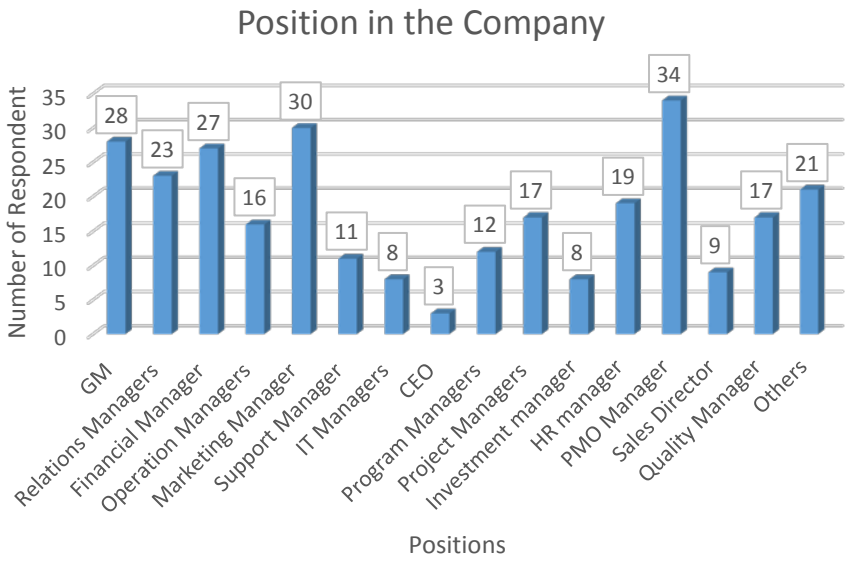

Figure 3: Positions of Respondents

Table 6: Positions of the company

Position	No. of Respondents	Percentage
General Managers	28	9.89%
Relations Managers	23	8.13%
Financial Manager	27	9.54%
Operation Managers	16	5.65%
Marketing Manager	30	10.60%
Support Manager	11	3.89%
IT Managers	8	2.83%
CEO	3	1.06%
Program Managers	12	4.24%
Project Managers	17	6.01%
Investment manager	8	2.83%
Human recourse manager	19	6.71%
PMO Manager	34	12.01%
Sales Director	9	3.18%
Quality Manager	17	6.01%
Other	21	7.42%

As per the above table different people belonging to different managerial hierarchy and different project firms were contacted to fetch information. The break-up of the total contacted people is shown above to help the researchers and spectaculars.

- First of all, 28 (twenty-eight) General Managers of different Turkish firms were brought into contact who, more or less, were engaged in initiating business projects based upon TQM techniques and tools to improve quality of the projects. Almost half of them showed positive response that TQM techniques affect business projects positively.
- Nearly twenty-three relations managers were contacted to present their own experience before our surveying team whether or not the implementation of TQM positively affects the business projects. Relations Manager is also a TQM technique in itself that is designed to maintain good and brotherly relation not only between the employees of firm gathered together for initiating the business project but also between the customers with the company.
- Another it was the response of Financial Managers. Because of the fact that we relied on three hypotheses one of them was related to financial performance of the business projects. Therefore, the response got from the financial managers of the different Turkish firms operated as a helping hand. Round about ten percent of the total respondents who were contacted were financial managers form different Turkish firms. They equipped us with relevant knowledge and in their opinion use of TQM techniques is a handy tool to successfully initiate and complete business projects.
- Of equal importance was the response of Operation Managers. A list of operation mangers was prepared by our team that chose these managers from different Turkish firms whose major work consisted of initiating business projects. The ration of operation managers from total respondents' list was 5.65%. From their perspective, use of TQM techniques is the real panacea to deal with issues like failure of business projects, personal enmity among project members, inability to get right person for the right task and so on.
- Almost 11% of the total people contacted for survey were Marketing Managers. They were very helpful for our thesis because we needed to know that how and to what extent the operational performance of business projects is speeded up or enhanced or in other word is damaged. According to the contacted managers, use of Statistical tools under TQM techniques really benefits the efficiency and efficacy of the business projects.

- Support managers were also considered while surveying the given hypotheses. They made up 3.89% of the total respondents' list. They also shared their important experience. According to which, basing the progress of business projects on Statistical tools of TQM enhances the capability of support managers to work more efficiently and quickly keeping in view the changing requirements of their job responsibility.
- Among other respondents, 2.83% were IT managers whose significant reply to our questionnaire helped us to reach on to the conclusion that the induction of TQM tools in terms of statistical measures develops the maturity level of the managers who work in a business project. Since, this approach gives them immense knowledge how to make the project successful without relying to the old and monotonous techniques of working.
- The response from the CEOs was also the hallmark of our survey. They also provided us with the necessary knowledge to proceed ahead in our survey and determine results of it. Since the efficiency of business projects cannot be determined in isolation with the top management, the reply of CEOs from different Turkish firms became a must go for us. It is also a fat that without their comments, we would have been unable determine the impact of use of statistical measures in business projects. Therefore, in their point of view, business projects are hardly successful without relying to statistical measures of TQM.
- Response of Program managers was also an important aspect of the survey. Almost five percent of the total respondents were program Managers who were asked to present their analysis in respect with the use of statistical measures of quality in business projects. They said that the use of statistical measures of quality in business projects improves the capacity of projects to benefit the company and satisfy the needs of both the company's employees (project members who are working in a particular business project) and the customers or other stockholders who rely on that project.
- PMO Directors is care about quality and to increase the performance of the business projects and to make policies, rules and regulations, strategies, about company. And its almost 12% from our sample.
- The most important thing is that the Project Managers were also brought into

contact with our questionnaire that was hovering around the title that whether the use of statistical measures of quality affects the performance of business projects positively or negatively. No one other than Project Managers can have a good answer for this. In their view, use of statistical measures of quality in business projects by Turkish companies has increased the ration of successfully launched and completed projects in the country which was not the case a few years ago.

- Investment managers were inquired in connection with our hypothesis of determining the financial performance of the projects with statistical measures as the basic building blocks. Almost 2.83% investment managers out of total respondent list gave us the stance that the use of statistical measures provides them in-depth analysis of financial opportunities and the ways to deal with financial issues to improve the output of the project.
- Another it was the response of Quality Manager and its almost 6.01% from researcher sample. Because our main topic in this research the Quality, Therefore, the response got from the Quality Managers of the different Turkish firms operated as a helping of the fact that we relied on all hypotheses. Round about 5 percent of the total respondents who were contacted were Quality Managers form different Turkish firms. They equipped us with relevant knowledge and in their opinion use of TQM techniques is a handy tool to successfully initiate and complete business projects.
- Almost 3.18% of the total people contacted for survey were Sales Director. They were very helpful for our thesis because we needed to know that how and to what extent the operational, financial, and innovation performance of business projects is speeded up or enhanced or in other word is damaged the sales volume and market. According to the contacted managers, use of Statistical tools under TQM techniques really benefits the efficiency and efficacy of the business projects.
- At last, the people who work in the Human Resource department of the Turkish firms were also contacted. 6.71% of these people rewarded the surveying team with their precious reply. They said that without imparting statistical tools of quality in the business methodologies, it is very much a tough job to materialize business objectives especially when you are pursuing your working on the basis of initiating short term and long-term business projects. According to them, all

firms of turkey need to opt statistical tool of quality as a starting point to start their business project.

3. Analyzing the Manufacturing Process

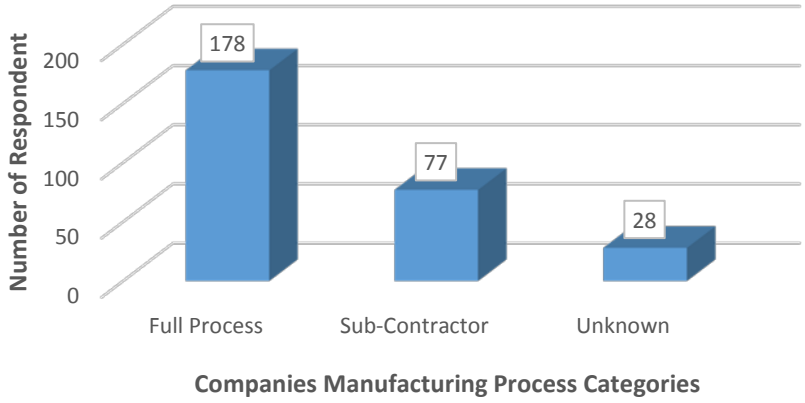

Figure 4: Manufacturing Process

Table 7: Manufacturing Process

Does your company have a full manufacturing process?	Frequency	Percent	Valid Percent	Cumulative Percent
Full Process	178	62.9	62.9	62.9
Sub-Contractor	77	27.2	27.2	90.1
Unknown	28	9.9	9.9	100.0
Total	283	100.0	100.0	

This portion was incorporated in the thesis survey in order to know that how effective is TQM implementation when a firm is having a full manufacturing process and is also initiating business projects. During the survey almost having 62.9% respondents were those firms whose business resided in full manufacturing process. It is a world-wide accepted fact that statistical measures of quality are more useful in manufacturing companies than in any other type of companies. From the topmost Turkish firms that were engaged in initiating business projects, a handsome amount of them was surveyed to know the exact results that whether the reliance on the statistical tools of quality enhances the effectiveness of the business projects or not.

Afterwards, a good number of subcontracting firms was also inquired in this regard. The use of statistical measures of quality is also abundant in these types of firms initiating business projects. Because mostly the contracting companies are project oriented that undertake short term and long-term business projects in order to

earn profit, more specifically to enhance their business.

After all, the main concern of studying this was to substantiate that whether or not the use of statistical measures of quality positively affects the business projects. We got a positive response in this regard in which almost half of the manufacturing and subcontracting companies replied positively.

From this it is deduced that the use of TQM tools is very much a necessary task to enhance the competitiveness of the businesses, especially those which are business projects oriented.

4. Unleashing the Companies experience Horizon

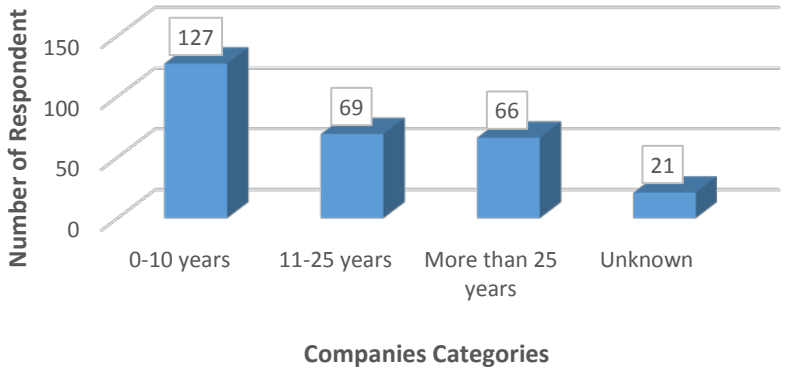

Figure 5: Years in Operation

Experience plays a pivotal role when it comes to determining a company's potential and capabilities. The same is case with our survey because we wanted to rely on the quality of information to be gathered to study our hypotheses. The responding firms experience is discussed below.

Table 8: Years in Operation

	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
0-10 years	127	44.9	44.9	44.9
11-25 years	69	24.4	24.4	69.3
More than 25 years	66	23.3	23.3	92.6
Unknown	21	7.4	7.4	100.0
Total	283	100.0	100.0	

In the first column the response of companies is reliable when it comes near 44.9% of the total respondent list. We achieved 45% table in round about. It means the results deduced from this figure are reliable. The same is true with second heading that shows companies having experience between 11-25 years. In SPSS software the valid figure for it is 24.4% or near to it. We achieved almost 25% which was very near to it. It means the results based on this figure can also be relied upon.

The required percentage to be relied upon for the third heading is 19.7% as per the SPSS. Ours was near to that figure which means that the results of this figure can also be fruitful for the survey.

In lump sum, out of 100% the responding percentage was ninety-two. Or in other words, out of hundred percentages, ninety-two responses of the respondents were very useful and effective for our survey. Ninety-two percentages which is a closer figure to 100% also shows the reliability of the data received in survey. Almost 45% firms had ten years of operation or within it. It was necessary to know the experience of the companies before extracting information so that the information or their responses can be categorized, and the data can be effectively utilized to facilitate the survey process. Near about to forty-five percentage is a good deal to go ahead with its results. It forms forty-six percent of the total which is a good figure to be studied. Other than this, we had almost 25% percent of the firms which had operational years in between 11 to 25 years. Undoubtedly their response is a key to conclude this study. Because, they had already tried every option and technique to enhance their productivity and effectiveness of the business projects.

Second to this was the reply from companies operating since more than twenty-five years. They were the mature and well-equipped firms that can contribute more to our thesis by their valuable response. They had tried every option to enhance their quality and effectiveness. Every substitute is tried by them in order to successfully implement business projects. A total of 283 companies' representatives were asked to give their valuable contribution to complete this research.

5. Accreditation of Persons:

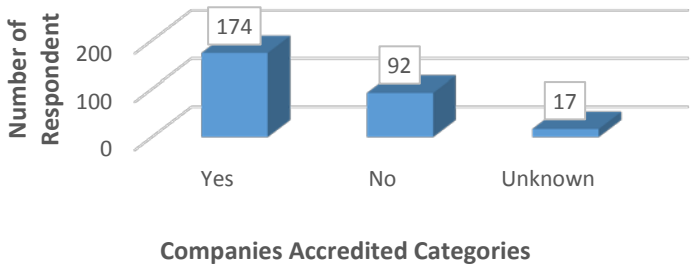

Figure 6: Comp any Accredited

The survey is very tough when you are plunged into the problem of not finding the accredited persons. It is very easy to stop a passerby and give him a questionnaire to fill it out and return it to you back. But the testing time is that you go out and find a relevant accredited person before distributing the questionnaire for survey. Below discussion revolves around this question. It was not that only the responding employees compelled their companies to give them accreditation, but the fact is that each firm tried its best to nominate the potential persons to support research and development in the business. Below table shows that to what extent these firms tried to give accreditation to their employees in this regard.

Table 9: Company Accredited

Is your company accredited?	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	174	61.5	61.5	61.5
No	92	32.5	32.5	94.0
Unknown	17	6.0	6.0	100.0
Total	283	100.0	100.0	

According the SPSS software the valid data percentage is 61.5% of respondents were round about to that figure. It means that the percentage test of persons' accreditation was successful, and the data extracted by them is also of great importance as they represent their respective firms. Each person of the respondents list was a true representative of his company. In numerous cases, SPSS' benchmark percentage is not met and the data in that case is not all embracing to meet all the aspects of the thesis. That is why the reliability is important to be undertaken.

As per the above table, almost sixty two percent of the respondents tried their level best to accredit them to facilitate the research on businesses. It is always a two-

way process. The contribution and interest of both is needed one company itself and the other employee himself. The former is needs to be willing to accredit its employees while the latter should always be ready to take on the job.

Apart from this, if we look at the results submitted by these accredited persons we find that their response was positive in determining that the use of statistical measures of quality positively affects the quality of the business projects **(**Eng & Yusof, 2003). Because in isolation of TQM tools, any business projects quality cannot be enlarged especially when the business market is surrounded by unfair minds and poor customers who possess little information to know whether the quality delivered by a company is really a quality or it is quality just in name. Hence in this situation the use of statistical measures of quality become part and parcel of the modern business projects working.

It is not binding or fixed that you use a particular quality system for all the operations and in all the regions. For example, a company may have the same operations throughout different regions of the world. Therefore, use the same quality same across the board may not prove fruitful for that country. It may not be the cost effective for that company as well **(**Feigenbaum, 1983). It also depends upon the nature of work that determines which kind of quality of system is going to be adopted. The same is case with Turkish firms. These firms do not rely on any single quality system. But they choose different ones depending upon their interest level, cost-effectiveness, and the capacity to serve the purpose of the firm.

6. Quality System

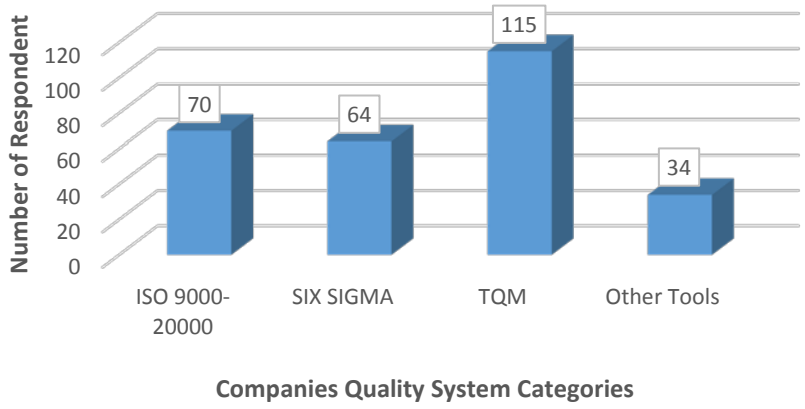

Figure 7: Quality System

Table 10: Quality System

Which quality system does your company have?				
	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
ISO 9000-20000	70	24.7	24.7	24.7
SIX SIGMA	64	22.6	22.6	47.3
TQM	115	40.6	40.6	88.0
Other Tools	34	12.0	12.0	100.0
Total	283	100.0	100.0	

As earlier discussed, different quality system has different objectives and different purpose to be served. In our case, the percentage of respondents' firm using ISO 9000-2000 was 24.7% which is a valid number recognized by the SPSS. The importance and objectives of this quality system is discussed henceforth.

Since beginning, a number of times the doubts and disagreements blanketed the initiation of ISO 9000 in order to satisfy customers internal, external, and changing needs with regard to products and services (Vouzas & Psychogios, 2007). The main objective of ISO 9000 is to maintain and retain the quality of a product and services by introducing such qualitative measures (Kartha, 2002). Most of the authors and scholars admit that the ISO 9000 lacks in implementation. It operates as a paper driven work in some cases (Curkovic & Pagell, 1999). In order to maintain its standards of quality, human resource must be given to it.

This was the reason that the second version of it became a necessity. In its new version (ISO 9000:2000) an attempt is made to reinvigorate its document and meet its deficiencies (Najmi & Kehoe, 2000). In the new version there is nothing negative, but the benefits are seeming less than the previous one (Vouzas & Gotzamani, 2005).

Secondly, the quality system of Six Sigma is also a significant one that is used widely in the world of business now a day. It also works to cater to the different needs of business project in terms of enhancing quality and effectiveness. The valid percentage of Six Sigma recognized by SPSS is 22.6%. The figure near to it is also reliable.

Thirdly, the Quality system of TQM is also an important aspect of quality. In our case around 40% companies being contacted used TQM as a quality tool.

Using TQM improves performance of business projects by leaps and bound.

It caters to the needs of customers, employees as well as society (José Tarí & Molina, 2002). The fruits of using TQM come in the form of customer retention, enhanced productivity, and improved performance of products and services (Rahman, 2004). Implementing TQM leads to productive performance indicators, competitive advantage and increased capacity of labor to work more (Chapman & Al-Khawaldeh, 2002).

7. Reason of Choosing a Particular Quality System:

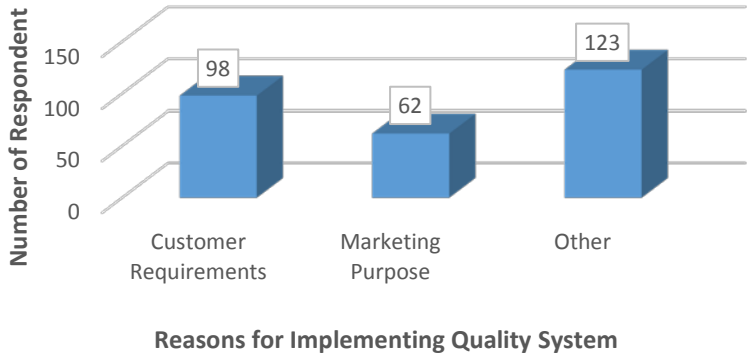

Figure 8: Reasons for Implementing Quality System

As discussed above, different companies use different quality system as per their requirements and needs. Different requirements are met by a different quality system. Since the needs and requirements of one organization differ from that of others.

Table 11: Reasons for Implementing Quality System

The Reasons for Implementing Quality System?

	Frequency	Percent	Valid Percent	Cumulative Percent
Customer Requirements	98	34.6	34.6	34.6
Marketing Purpose	62	21.9	21.9	56.5
Other	123	43.5	43.5	100.0
Total	283	100.0	100.0	

The above-mentioned table shows that there were three main indicators that showed why a firm adopted a quality system and on what grounds. This information was necessary to conclude the survey. Without determining the exact reason of implementing a quality system we cannot analyze that whether the use of statistical

measures of quality impact positively on the business projects or not.

Out of total responding firms, 34.6% of companies chose quality system on the requirements of customers. Either the customers suggested them, or the firms chose themselves on the basis that a quality system might meet the requirements and needs of the customers.

Almost 22% of the respondent firms chose their quality system keeping in view the market trends. In other words, these companies were market oriented. They chose a quality system that obliges the market trend or in any way benefits the host firm. However, one should not consider it a loose strategy. These firms chose quality system to improve the performance and effectiveness of their working.

Rest of the responding firms also used quality system, but they didn't provide exact reason. As per the renowned economists, the performance of any organization is not up to date with the market trends if it keeps itself away from the quality system. On these grounds, each and every company relies on the quality system to improve their efficiency whether the quality system is TQM, Six Sigma or any other.

The strategy of adhering to any quality system portrays the fact that almost all the Turkish firms use quality system (statistical tools of quality) to improve the performance of their business projects. When asked, the respondents replied that the use of statistical measures of quality or quality systems not only positively affects their performance but also enhances their capacity of doing more with fewer resources.

In the end, it was deduced that though the firms used different quality systems keeping in view the different divergences, yet their goal was one: to improve the performance of their business projects by using quality tools provided by different quality systems.

8. Nature of the Implementation Process:

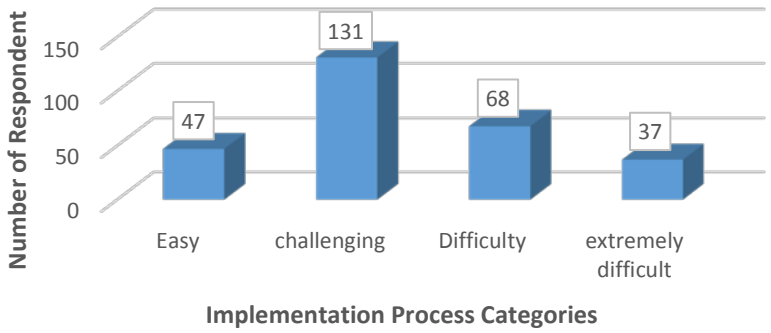

Figure 9: Implementation Process

Every quality system is of different nature and consequently it meets different needs and requirements. The same is the case with its implementation. Sometimes it is very difficult for a firm to implement. On the other hand, some firms feel it easier to implement. Hence, the below figure and table is discussed in this connection.

Table 12: Implementation Process

The Implementation Process was	Frequency	Percent	Valid Percent	Cumulative Percent
Easy	47	16.6	16.6	16.6
Challenging	131	46.3	46.3	62.9
Difficulty	68	24.0	24.0	86.9
Extremely Difficult	37	13.1	13.1	100.0
Total	283	100.0	100.0	

Almost 17 percent respondents feel it easier to implement the quality system of their choice in order to enhance the quality and effectiveness of their working. Moreover, nearly 47% respondents felt it challenging to implement. This was because of different organizational culture. Demographic and institutional hurdles also play their part in this regard. While almost twenty four percent firms found it difficult to implement and digest. This was also due to the internal environment and challenges. Apart from this, nearly 13% firm's respondent found it extremely difficult to implement.

9. Trained Person to maintain the system:

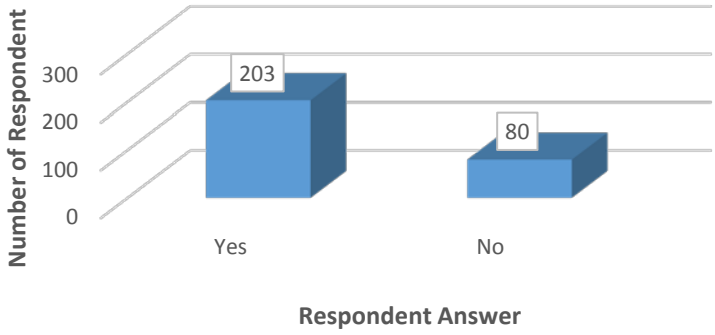

Figure10: Training Part

Table 13: Training Part

Was anyone trained to maintain the system?				
	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Yes	203	71.7	71.7	71.7
No	80	28.3	28.3	100.0
Total	283	100.0	100.0	

The level of commitment to maintain and retain quality is different. In order to determine that level we constitute the following figure that and represent almost 72% that shows how many firms trained their employees to adapt to the quality system being implemented by the company in its different departments.

Out of total responding firms, two and three firm's respondent showed their commitment towards this trend. These firms gave their employees training in order to make them familiar to the quality system. In some cases, one employee was chosen who was given the task of coordinating and assisting the entire staff to become used to the new quality system. The person who was given the task of leading all other employees was an expert one who usually resolved the issues that the quality system produced for the rest of the employees. This information is incorporated in this thesis in the same way as received from the respondents.

10. Duration of Training:

Figure 11 Training Period

As earlier mentioned, different firms adopted different quality system depending upon their priorities. Therefore, it is also inevitable that each organization has different internal atmosphere and internal control (Flynn, et al, 1994). Hence, the time taken by an organization to train their employees also differed. Following table shows that how much time was taken by each respondent organization.

Table 14: Training Period

How long should be the training period?				
	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
6 Weeks	72	25.4	25.4	25.4
8 Weeks	69	24.4	24.4	49.8
6 Months	92	32.5	32.5	82.3
More Than 6 Months	50	17.7	17.7	100.0
Total	283	100.0	100.0	

Around 25.4% firms' respondents said that the training period to train the employees needs to be six weeks. As it is more congenial and friendly period wherein employees learn more within short period of time. Others said that the period needs to be extended to eight weeks so that every subtle difference in learning could be highlighted. Almost 32% firms adhered to the suggestion that the training period should be of six months.

According to them this is the more congenial period than the six weeks' time. Because it leads to better understanding of each and every aspect of training that ultimately enhances the learning capacity of the employees. Apart from this, around 18% companies being contacted for survey opined that the training period to train employees is to be more than six months.

11. Reason of Not Getting Accreditation:

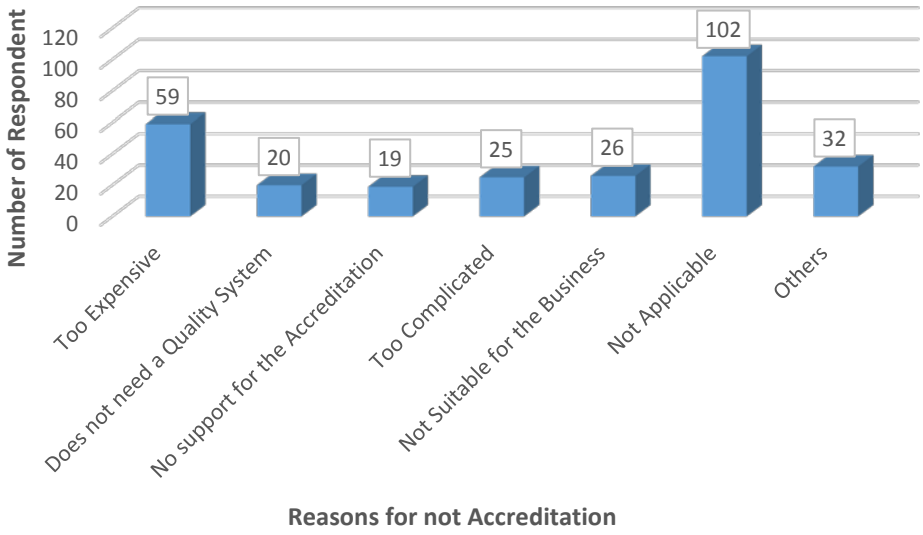

Figure 122: Reasons for not Accreditation

Although Turkish firms which were contacted to participate in this thesis were found interested yet there were some companies whose response was lukewarm. They cited different reasons to not to accredit any employee in this regard. This has been comprehensively discussing with reference to the following table.

Table 15: Reasons for not Accreditation

Reasons for not getting the accreditation?	**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
Too Expensive	59	20.8	20.8	20.8
Does not need a Quality System	20	7.1	7.1	27.9
No support for the Accreditation	19	6.7	6.7	34.6
Too Complicated	25	8.8	8.8	43.5
Not Suitable for the Business	26	9.2	9.2	52.7
Not Applicable	102	36.0	36.0	88.7
Others	32	11.3	11.3	100.0
Total	283	100.0	100.0	

Around 20% responding firms said that they didn't get accreditation because incorporating any quality system was too expensive for them. These firms were

profit-conscious who don't want to experiment for quality. Other than this, nearly 7.1% firms were those which said that they are already working on the quality of their business projects therefore they didn't need any quality system to be introduced (Forza, 1995). There were about 6.7 percent firms whose response was that they didn't receive any support from any authority to implement the quality system. Afterwards, around nine percent firms said that the process of introducing any quality system is not an easy go. Similarly, nearly 10 percent firms said that this task didn't match with their business, so they don't need it. And, around 36% percent firms said that implementing quality system doesn't apply to them as they were already well enough on the quality standards. Lastly, 11.3% they have other reasons for not getting accreditation.

12. Does the Company Attempt to Get Accreditation?

This section showing the most important image and level of Turkish firms for attempt to get accreditation, and this will affect positively for quality standards and polices. In order to determine that level we constitute the following figure and table.

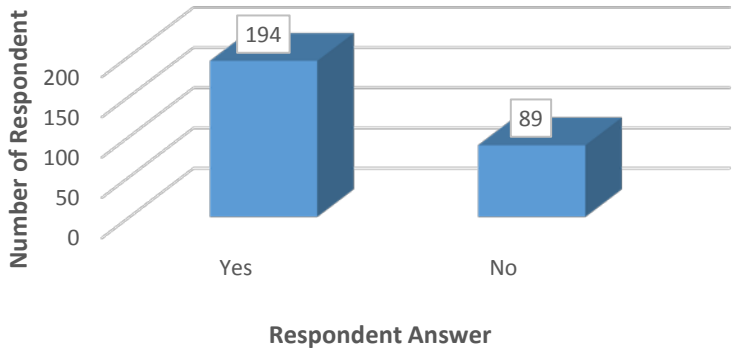

Figure 13: Attempt to Get Accreditation

Table 16: Attempt to Get Accreditation

Did your company attempt to get accreditation?	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	194	68.6	68.6	68.6
No	89	31.4	31.4	100.0
Total	283	100.0	100.0	

Represent almost 69% that shows how many firm respondents to adapt and attempt to get accreditation and this will affect for quality system being implemented by the company in its different departments.

13. Does the Company Has Long Term Plan?

Especially the companies having long term plans need quality system. They also initiate short term and long-term business projects. They implement quality standards to enhance their performance and productivity. In order to know that how many firms had long term planning we discuss following table.

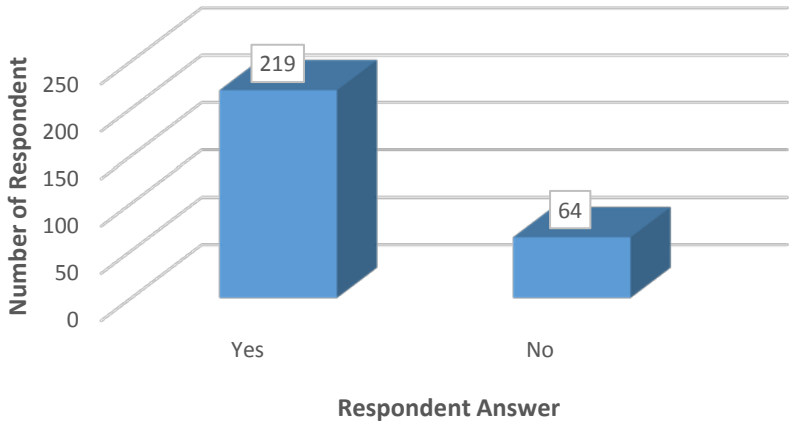

Figure 14: Long term Plans of the company

Table 17: Long term Plans of the company

Does the company have a long-term plan?	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	219	77.4	77.4	77.4
No	64	22.6	22.6	100.0
Total	283	100.0	100.0	

Around 78% firm respondents said that they had a quality of vision of long-term plans or projects to be initiated. While 22 percent firm respondents said that they didn't have long term plans. This is the point where our thesis gets relevance. Out of the 80% firms that had long term projects in minds nearly half a dozen firms opined that the use of statistical tools of quality positively affects their performance and increases the productivity of their business projects.

14. Types of Long-Term Plan?

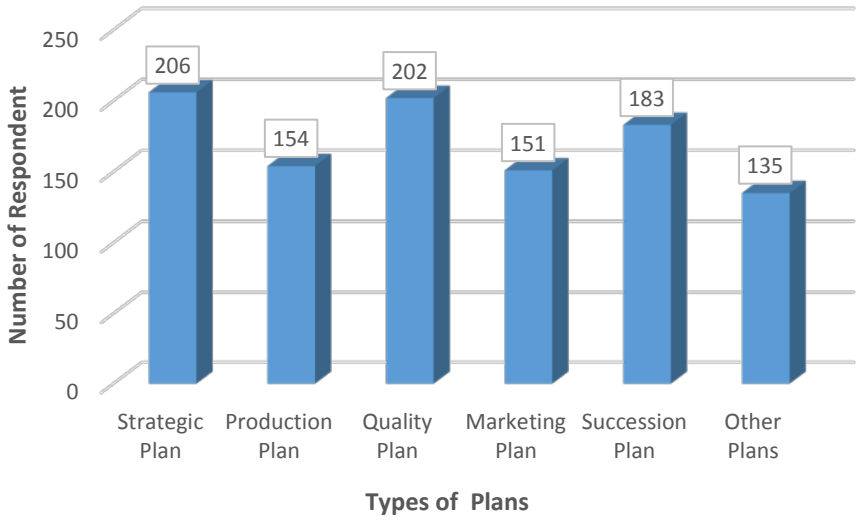

Figure 15: Types of Long-Term Plans

Table 18: Types of Long-Term Plans

Which type of plan does the company have?			
	Responses		**Percent of Cases**
	N	**Percent**	
Strategic Plan	206	20.0%	72.8%
Production Plan	154	14.9%	54.4%
Quality Plan	202	19.6%	71.4%
Marketing Plan	151	14.6%	53.4%
Succession Plan	183	17.7%	64.7%
Others	135	13.1%	47.7%
Total	1031	100.0%	364.3%

Almost 20% firm respondents had long term plans in the form of strategic plans. Secondly, nearly fifteen percent firm respondents had long term plans in the form of production plans. Apart from this, around twenty percent firm respondents had long term plans in the shape of quality plans. Around 15% firms said that they were having long term plans in the terms of marketing plans. And around 17.7% companies' respondents said that they had long term plans in the shape of succession plans. And lastly, 13.1% firm respondents they have another of the research mention on questionnaire. Consequently, these all firms had long term plans of different types, but one thing is common for all of them that these plans need a quality system and use of quality measures to ensure that these projects are coordinated, implemented and completed well.

15. Staff Development:

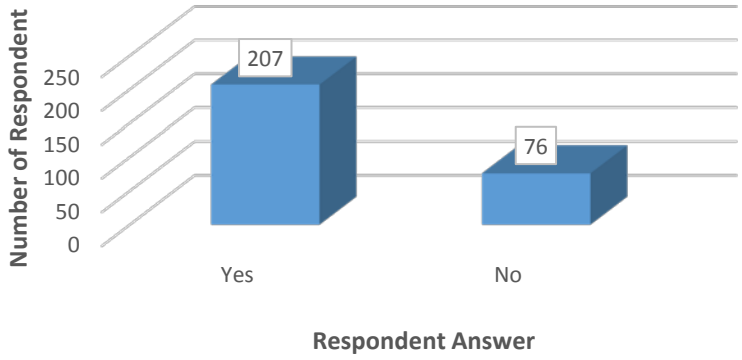

Figure 16: Encourage Staff Training

In isolation of development, the objectives of any business cannot be achieved. Therefore, it was necessary for us to categorize the data to know that how many firms supported staff development with the view of implementing and retaining the quality standards.

Table 19: Encourage Staff Training

Does the company encourage staff development?				
	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	207	73.1	73.1	73.1
No	76	26.9	26.9	100.0
Total	283	100.0	100.0	

The above-mentioned table shows that nearly 73% firm respondents supported the staff development. The development encompassed every aspect like physical, psychological and emotional in order to match the employees' interests with that of the organization. On the other hand, nearly 27% respondents said that their firms didn't support staff development due to monitory reasons. Staff development is one of the tools of TQM standards that enhances the quality of business projects.

If a firm is encouraging its staff development, then what was its schedule of sending her employees on the training? Either it encouraged internal training or hired external trainers to train the staff? These are some questions that arise from the fact that companies which encourage staff development also assist their employees in training process.

16. Company Send Employees to Training:

Training is a courses or workshops that supports and helps employees to learn specific knowledge or skills in their current roles to improve performance. And such type of these training will affect positively to quality.

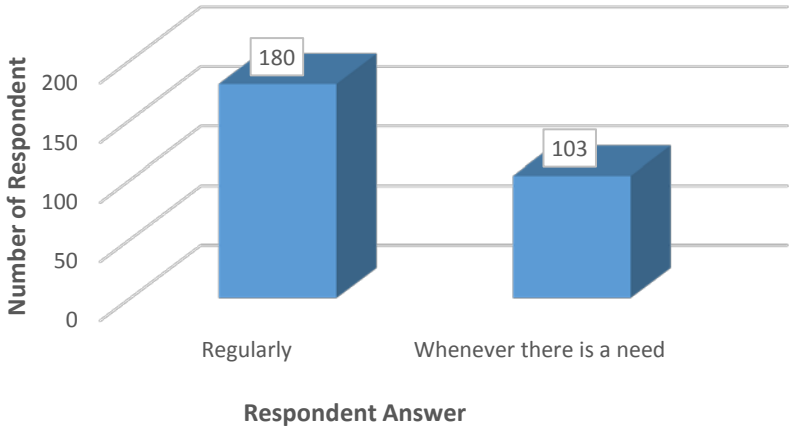

Figure 17: Company send employees to training

Table 20: Company send employees to training

How often does your company send employees to training?				
	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Regularly	180	63.6	63.6	63.6
Whenever there is a need	103	36.4	36.4	100.0
Total	283	100.0	100.0	

Around sixty four percent companies which were sending supporting the staff development replied that they were sending their employees regularly on the training whether it be internal or external. Rest of the companies said that they send their employees on training not on the regular basis but whenever the need is arisen.

17. Placement of the Quality Policy:

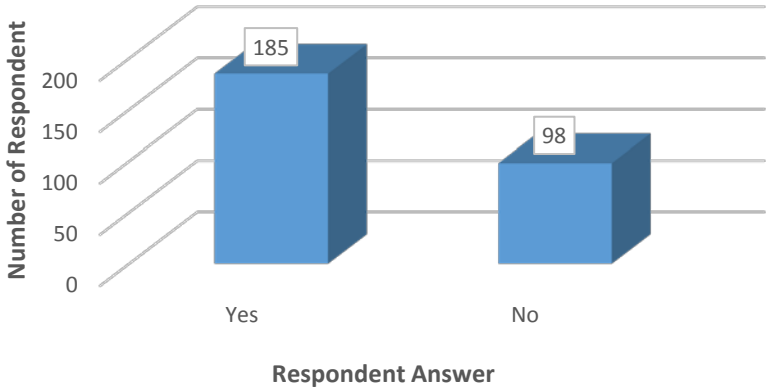

Figure 18: Quality Policy Existence

It is very necessary when you are using a quality system that you should have a quality policy in place. Without that policy you cannot implement well the statistical measures of quality. The responding firm's response in this regard was good. This has been discussed below:

Table 21: Quality Policy Existence

Does the company have a quality policy in place?				
	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Yes	185	65.4	65.4	65.4
No	98	34.6	34.6	100.0
Total	283	100.0	100.0	

Around sixty five percent firm's respondent opined that they have a quality policy in place while around 35% firm's respondent said they didn't have it. The purpose of having this policy is to enhance the efficiency of business projects and to reduce the human effort in determining the fault lines in a business task. While doing away with it depends upon the leadership of a firm. Sometimes the leadership of a firm is strong enough that takes into account every negativity that may arrive on account of not having a quality police.

18. Top Management's Commitment:

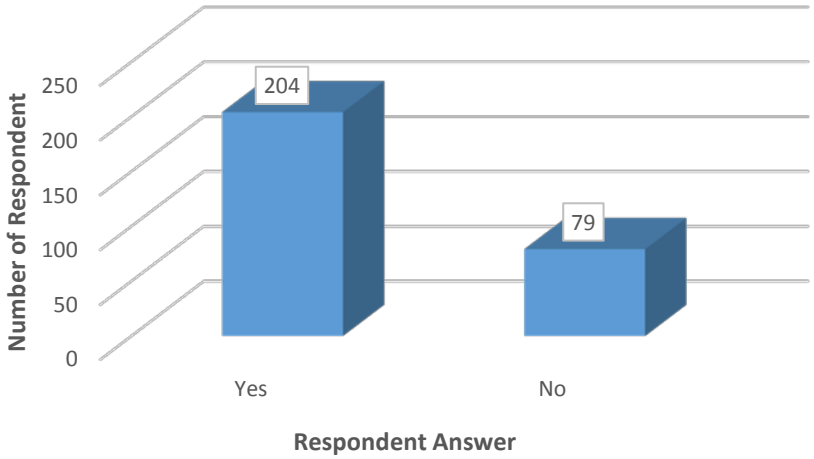

Figure 19: Management shows Commitment to quality

As discussed earlier, top management do not pay regular attention on quality standards only. It has a lot of distractions in the form of numerous tasks to be performed. With their lukewarm interest in implementing the TQM standards, quality cannot be retained (Garvin, 1984). Therefore, it was necessary to know that what the level of commitment in Turkish firms is in this regard.

Table 22: Management shows Commitment to quality

Does top management show commitment to quality?				
	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Yes	204	72.1	72.1	72.1
No	79	27.9	27.9	100.0
Total	283	100.0	100.0	

Around 72% Turkish firm respondents found committed to quality standards because their top management was very encouraging and showed a great deal of commitment to quality standards. Only 27.9% firms said that their top management shows a lukewarm interest to quality.

19. Quality Manual

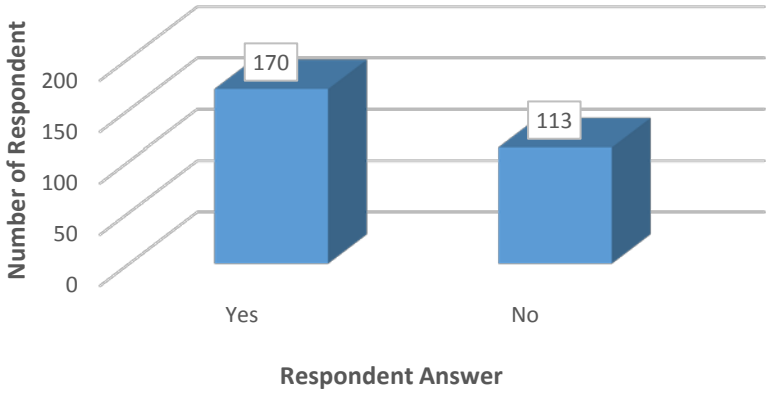

Figure 20: Quality Manual Existence

A quality manual is a report or guidelines setting out the goals of the firms to execute the procedures and process within the quality management system. And it will contain the processes, policies, and flowcharts for all business areas that affect firm's ability to produce the high-quality of performance and meet the requirements of customers and quality standards. And it is very necessary when you are using a quality system that you should have a quality manual in place.

Table 23: Quality Manual Existence

Does the company have a quality manual?				
	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Yes	170	60.1	60.1	60.1
No	113	39.9	39.9	100.0
Total	283	100.0	100.0	

Around 60% percent firm's respondent opined that they have a quality manual in place while around 40% firm's respondent said they didn't have it. The purpose of having this manual is to enhance the efficiency of business projects and to reduce the human effort in determining the fault lines in a business task.

20. Level of Teamwork

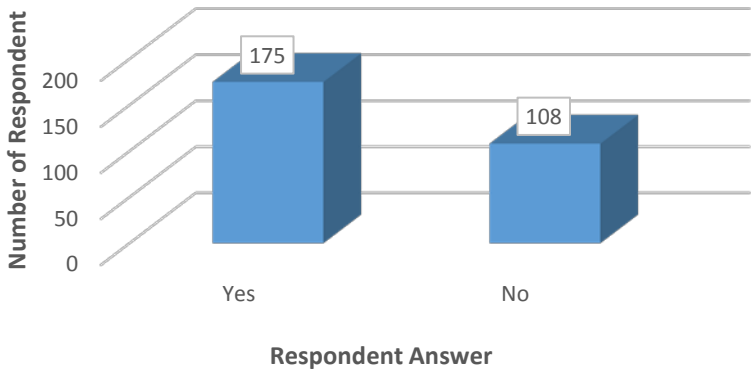

Figure 21: Company encourages teamwork

Teamwork is such asset by which all of the organization's goals and objectives can be achieved. Different businesses require different level of teamwork **(**Garvin, 1987), but when it comes to implementing quality standards in business projects the level of teamwork becomes threefold larger.

Table 24: Company encourages teamwork

Does the company encourage teamwork?				
	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Yes	175	61.8	61.8	61.8
No	108	38.2	38.2	100.0
Total	283	100.0	100.0	

Around 62% companies' respondent's opinion their companies encourages teamwork. This shows that these firms encourage teamwork and are devotees of quality standards. And when organizations team reach to work as one team that will affect positively to achieve quality standards. It contains encourage and investment in its function like interpersonal skills, leadership, decision making, and quality practices.

21. Decision making

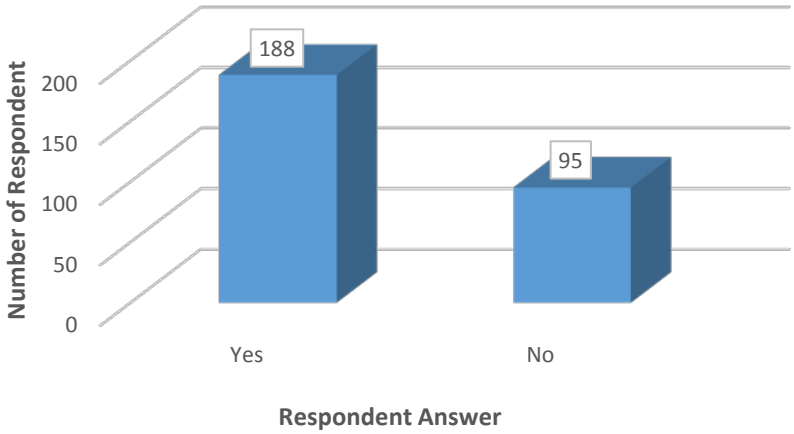

Figure 22: Company involve employees in decision making

Weak or incorrect decisions making process will affect negatively to the result in business project performance. Involving teams in decision making improves the quality of decisions most of the times (Drucker, 2009).

Table 25: Company involve employees in decision making

Does the company involve employees in decision making				
	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Yes	188	66.4	66.4	66.4
No	95	33.6	33.6	100.0
Total	283	100.0	100.0	

Around 66% Turkish firm respondents reply their companies involve employee in the decision-making process because their top management was very encouraging and showed a great deal of commitment to quality standards. Only 33.6% firms said that their top management shows an unenthusiastic interest in decision making involvement.

22. Company communicate objectives to the staff

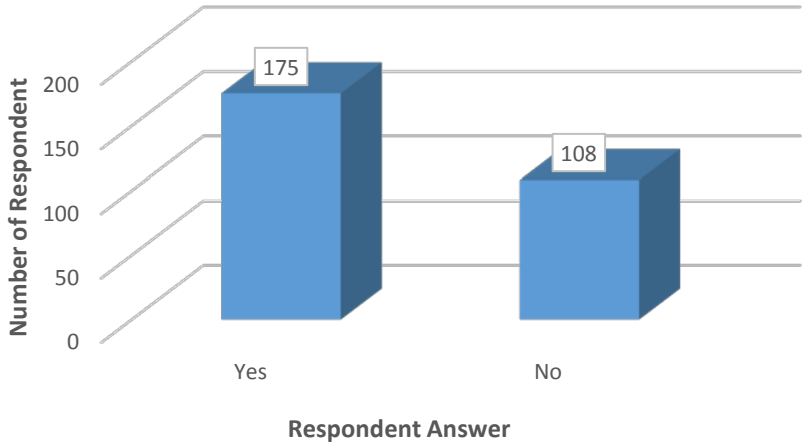

Figure 23: Company communicate objectives to the staff

Table 26: Company communicate objectives to the staff

Does the company communicate company objectives to staff?				
	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Yes	175	61.8	61.8	61.8
No	108	38.2	38.2	100.0
Total	283	100.0	100.0	

This table shows that when asked around 61% Turkish firm respondents said that they are real supporters of communicate objectives. Quality cannot be attained in isolation of objectives of the company. All the departments of a company need to be linked in this regard. When there is no communication between staff companies cannot achieve their objectives, devoid takes place between different organs of the company. When this happens, it wears that company down. That was the reason that these firms communicated staff in order to establish quality standards that can positively benefit their business projects.

23. Measuring the Quality Performance:

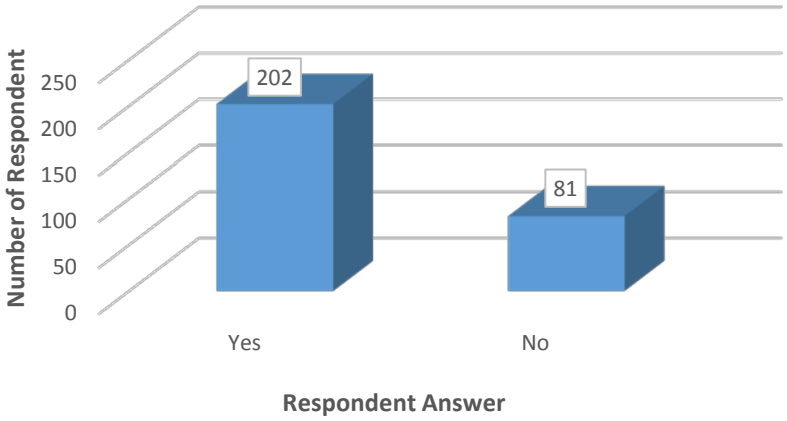

Figure 24: Quality Performance Measuring

It is necessary for the firms to review their performance when they implement quality standards. Without this check, quality cannot be achieved. This is the main area where the focus of business firms is required. Because implementing quality standards is not the achievement but receiving its fruits is the real achievement. Therefore, measuring quality performance becomes an important task.

Table 27: Quality Performance Measuring

Does company measure quality performance?				
	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Yes	202	71.4	71.4	71.4
No	81	28.6	28.6	100.0
Total	283	100.0	100.0	

Around seventy one percent firms said that they review their performance in order to maintain the quality and standard. As earlier discussed, this is the point where the real fruits are derived of implementing the quality standards of TQM in business projects.

24. Measuring the Customer Satisfaction:

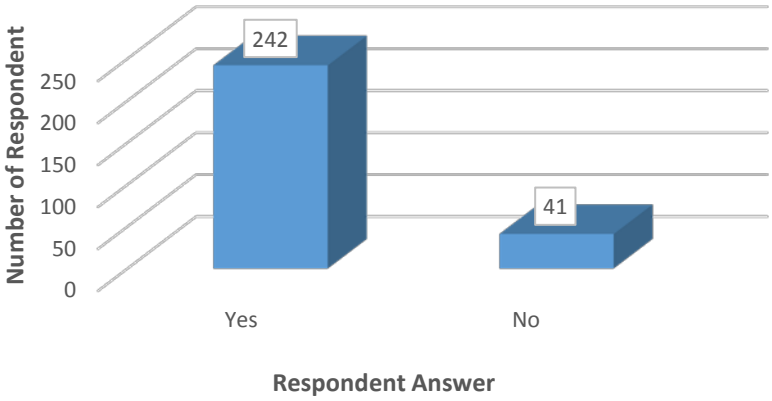

Figure 25: Customer Satisfaction Measuring

Customers are the fuel for organizations. No customer means no organization. Therefore, it becomes necessary for the businesses to take care of their customers in terms of satisfying their needs requirements **(**Georgiades & Macdonell, 1998). For that purpose, a company needs to undertake a process wherein it can review and measure the customer satisfaction level. This task can be achieved through various ways.

Table 28: Customer Satisfaction Measuring

Does company measure customer satisfaction?				
	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Yes	242	85.5	85.5	85.5
No	41	14.5	14.5	100.0
Total	283	100.0	100.0	

In this regard, 85.5% firm respondents said that they usually measure customer satisfaction level and in case of no customer satisfaction they initiate different tasks to motivate and satisfy the customers with their requirements.

25. Seek Customer Views

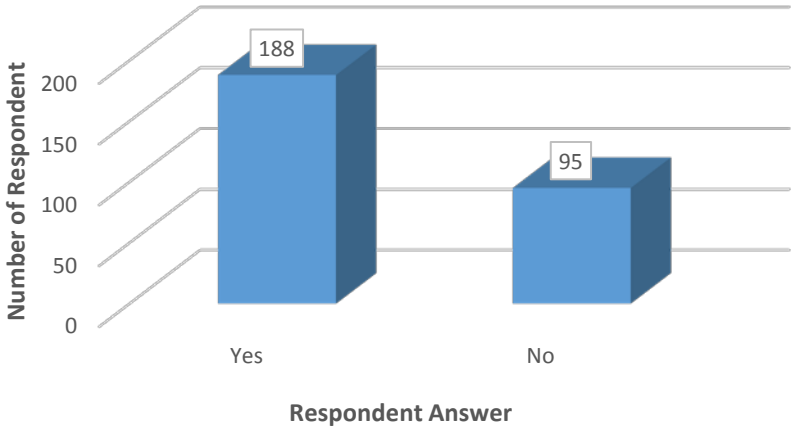

Figure 26: Seek Customer Views

As mention earlier, the customers are the fuel for organizations. Therefore, its most important factors to success the company's business it's looking what the customer requirements, aspires, and desires.

Table 29: Seek Customer Views

Does company seek customer views?				
	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Yes	188	66.4	66.4	66.4
No	95	33.6	33.6	100.0
Total	283	100.0	100.0	

This table shows that when asked around 66.4% Turkish firm respondents said that they are seeking for customer views. Quality cannot be attained in isolation of customer satisfaction. And firms can get feedback on many ways like live chat, feedback form, adds, and surveys.

26. Measuring the Employee Satisfaction:

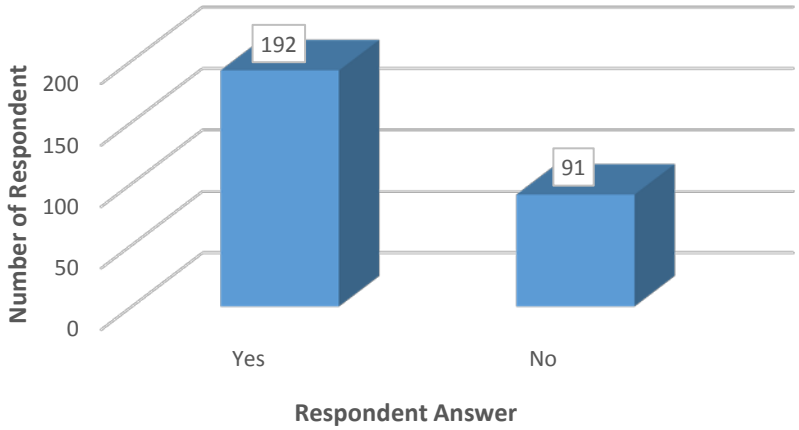

Figure 27: Employee Satisfaction

Apart from customers satisfaction employees' satisfaction is also very important. When employees are not satisfied, they will work against the company's norms and values **(**David & Davis, 2000). They will never try harder to implement quality standards. That is why, most companies along with their business projects become bankrupt.

Table 30: Employee Satisfaction

Are employees satisfied with the company				
	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Yes	192	67.8	67.8	67.8
No	91	32.2	32.2	100.0
Total	283	100.0	100.0	

Nearly 68% companies' employees were satisfied with their companies and about 32.2% firms' employees were not satisfied with their organization. This was due to the different internal atmosphere of the companies and different cultural divergence between employees. However, majority of Turkish firms which initiate business projects satisfy their employees which is a very positive thing especially in the era of using statistical tools of quality and TQM standards to maintain and retain quality.

C. Detail related responses to thesis variables

In this section, the researcher will show the responses to all questions related

to the thesis variables. These variables are TQM, Statistical Measures, Financial Performance, Innovation Performance, and Operational Performance.

1. TQM Practices Questions:

a. The senior executives provide high visible leadership in maintaining an environment that supports quality improvements:

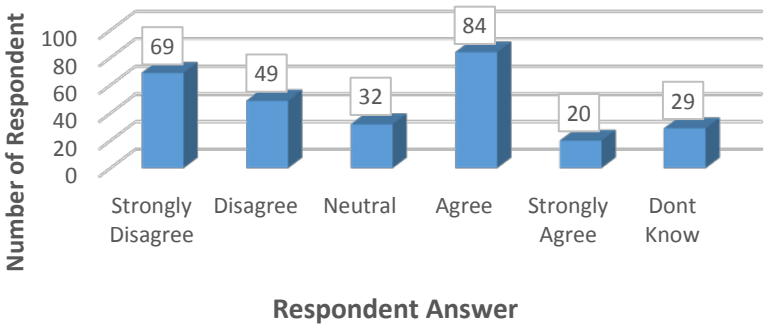

Figure 28: Senior executives provide high visible leadership

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 20(7.1%) strongly agree, 84(29.7%) agreed, 32(11.3%) replied neutrally, 49(17.3%) responded with disagreement, 69(24.4%) responded with strong disagreement, and lastly 29(10.2%) responded with don't know.

b. The industry collects a wide range of data and information about the quality:

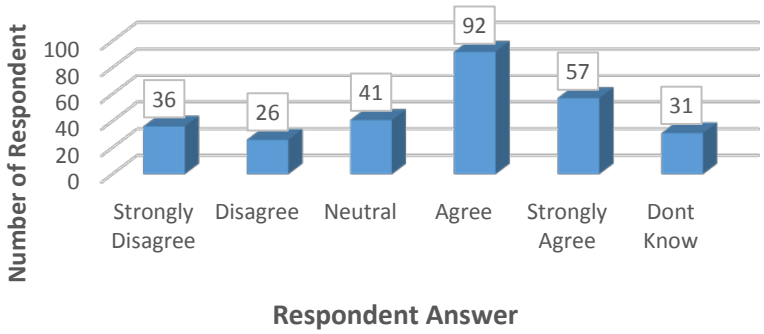

Figure 29: Industry collects a wide range of data and information about the quality

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 57(20.1%) strongly agree, 92(32.5%)

agreed, 41(14.5%) replied neutrally, 26(9.2%) responded with disagreement, 36(12.7%) responded with strong disagreement, and lastly 31(11%) responded with don't know.

c. Middle managers are playing a key role in setting priorities for quality planning:

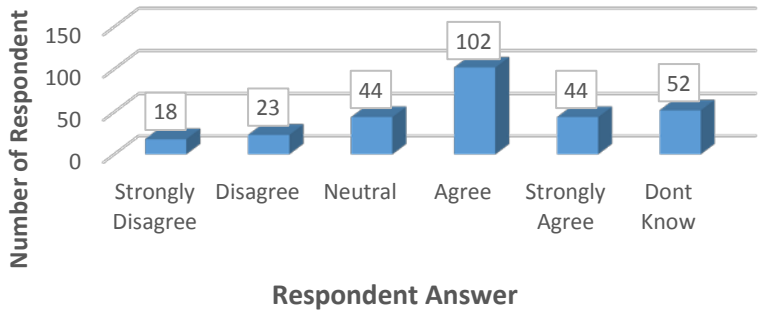

Figure 30: Middle managers playing role in setting priorities for quality planning

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 44(15.5%) strongly agree, 102(36%) agreed, 44(15.5%) replied neutrally, 23(8.1%) responded with disagreement, 18(6.4%) responded with strong disagreement, and lastly 52(18.4%) responded with don't know.

d. Continuous improvement tools (brainstorming, check sheet and other statistical process control) are applied on regular basis:

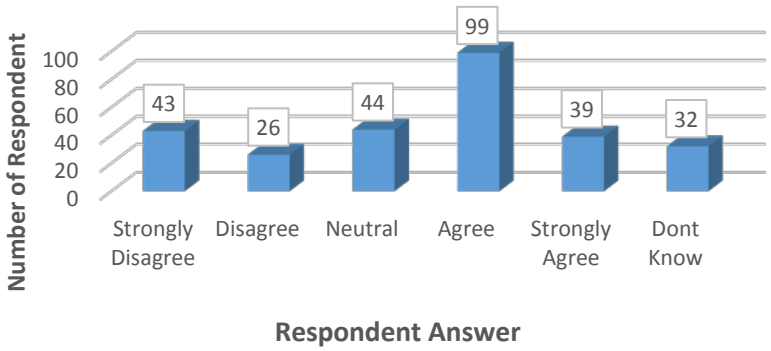

Figure 31: Continuous improvement tools are applied on regular basis

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to

Strongly Disagree. Of the 283 respondents, 39(13.8%) strongly agree, 99(35%) agreed, 44(15.5%) replied neutrally, 26(9.2%) responded with disagreement, 43(15.2%) responded with strong disagreement, and lastly 32(11.3%) responded with don't know.

e. Employees' participation in industry's success reduces the turnover and therefore reduces the cost of hiring and training new employees:

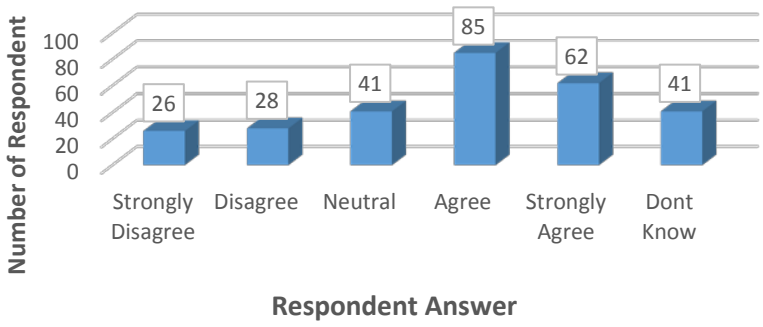

Figure 32: Employees' participation in industry's success

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 62(21.9%) strongly agree, 85(30%) agreed, 41(14.5%) replied neutrally, 28(9.9%) responded with disagreement, 26(9.2%) responded with strong disagreement, and lastly 41(14.5%) responded with don't know.

f. As well as being fully aware of customers' needs and expectations, each person must respect the needs and expectations of their suppliers:

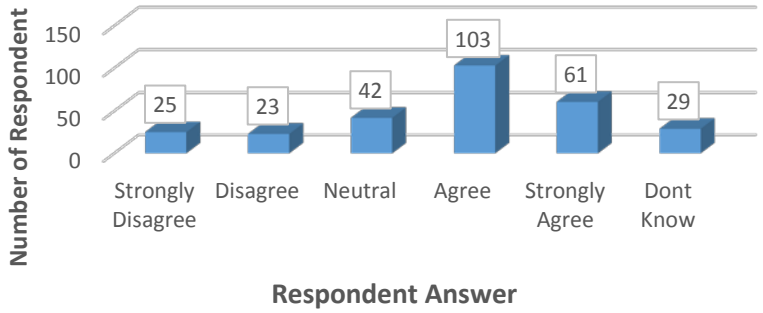

Figure 3: Fully aware of customers' needs and expectations

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to

Strongly Disagree. Of the 283 respondents, 61(21.6%) strongly agree, 103(36.4%) agreed, 42(14.8%) replied neutrally, 23(8.1%) responded with disagreement, 25(8.8%) responded with strong disagreement, and lastly 29(10.2%) responded with don't know.

g. The industry emphasizes on assessing current customers' needs and expectations:

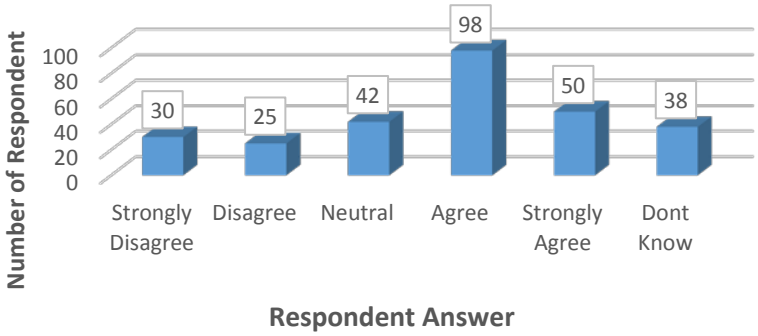

Figure 34: Assessing current customers' needs and expectations

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 50(17.7%) strongly agree, 98(34.6%) agreed, 42(14.8%) replied neutrally, 25(8.8%) responded with disagreement, 30(10.6%) responded with strong disagreement, and lastly 38(13.4%) responded with don't know.

h. Structural changes (less complexity, reduction of through put time and losses) are appreciated in your industry:

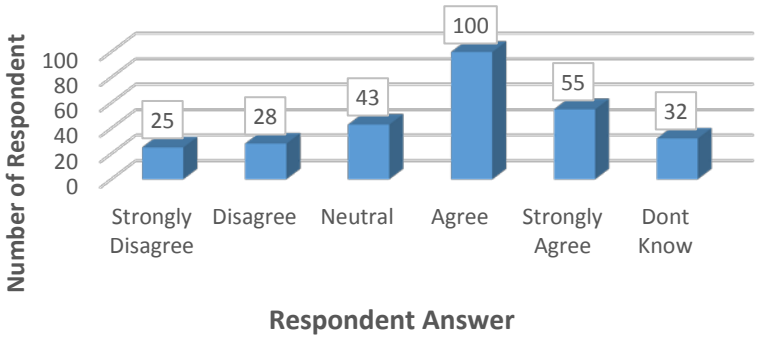

Figure 35: Structural changes are appreciated in your industry

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to

Strongly Disagree. Of the 283 respondents, 55(19.4%) strongly agree, 100(35.3%) agreed, 43(15.2%) replied neutrally, 28(9.9%) responded with disagreement, 25(8.8%) responded with strong disagreement, and lastly 32(11.3%) responded with don't know.

2. Statistical Measures Questions

a. Industry employees are given education and statistical training in how to identify and act on quality improvement opportunities:

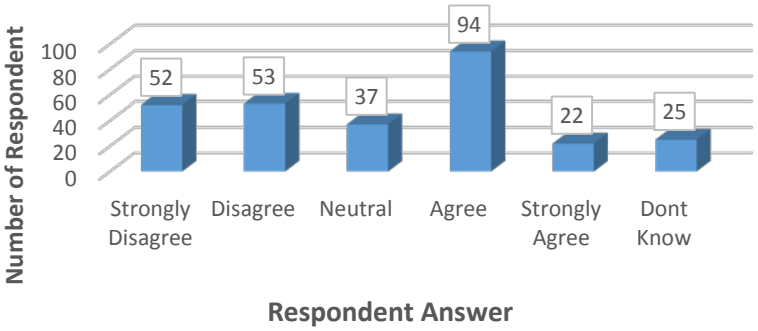

Figure 36: Education and statistical training given quality improvement

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 22(7.8%) strongly agree, 94(33.2%) agreed, 37(13.1%) replied neutrally, 53(18.7%) responded with disagreement, 52(18.4%) responded with strong disagreement, and lastly 25(8.8%) responded with don't know.

b. Industry employees are given education and training in statistical and other quantitative methods that support quality improvement:

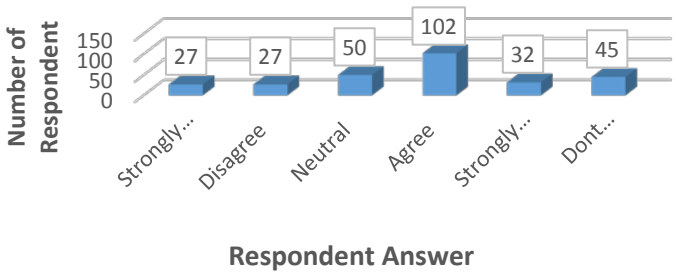

Figure 37: Education and statistical training given to support quality improvement

The Likert scale (five-point) was used in the above figure to calculate the

opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 32(11.3%) strongly agree, 102(36%) agreed, 50(17.7%) replied neutrally, 27(9.5%) responded with disagreement, 27(9.5%) responded with strong disagreement, and lastly 45(15.9%) responded with don't know.

c. Industry employees have the authority to correct problems in their area when quality standards are not being met:

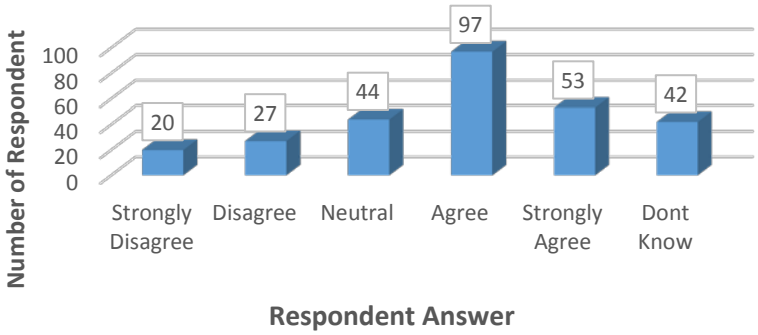

Figure 38: Authority to correct problems

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 53(18.7%) strongly agree, 97(34.3%) agreed, 44(15.5%) replied neutrally, 27(9.5%) responded with disagreement, 20(7.1%) responded with strong disagreement, and lastly 42(14.8%) responded with don't know.

d. Industry employees are supported when they take necessary risks to improve quality:

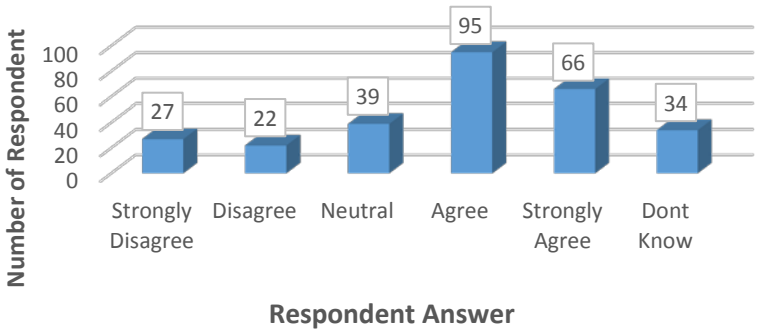

Figure 39: Risks to improve quality

The Likert scale (five-point) was used in the above figure to calculate the

opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 66(23.3%) strongly agree, 95(33.6%) agreed, 39(13.8%) replied neutrally, 22(7.8%) responded with disagreement, 27(9.5%) responded with strong disagreement, and lastly 34(12%) responded with don't know.

e. The industry has an effective system for employees to make suggestions to management on how to improve quality:

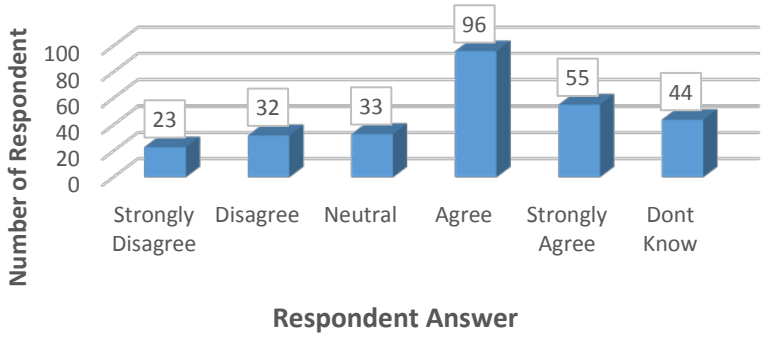

Figure 40: Effective system for employees

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 55(19.4%) strongly agree, 96(33.9%) agreed, 33(11.7%) replied neutrally, 32(11.3%) responded with disagreement, 23(8.1%) responded with strong disagreement, and lastly 44(15.5%) responded with don't know.

3. Operation Performance Questions

a. Industry employees are given adequate time to plan for test improvements:

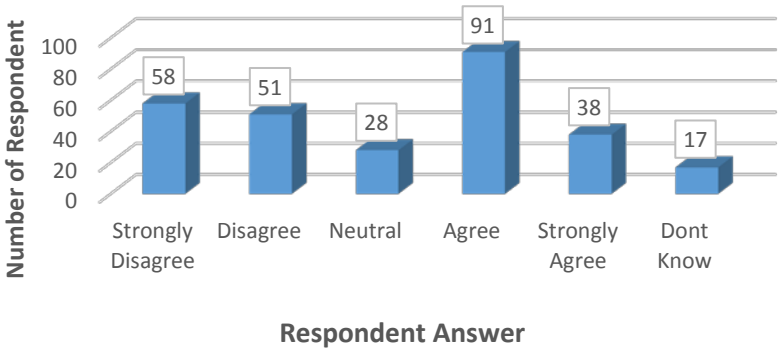

Figure 41: Adequate time to plan for and test improvements

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 38(13.4%) strongly agree, 91(32.2%) agreed, 28(9.9%) replied neutrally, 51(18%) responded with disagreement, 58(20.5%) responded with strong disagreement, and lastly 17(6%) responded with don't know.

b. Each department and work group within this industry maintains specific goals to improve quality:

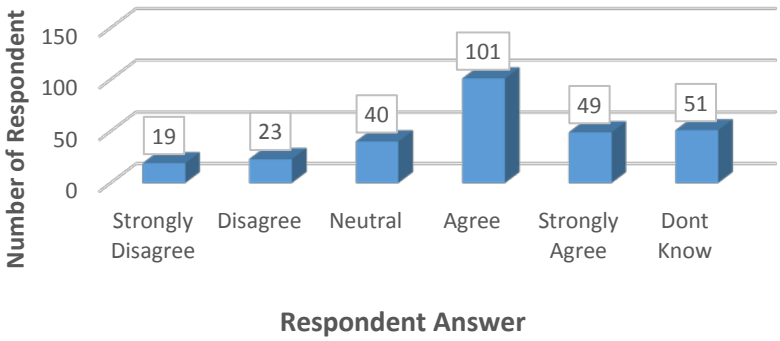

Figure 42: Maintains specific goals to improve quality

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 49(17.3%) strongly agree, 101(35.7%) agreed, 40(14.1%) replied neutrally, 23(8.1%) responded with disagreement, 19(6.7%) responded with strong disagreement, and lastly 51(18%) responded with don't know.

c. Middle managers (e.g., department heads, program directors, and first line supervisors) are playing a key role in setting priorities for quality planning:

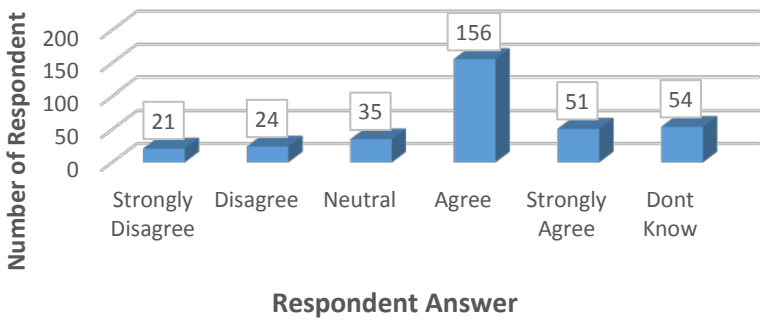

Figure 434: Middle manager setting priorities for quality planning

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 51(18%) strongly agree, 98(34.6%) agreed, 35(12.4%) replied neutrally, 24(8.5%) responded with disagreement, 21(7.4%) responded with strong disagreement, and lastly 54(19.1%) responded with don't know.

d. External customers are playing a key role in setting priorities for quality planning:

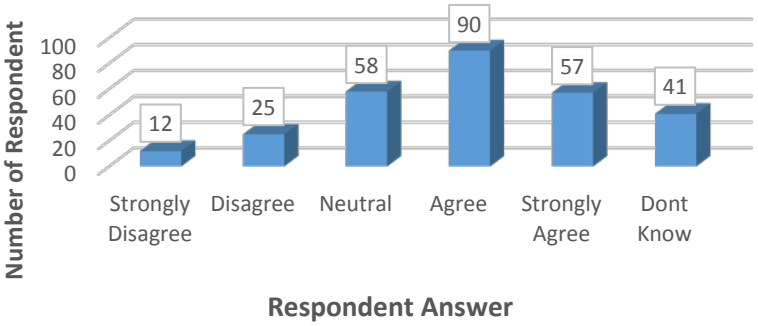

Figure 44: External customers - setting priorities for quality planning

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 57(20.1%) strongly agree, 90(31.8%) agreed, 58(20.5%) replied neutrally, 25(8.8%) responded with disagreement, 12(4.2%) responded with strong disagreement, and lastly 41(14.5%) responded with don't know.

e. Non-managerial employees are playing a key role in setting priorities for quality planning:

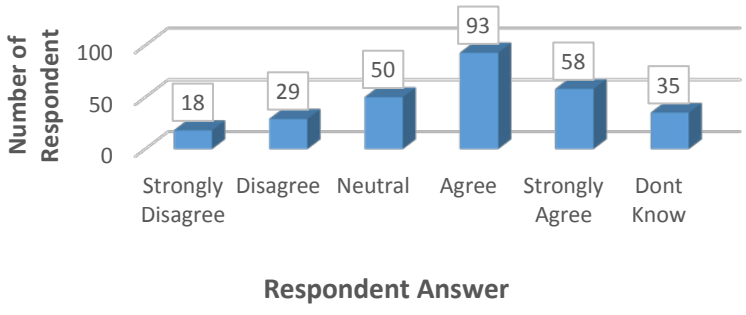

Figure 45: Non-managerial - setting priorities for quality planning

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 58(20.5%) strongly agree, 93(32.9%) agreed, 50(17.7%) replied neutrally, 29(10.2%) responded with disagreement, 18(6.4%) responded with strong disagreement, and lastly 35(12.4%) responded with don't know.

f. The senior executives have demonstrated an ability to manage the changes (organizational, technological) needed to improve the quality:

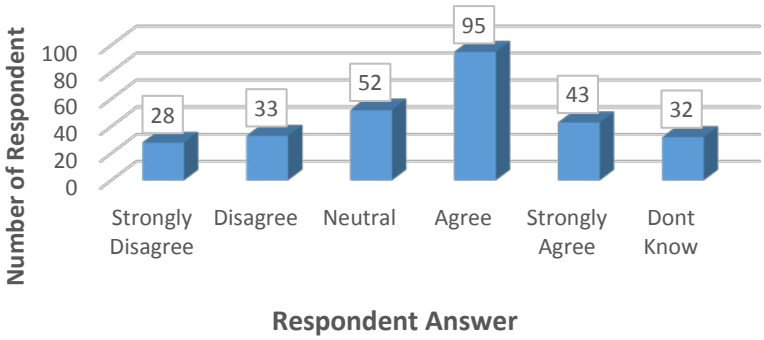

Figure 46: Senior executives demonstrate ability to manage changes

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 43(15.2%) strongly agree, 95(33.6%) agreed, 52(18.4%) replied neutrally, 33(11.7%) responded with disagreement, 28(9.9%) responded with strong disagreement, and lastly 32(11.3%) responded with don't know.

g. The senior executives generate confidence that efforts to improve quality will succeed:

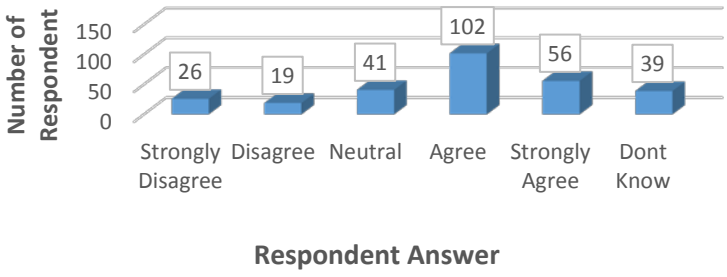

Figure 48: Senior executives generate confidence

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 56(19.8%) strongly agree, 101(36%) agreed, 41(14.5%) replied neutrally, 19(6.7%) responded with disagreement, 26(9.2%) responded with strong disagreement, and lastly 39(13.8%) responded with don't know.

4. Financial Performance Questions

a. Liquidity cash on hand:

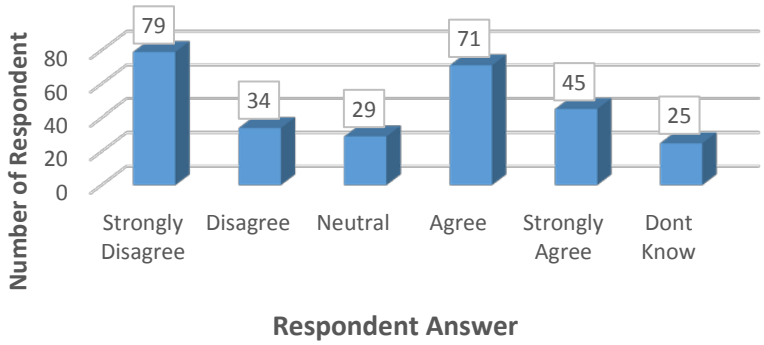

Figure 49: Liquidity cash on hand

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 45(15.9%) strongly agree, 71(25.1%) agreed, 29(10.2%) replied neutrally, 34(12%) responded with disagreement, 79(27.9%) responded with strong disagreement, and lastly 25(8.8%) responded with don't know.

b. Solvency (as little liabilities as possible):

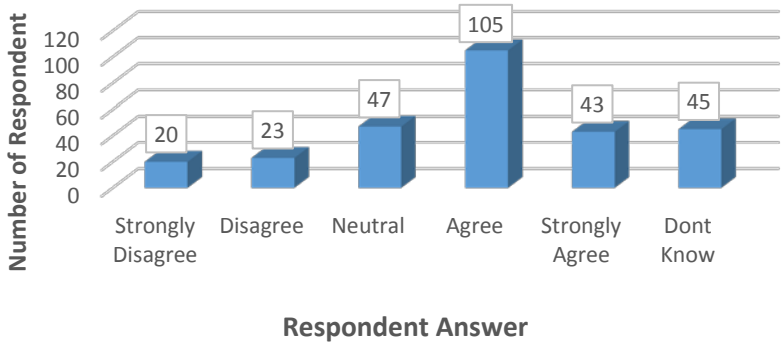

Figure 50: Solvency

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 43(15.2%) strongly agree, 105(37.1%) agreed, 45(16.6%) replied neutrally, 23(8.1%) responded with disagreement, 20(7.1%) responded with strong disagreement, and lastly 45(15.9%) responded with don't know.

c. Efficiency (time-efficient processes):

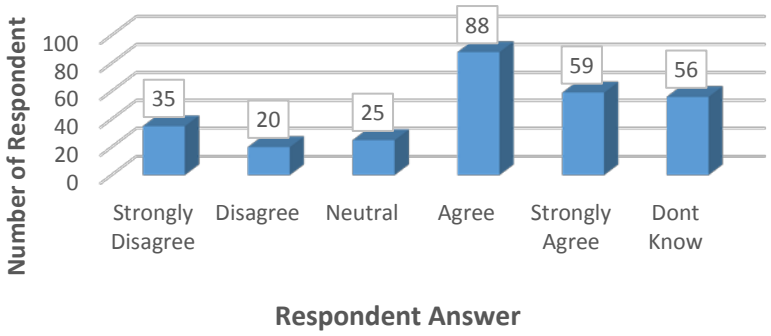

Figure 51: Efficiency

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 59(20.8%) strongly agree, 88(31.1%) agreed, 25(8.8%) replied neutrally, 20(7.1%) responded with disagreement, 35(12.4%) responded with strong disagreement, and lastly 56(19.8%) responded with don't know.

d. Effectiveness (performing economically):

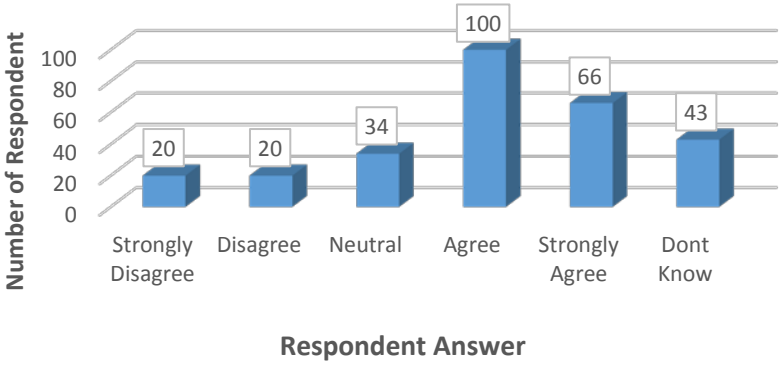

Figure 52: Effectiveness

The Likert scale (five-point) was used in the above figure to calculate the

opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 66(23.2%) strongly agree, 100(35.3%) agreed, 34(12%) replied neutrally, 20(7.1%) responded with disagreement, 20(7.1%) responded with strong disagreement, and lastly 43(15.2%) responded with don't know.

e. Existence (remaining in operation):

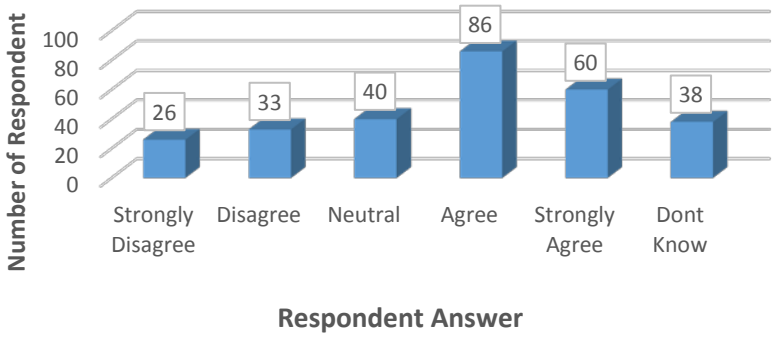

Figure 53: Existence

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 60(21.2%) strongly agree, 86(30.4%) agreed, 40(14.1%) replied neutrally, 33(11.7%) responded with disagreement, 26(9.2%) responded with strong disagreement, and lastly 38(13.4%) responded with don't know.

f. Profitability (most profit as possible):

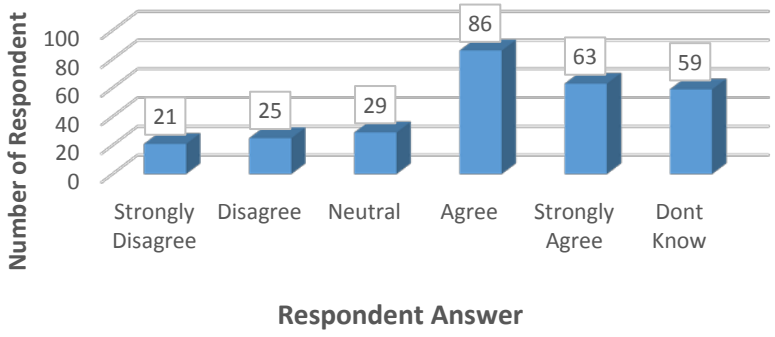

Figure 54: Profitability

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to

Strongly Disagree. Of the 283 respondents, 63(22.3%) strongly agree, 86(30.4%) agreed, 29(10.2%) replied neutrally, 25(8.8%) responded with disagreement, 21(7.4%) responded with strong disagreement, and lastly 59(20.8%) responded with don't know.

5. Innovation Performance Questions

a. Competitors are slow to copy our product introductions:

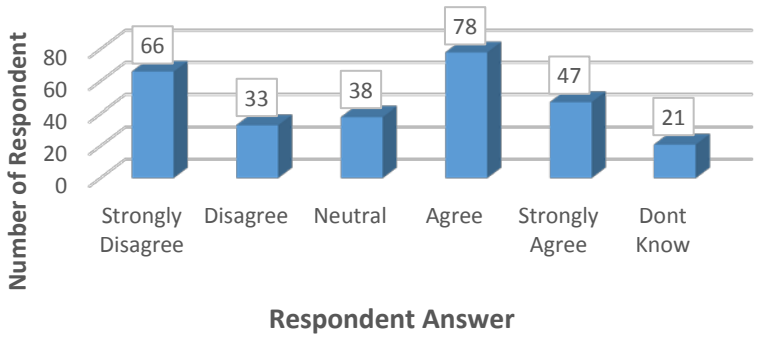

Figure 55: Competitors are slow to copy our product

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 47(16.6%) strongly agree, 78(27.6%) agreed, 38(13.4%) replied neutrally, 33(11.7%) responded with disagreement, 66(23.3%) responded with strong disagreement, and lastly 21(7.4%) responded with don't know.

b. New product development projects often don't finish on time:

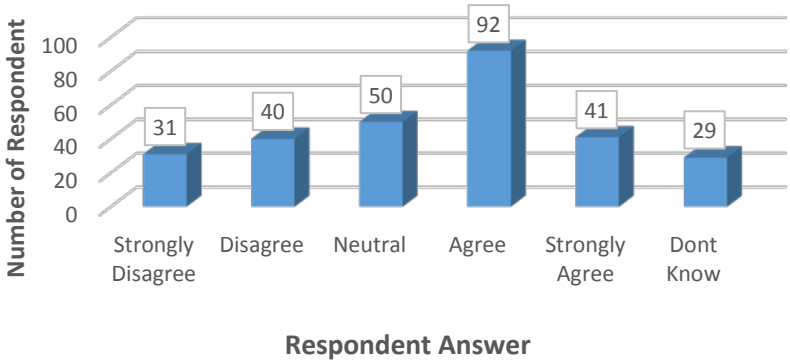

Figure 56: New product development projects often don't finish on time

The Likert scale (five-point) was used in the above figure to calculate the

opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 41(14.5%) strongly agree, 92(32.5%) agreed, 50(17.7%) replied neutrally, 40(14.1%) responded with disagreement, 31(11%) responded with strong disagreement, and lastly 29(10.2%) responded with don't know.

c. Managers receive lots of support developing new ideas:

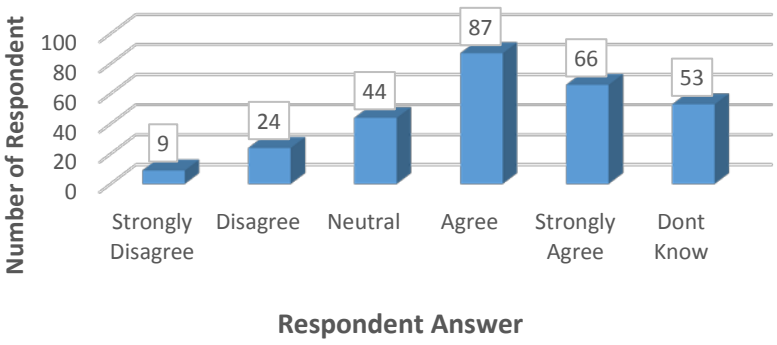

Figure 57: Managers receive lots of support developing new ideas

The Likert scale (five-point) was used in the above figure to calculate the opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 66(23.3%) strongly agree, 87(30.7%) agreed, 44(15.5%) replied neutrally, 24(8.5%) responded with disagreement, 9(3.2%) responded with strong disagreement, and lastly 53(18.7%) responded with don't know.

d. We don't penetrate all possible channels, customer groups, and regions with new products and services:

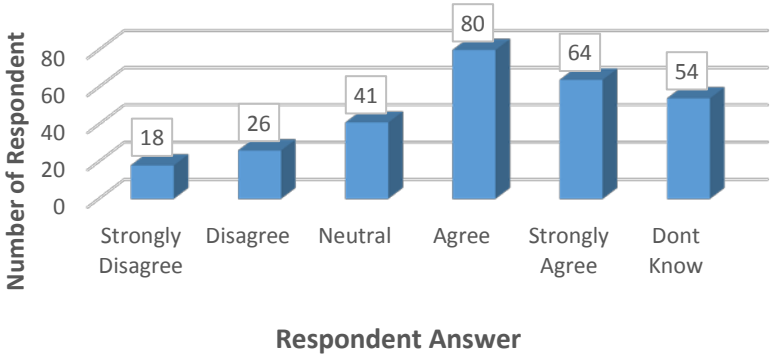

Figure 58: Penetrate all possible channels, customer groups, and regions

The Likert scale (five-point) was used in the above figure to calculate the

opinion of the respondents. The bar chart contains options from Strongly Agree to Strongly Disagree. Of the 283 respondents, 64(22.6%) strongly agree, 80(28.3%) agreed, 41(14.5%) replied neutrally, 26(9.2%) responded with disagreement, 18(6.4%) responded with strong disagreement, and lastly 54(19.1%) responded with don't know.

D. Analysis for thesis variables

In this section, the researcher will discuss and analysis thesis variables. These variables are TQM, Statistical Measures, Financial Performance, Innovation Performance, and Operational Performance.

1. Reliability Test

Table 31: Reliability Test

Reliability Statistics		
Variable	**Cronbach's Alpha**	**N of Items**
TQM-Practices	0.748	8
Statistical-Measures	0.806	5
Operation-Performance	0.751	7
Financial-Performance	0.701	6
Innovation-Performance	0.738	4
Overall Items	0.909	30

- Reliability test of items has checked through Cronbach's alpha of overall items and it is 90.9% which is excellent it means we can say that items which we have used in this research that are valid and acceptable.
- Reliability test of items has checked through Cronbach's alpha of TQM items and it is 74.8% which is excellent it means we can say that TQM items which we have used in this research that are valid and acceptable.
- Reliability test of items has checked through Cronbach's alpha of Statistical Measures items and it is 80.6% which is also excellent indicator that means we can say that Statistical Measures items which we have used in this research that are valid and acceptable
- Reliability test of items has checked through Cronbach's alpha of Operational Performance items and it is 76.2% which is also excellent indicator that means we can say that Operational Performance items which we have used in this

research that are valid and acceptable.

- Reliability test of items has checked through Cronbach's alpha of Financial Performance items and it is 70.1% which is also excellent indicator that means we can say that Financial Performance items which we have used in this research that are valid and acceptable.
- Reliability test of items has checked through Cronbach's alpha of Innovation Performance items and it is 73.8% which is also excellent indicator that means we can say that Innovation Performance items which we have used in this research that are valid and acceptable.

2. Factors Analysis:

Kaiser-Meyer-Olkin (KMO) Test is a measure of how suited your data is for Factor Analysis. The test measures the adequacy of sampling for each parameter in the system and for the entire model. The statistics is a calculation of the ratio of variance between variables that could be typical and common variance (Cerny & Kaiser, 1977).

Table 3: KMO Result Explanation based on Kaiser (1974)

Value	Status - Result
Between 0.00 to 0.49	Unacceptable
Between 0.50 to 0.59	Miserable
Between 0.60 to 0.69	Mediocre
Between 0.70 to 0.79	Middling
Between 0.80 to 0.89	Meritorious
Between 0.90 to 1.00	Marvelous

a. Factor Analysis (KMO) for independent variables (TQM-Practices and Statistical-Measures)

Table 33: Factor Analysis - KMO Test result for independent variables

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.858
Bartlett's Test of Sphericity	Approx. Chi-Square	2050.581
	df	78
	Sig.	.000

Based on the above table, the KMO for the independent variables in this study is 0.858. That mean our values of sample is Meritorious and acceptable.

b. Factor Analysis (Rotated Component Matrix) for independent variables (TQM-Practices and Statistical-Measures)

Table 34: Factor Analysis - Rotated Component Matrix Test result for independent variables

Rotated Component Matrix[a]	Component	
	1	2
TQM1-The senior executives provide high visible leadership in maintaining an environment that supports quality improvements		.797
TQM2-The industry collects a wide range of data and information about the quality.	.837	
TQM3-Middle managers (e.g., department heads, program directors, and first line supervisors) are playing a key role in setting priorities for quality planning	.659	
TQM4-Continuous improvement tools (brainstorming, check sheet and other statistical process control) are applied on regular basis.		.897
TQM5-Employees' participation in industry's success reduces the turnover and therefore reduces the cost of hiring and training new employees	.691	
TQM6-As well as being fully aware of customers' needs and expectations, each person must respect the needs and expectations of their suppliers		.905
TQM7-The industry emphasizes on assessing current customers' needs and expectations.	.832	
TQM8-Structural changes (less complexity, reduction of through put time and losses) are appreciated in your industry.	.764	
SM1-Industry employees are given education and statistical training in how to identify and act on quality improvement opportunities.		
SM2-Industry employees are given education and training in statistical and other quantitative methods that support quality improvement.	.741	

Table 34(cont): Factor Analysis - Rotated Component Matrix Test result for independent variables

SM3-Industry employees have the authority to correct problems in their area when quality standards are not being met.	.776
SM4-Industry employees are supported when they take necessary risks to improve quality.	.822
SM5-The industry has an effective system for employees to make suggestions to management on how to improve quality	.775

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.[a]
a. Rotation converged in 3 iterations.

Based on the above table, the researcher founds the below about independent variables:

- TQM-Practices, its grouped in two groups (factors). That is mean the TQM-Practices will divide for two variables. The new variables (factors) are TQM-Continues-Improvements and TQM-Management-Supports.
- The questions TQM2, TQM3, TQM5, TQM7, and TQM8 are related to TQM-Continues-Improvements.
- The questions TQM1, TQM4, and TQM6 are related to TQM- Management-Supports.
- The first question in Statistical-Measures (SM1), its discarded because of its factor can't be grouped.

c. Factor Analysis (KMO) for dependent variables (Financial, Operation and Innovational Performances)

Table 35: Factor Analysis - KMO Test result for dependent variables

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.747
Bartlett's Test of Sphericity	Approx. Chi-Square	2096.497
	df	136
	Sig.	.000

Based on the above table, the KMO for dependent variables in this study is 0.747. That mean our values of sample is Meritorious and acceptable.

d. Factor Analysis (Rotated Component Matrix) for dependent variables (Financial, Operation and Innovational Performances)

Table 36: Factor Analysis - Rotated Component Matrix Test result for dependent variables

Rotated Component Matrix[a]	Component		
	1	2	3
OP1-Industry employees are given adequate time to plan for and test improvements.			.828
OP2-Each department and work group within this industry maintains specific goals to improve quality.			.565
OP3-Middle managers (e.g., department heads, program directors, and first line supervisors) are playing a key role in setting priorities for quality planning.			.715
OP4-External customers are playing a key role in setting priorities for quality planning	.637		
OP5-Non-managerial employees are playing a key role in setting priorities for quality planning.	.589		
OP6-The senior executives have demonstrated an ability to manage the changes (e.g., organizational, technological) needed to improve the quality.			.684
OP6-The senior executives have demonstrated an ability to manage the changes (e.g., organizational, technological) needed to improve the quality.			.684
OP7-The senior executives generate confidence that efforts to improve quality will succeed.	.819		
FP1-Liquidity cash on hand.			
FP2-Solvency (as little liabilities as possible).	.874		
FP3-Efficiency (time-efficient processes).	.892		
FP4-Effectiveness (performing economically).	.833		
FP5-Existence (remaining in operation).			
FP6-Profitability (most profit as possible).			

Table 46: (con) Factor Analysis - Rotated Component Matrix Test result for dependent variables

IP1-Competitors are slow to copy our product introductions.	.764
IP2-New product development projects often don't finish on time.	.708
IP3-Managers receive lots of support developing new ideas.	.703
IP4-We don't penetrate all possible channels, customer groups, and regions with new products and services.	.762

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.[a]
a. Rotation converged in 5 iterations.

Based on the above table, the researcher founds the below about dependent variables:

- Operation-Performance, its grouped in two groups (factors). That is mean the Operation-Performance will divide for two variables (factors). The new variables are OP-Quality-Planning and OP-Quality-Improvements.
- The questions OP4, OP5, and OP7 are related to OP-Quality-Planning.
- The questions OP1, OP2, OP3, and OP6 are related to OP-Quality-Improvements.
- The questions FP1, FP5, and FP6 in Financial-Performance, its discarded because of its factors can't be grouped.

3. Correlation Analysis:

Table 37: Correlation Analysis

		TQM-CI	**TQM-MS**	**SM**	**OP-QP**	**OP-QI**	**IP**	**FP**
TQM-Continues-Improvements (TQM-CI)	Pearson Correlation	1	.043	.787**	.745**	.303**	.209**	.860**
	Sig. (2-tailed)		.476	.000	.000	.000	.000	.000
	N	283	283	283	283	283	283	283

Table 37: **(con)** Correlation Analysis

TQM-Management-Supports (TQM-MS)	Pearson Correlation	.043	1	.243**	.156**	.218**	.233**	-.025
	Sig. (2-tailed)	.476		.000	.008	.000	.000	.676
	N	283	283	283	283	283	283	283
Statistical Measure (SM)	Pearson Correlation	.787**	.243**	1	.696**	.372**	.375**	.718**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	283	283	283	283	283	283	283
Operation Performance, Quality-Planning (OP-QP)	Pearson Correlation	.745**	.156**	.696**	1	.419**	.239**	.712**
	Sig. (2-tailed)	.000	.008	.000		.000	.000	.000
	N	283	283	283	283	283	283	283
Operation Performance, Quality-Improvements (OP-QI)	Pearson Correlation	.303**	.218**	.372**	.419**	1	.123*	.437**
	Sig. (2-tailed)	.000	.000	.000	.000		.039	.000
	N	283	283	283	283	283	283	283
Innovation Performance (IP)	Pearson Correlation	.209**	.233**	.375**	.239**	.123*	1	.118*
	Sig. (2-tailed)	.000	.000	.000	.000	.039		.048
	N	283	283	283	283	283	283	283
Financial Performance (FP)	Pearson Correlation	.860**	-.025	.718**	.712**	.437**	.118*	1
	Sig. (2-tailed)	.000	.676	.000	.000	.000	.048	
	N	283	283	283	283	283	283	283

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

*. Correlation is significant at the 0.05 level (2-tailed).

This thesis contains three main hypotheses. These hypotheses are newer and are linked with each other to form a new hypothesis which is ‘‘Is the use of TQM practices with statistical measures of quality positively affect the performance of

business projects?'' Now, the researcher has undergone a test of these variables in order to determine their validity. According to (Pallant, 2007), researchers conduct correlation tests to determine how these variables are connected with each other and whether their amalgamation is valid or not.

The main variables of this thesis are TQM practices and Statistical Measures of Quality, and depending variables were Innovation Performance, Operational Performance, and Financial Performance of Quality. The test is that how these variables are linked with one another.

The correlation values range from -1.00 to +1.00.

Table 38: Correlation Interpretations

Value	Status
Between 0.01 to 0.25	Weak but positive correlation
Between 0.25 to 0.50	Moderate correlation
Between 0.50 to 0.75	Strong positive correlation
Equal to 1	Perfect positive correlation
Equal to 0	No correlation
Between -0.01 to -0.25	Weak negative correlation
Between -0.25 to -0.50	Moderate negative correlation
Between -0.50 to -0.75	Strong negative correlation
Between -0.75 to -1.00	Perfect negative correlation

If we look at the above table, we found that all of our values were positive expect FP with TQM-MS. It means almost all of our variables were positively linked to each other and form a consensus to develop a newer hypothesis. Finding a good relationship between variables results in newer and stronger idea that develops into a hypothesis or, in other words, becomes the center of study.

4. Regression Analysis:

a. R-Square for Operation Performance – Quality Planning

Table 39 : R Square – OP-QP

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.769a	.592	.587	.70713
a. Predictors: (Constant), SM, TQM-CI, TQM-MS				

R- square is 0.592 that means using the TQM and Statistical Measures can explained by 59.2% variations of variation in Operation Performance – Quality

Planning of Business Projects.

b. ANOVA for Operation Performance – Quality Planning

Table 40: ANOVA - OP-QP

ANOVA[a]					
Model	**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
Regression	202.314	3	67.438	134.866	.000b
Residual	139.510	279	.500		
Total	341.824	282			

a. Dependent Variable: Operation Performance – Quality Planning
b. Predictors: (Constant), SM, TQM-CI, TQM-MS

Above table (ANOVA) showing the significance value is 0.000 and it is below that 0.05 it means that Regression analysis also supported hypotheses of this research.

c. Beta Interpretations for Operation Performance – Quality Planning:

Table 41: Co-efficient of Betas - OP-QP

Coefficients[a]					
Model	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
	B	**Std. Error**	**Beta**		
(Constant)	.808	.182		4.437	.000
TQM-Continues-improvements	.528	.062	.547	8.556	.000
TQM-Management-Supports	.061	.034	.073	1.792	.074
Statistical Measures	.225	.060	.248	3.771	.000

a. Dependent Variable: Operation Performance – Quality Planning

Based on the above table, the researcher finds the below:

- If the company will apply 1 tool of TQM-Continues-improvements, then Operation Performance – Quality Planning will be increase by 52.8%.
- If the company will apply 1 tool of TQM-Management-Supports, then Operation Performance – Quality Planning will be increase by 6%.
- If the company will apply 1 tool of Statistical Measures, then Operation Performance – Quality Planning will be increase by 22.5%.

d. R-Square for Operation Performance – Quality Improvements

Table 42: R Square – OP-QI

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.398a	.158	.149	.98232

a. Predictors: (Constant), SM, TQM-CI, TQM-MS

R- square is 0.158 that means using the TQM and Statistical Measures can explained by 15.8% variations of variation in Operation Performance – Quality Improvements of Business Projects.

e. ANOVA for Operation Performance – Quality Improvements

Table 43: ANOVA - OP-QI

ANOVA[a]					
Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	50.627	3	16.876	17.489	.000b
Residual	269.223	279	.965		
Total	319.850	282			

a. Dependent Variable: Operation Performance – Quality Improvements
b. Predictors: (Constant), SM, TQM-CI, TQM-MS

Above table (ANOVA) showing the significance value is 0.000 and it is below that 0.05 it means that Regression analysis also supported hypotheses of this research.

f. Beta Interpretations for Operation Performance – Quality Improvements:

Table 44: Co-efficient of Betas - OP-QI

Coefficients[a]					
Model	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
	B	**Std. Error**	**Beta**		
(Constant)	2.269	.253		8.965	.000
TQM-Continues-improvements	.079	.086	.085	.926	.355
TQM-Management-Supports	.121	.047	.149	2.556	.011
Statistical Measures	.236	.083	.269	2.843	.005

a. Dependent Variable: Operation Performance – Quality Improvements

Based on the above table, the researcher finds the below:

- If the company will apply 1 tool of TQM-Continues-improvements, then Operation Performance – Quality Improvements will be increase by 7.9%.
- If the company will apply 1 tool of TQM-Management-Supports, then Operation Performance – Quality Improvements will be increase by 12.1%.
- If the company will apply 1 tool of Statistical Measures, then Operation Performance – Quality Improvements will be increase by 23.6%.

g. R-Square for Innovation Performance

Table 45: R Square – IP

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.416a	.173	.164	.99780
a. Predictors: (Constant), SM, TQM-CI, TQM-MS				

R- square is 0.173 that means using the TQM and Statistical Measures can explained by 17.3% variations of variation in Innovation Performance of Business Projects.

h. ANOVA for Innovation Performance

Table 46: ANOVA - IP

ANOVA[a]					
Model	**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
Regression	58.098	3	19.366	19.452	.000b
Residual	277.774	279	.996		
Total	335.873	282			
a. Dependent Variable: Innovation Performance					
b. Predictors: (Constant), SM, TQM-CI, TQM-MS					

Above table (ANOVA) showing the significance value is 0.000 and it is below that 0.05 it means that Regression analysis also supported hypotheses of this research.

i. Beta Interpretations for Innovation Performance:

Table 47: Co-efficient of Betas - IP

Coefficients[a]					
Model	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
	B	**Std. Error**	**Beta**		
(Constant)	2.376	.257		9.243	.000
TQM-Continues-Improvements	-.169	.087	-.176	-1.939	.054
TQM-Management-Supports	.102	.048	.123	2.119	.035
Statistical Measures	.435	.084	.484	5.163	.000

a. Dependent Variable: Innovation Performance

Based on the above table, the researcher finds the below:

- If the company will apply 1 tool of TQM-Continues-improvements, then Innovation Performance will be decrease by 16.9%.
- If the company will apply 1 tool of TQM-Management-Supports, then Innovation Performance will be increase by 10.2%.
- If the company will apply 1 tool of Statistical Measures, then Innovation Performance will be increase by 43.5%.

j. R-Square for Financial Performance

Table 48: R Square – FP

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.867a	.752	.749	.67620

a. Predictors: (Constant), SM, TQM-CI, TQM-MS

R- square is 0.752 that means using the TQM and Statistical Measures can explained by 75.2% variations of variation in Innovation Performance of Business Projects.

k. ANOVA for Financial Performance

Table 49: ANOVA - FP

ANOVA[a]					
Model	**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
Regression	386.096	3	128.699	281.469	.000b
Residual	127.570	279	.457		
Total	513.666	282			
a. Dependent Variable: Financial Performance					
b. Predictors: (Constant), SM, TQM-CI, TQM-MS					

Above table (ANOVA) showing the significance value is 0.000 and it is below that 0.05 it means that Regression analysis also supported hypotheses of this research.

l. Beta Interpretations for Financial Performance:

Table 50: Co-efficient of Betas - IP

Coefficients[a]					
Model	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
	B	**Std. Error**	**Beta**		
(Constant)	.291	.174		1.669	.096
TQM-Continues-improvements	.872	.059	.736	14.766	.000
TQM-Management-Supports	-.098	.033	-.096	-3.010	.003
Statistical Measures	.180	.057	.162	3.153	.002
a. Dependent Variable: Financial Performance					

Based on the above table, the researcher finds the below:

- If the company will apply 1 tool of TQM-Continues-improvements, then Financial Performance will be increase by 87.2%.
- If the company will apply 1 tool of TQM-Management-Supports, then Financial Performance will be decrease by 9.8%.
- If the company will apply 1 tool of Statistical Measures, then Financial Performance will be increase by 18%.

E. Updated Conceptual Framework:

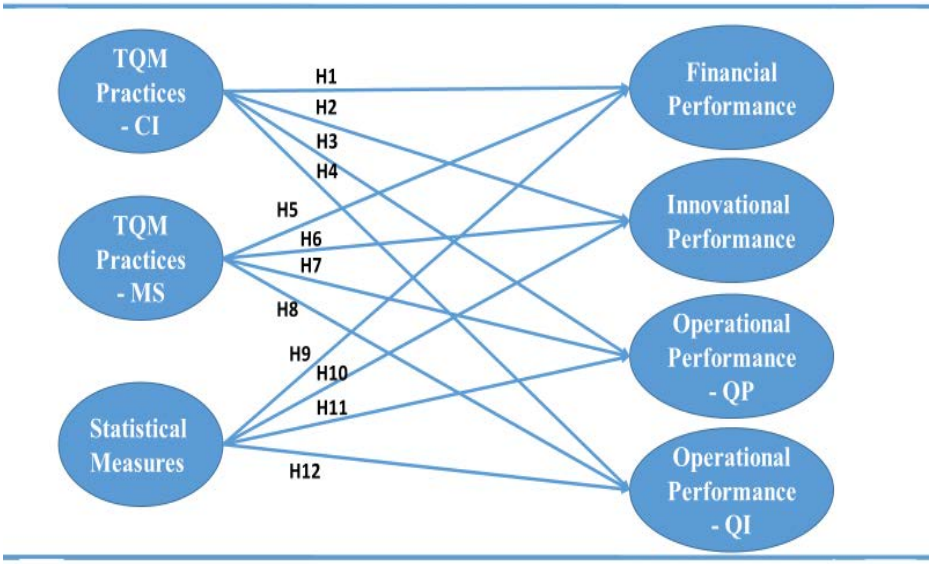

Figure 59 : Updated Conceptual Framework

F. Updated and Testing Hypotheses:

- TQM-Practices - Continues Improvements are directly affects Financial, Innovational, Operational (Quality Planning and Quality Improvements) Performances.

1. H1: TQM-Practices - Continues Improvements are directly and positively affects Financial Performance.

   Based on the table 33, value is ($r=0.860$) and $p < 0.05$.

   Based on the table 44, $R^2 = 0.752$.

   Based on the table 45, $p < 0.05$.

   Based on the table 50, $p < 0.05$.

Based on the above results, it means there is strong relationship between TQM Practices - Continues Improvements and Financial Performance, that is supported H1 hypothesis.

2. H2: TQM-Practices - Continues Improvements are directly and positively affects Innovational Performance.

Based on the table 33, value is (r=0.209) and $p < 0.05$.

Based on the table 41, $R^2 = 0.173$.

Based on the table 42, $p < 0.05$.

Based on the table 43, $p > 0.05$.

Based on the above results, it means there is no strong significant relationship between TQM Practices - Continues Improvements and Innovational Performance, that is not supported H2 hypothesis.

3. H3: TQM-Practices - Continues Improvements are directly and positively affects Operational - Quality Planning Performance.

   Based on the table 33, value is (r=0.745) and $p < 0.05$.

   Based on the table 35, $R^2 = 0.592$.

   Based on the table 36, $p < 0.05$.

   Based on the table 37, $p < 0.05$.

Based on the above results, it means there is strong relationship between TQM Practices - Continues Improvements and Operational - Quality Planning Performance, that is supported H3 hypothesis.

4. H4: TQM-Practices - Continues Improvements are directly and positively affects Operational – Quality Improvements Performance.

   Based on the table 33, value is (r=0.303) and $p < 0.05$.

   Based on the table 38, $R^2 = 0.158$.

   Based on the table 39, $p < 0.05$.

   Based on the table 40, $p > 0.05$.

Based on the above results, it means there is no strong significant relationship between TQM Practices - Continues Improvements and Operational - Quality Improvements Performance, that is not supported H4 hypothesis.

- TQM-Practices - Management Supports are directly affects Financial, Innovational, Operational (Quality Planning and Quality Improvements) Performances.

1. H5: TQM-Practices - Management Supports are directly and positively affects Financial Performance.

   Based on the table 33, value is (r= -0.025) and $p > 0.05$.

   Based on the table 44, $R^2 = 0.752$.

   Based on the table 45, $p < 0.05$.

   Based on the table 46, $p < 0.05$.

   Based on the above results, it means there is no strong significant relationship between TQM Practices - Management Supports and Financial Performance, that is not supported H5 hypothesis.

2. H6: TQM-Practices - Management Supports are directly and positively affects Innovational Performance.

   Based on the table 33, value is (r= 0.233) and $p < 0.05$.

   Based on the table 41, R2 = 0.173.

   Based on the table 42, $p < 0.05$.

   Based on the table 43, $p < 0.05$.

   Based on the above results, it means there is strong relationship between TQM Practices - Management Supports and Innovational Performance, that is supported H6 hypothesis.

3. H7: TQM-Practices - Management Supports are directly and positively affects Operational - Quality Planning Performance.

   Based on the table 33, value is (r= 0.156) and $p < 0.05$.

   Based on the table 35, R2 = 0.592.

   Based on the table 36, $p < 0.05$.

   Based on the table 37, $p > 0.05$.

   Based on the above results, it means there is no strong significant relationship between TQM Practices - Management Supports and Operational - Quality Planning Performance, that is not supported H7 hypothesis.

4. H8: TQM-Practices - Management Supports are directly and positively

affects Operational - Quality Improvements Performance.

Based on the table 33, value is (r= 0.218) and $p < 0.05$.

Based on the table 38, R2 = 0.158.

Based on the table 39, $p < 0.05$.

Based on the table 40, $p < 0.05$.

Based on the above results, it means there is strong relationship between TQM Practices - Management Supports and Operational - Quality Improvements Performance, that is supported H8 hypothesis.

- Statistical Measures are directly affecting Financial, Innovational, Operational (Quality Planning and Quality Improvements) Performances.

1. H9: Statistical Measures are directly and positively affecting Financial Performance.

   Based on the table 33, value is (r= 0.718) and $p < 0.05$.

   Based on the table 44, R2 = 0.752.

   Based on the table 45, $p < 0.05$.

   Based on the table 46, $p < 0.05$.

   Based on the above results, it means there is strong relationship between Statistical Measures and Financial Performance, that is supported H9 hypothesis.

2. H10: Statistical Measures are directly and positively affecting Innovational Performance.

   Based on the table 33, value is (r= 0.375) and $p < 0.05$.

   Based on the table 41, R2 = 0.173.

   Based on the table 42, $p < 0.05$.

   Based on the table 43, $p < 0.05$.

   Based on the above results, it means there is strong relationship between Statistical Measures and Innovational Performance, that is supported H10 hypothesis.

3. H11: Statistical Measures are directly and positively affecting Operational - Quality Planning Performance.

Based on the table 33, value is (r= 0.696) and $p < 0.05$.

Based on the table 35, R2 = 0.592.

Based on the table 36, $p < 0.05$.

Based on the table 37, $p < 0.05$.

Based on the above results, it means there is strong relationship between Statistical Measures and Operational - Quality Planning Performance, that is supported H11 hypothesis.

4. H12: Statistical Measures are directly and positively affecting Operational - Quality Improvements Performance.

   Based on the table 33, value is (r= 0.372) and $p < 0.05$.

   Based on the table 38, R2 = 0.158.

   Based on the table 39, $p < 0.05$.

   Based on the table 40, $p < 0.05$.

Based on the above results, it means there is strong relationship between Statistical Measures and Operational - Quality Improvements Performance, that is supported H12 hypothesis.

G. Hypotheses Test Summary:

Table 51: Hypotheses Test Summary

H	Hypothesis	Result
H1	TQM-Practices - Continues Improvements are directly and positively affects Financial Performance.	Supported
H2	TQM-Practices - Continues Improvements are directly and positively affects Innovational Performance	Not Supported
H3	TQM-Practices - Continues Improvements are directly and positively affects Operational - Quality Planning Performance	Supported

Table 51(cont): Hypotheses Test Summary

H4	TQM-Practices - Continues Improvements are directly and positively affects Operational – Quality Improvements Performance	Not Supported
H5	TQM-Practices - Management Supports are directly and positively affects Financial Performance	Not Supported
H6	TQM-Practices - Management Supports are directly and positively affects Innovational Performance	Supported
H7	TQM-Practices - Management Supports are directly and positively affects Operational - Quality Planning Performance	Not Supported
H8	TQM-Practices - Management Supports are directly and positively affects Operational - Quality Improvements Performance	Supported
H9	Statistical Measures are directly and positively affecting Financial Performance	Supported
H10	Statistical Measures are directly and positively affecting Innovational Performance	Supported
H11	Statistical Measures are directly and positively affecting Operational - Quality Planning Performance	Supported
H12	Statistical Measures are directly and positively affecting Operational - Quality Improvements Performance	Supported

V. CONCLUSION AND RECOMMENDATION

A. General Summary of the Study:

To conclude is to say that imparting statistical measures of quality is the only viable option to increase the productivity and efficiency of business projects in this modern era of competition. As early discussed, businesses have developed. Technology develops with every passing day (Hofstede, 1991). New techniques are employed by rival firms to shore up their interests. Hence, without adhering to TQM tools, businesses cannot improve their performance. That is why; most of Turkish firms use statistical measures of quality to develop their business projects not only in operations but also in financial and innovation aspects.

It was very necessary to initiate a research paper on this question because the significance of TQM has increased many folds (Abusa & Gibson, 2013). It has become a central tool for business projects in the world of business today. Statistical tools generated as a result of TQM applications pave the way for smooth and productive conclusion of business projects undertaken in different conditions by different business-minds. This is the center of our research to know the impacts of TQM practices in the form of statistical measures on project's performance.

Statistical tools help us find out the exact calculations for future planning for business tools. For example, Correlation test help us in identifying the validity of the relationship between hypotheses that a student claims to be researched. This is one of the statistical tools that assist not only the researchers but also the businessman in carrying out the business projects (Yeung, et al, 2006). For instance, a manager is expecting a profit for a new venture equal to that of last year. But he has no exact calculations. He is scared to launch a new business project, having the similar ingredients of the last one. In this scenario statistical tools of TQM practices are the only viable option to assess the chances of getting the similar profit this year **(**Hughes and Halsall, 2002). Correlation technique would help him by determining the relationship of profit of last year and the probability of getting the same profit

this year.

At first, the companies face the issue of streamlining the use of statistical measures of quality into their day to day affairs. It is very easy to think bigger, but it is very difficult to achieve it. The same is the issue with these firms. They try their best to implement and impart the use of statistical measures of quality in their businesses but sometimes they fail to achieve it due to lack of internal control and sometimes due to disturbed environment of the firm.

Yet, most of the firms when asked were successful in using these tools effectively and efficiently. They tried different TQM techniques that were made for dealing with issues like internal control or organization's internal environment **(**Huq & Stolen, 1998). Most of the Turkish firms whose primary business was the initiating long term and short-term projects successfully implemented these techniques.

Secondly, the process of implementing quality standards to ensure the good performance of business projects was hindered by these issues: psychological attitude of employees, personal enmity and geographical differences (Idris & Zairi, 2006). One of TQM standard is to remove these obstacles and make the use of statistical measures of quality work. The issue was again highlighted:

The backwards areas of usually do not provide morally strong employees for an organization. They don't show full allegiance to the organization for moral shortcoming. This also hinders TQM implementation (Jabnoun and Sedrani, 2005). Because employees don't change their behavior despite receiving many moral trainings. They are ingrained with their regional customs; no matter they are right or wrong. Therefore, regional blend of employees affects organizational performance

TQM implementation is also disturbed when employees have disagreements between one another for personal reasons. Professional jealousy or peer pressure does not allow them to share knowledge or expertise with each other.

If employees are not psychologically relaxed, they do not give their hundred percent in their work (Joiner, 2007). In today's world where a lot of new problems regarding health, wealth and technology have emerged, employees receive psychological shocks that do not allow them to work effectively despite receiving trainings how to implement TQM principles.

These issues can be dealt well by resorting to professional trainings,

stratifying the monetary needs of employees who are psychologically disturbed dearth of money forging a cooperative environment where no personal interests reign supreme.

Afterwards, we presented four main points. These were: use of statistical tools leads to TQM practices and the TQM practices positively affects the four main areas of operational performance, financial performance and innovation performance of business projects. Here are the glimpses: When a business team or any organization is willing to initiate a project, it has to apply some techniques in order to test the probability of generating profit and minimizing the risk of loss (Huq & Stolen, 1998).

To get accurate calculations of this, businessmen are given Probability test in TQM as a statistical measure. The probability test is the element by which the estimation of profit and loss is done. This estimation reduces the risk of planners. As a result of this TQM technique, business projects are positively benefited. Because when this technique is applied, the risk is reduced, cost is minimized, and the time is saved. This, in turn, adds to the efficiency of a business project.

Moreover, there are many hurdles in the way of achieving satisfactory operational performance. Today, most of the businesses are struck with this issue of how to get satisfactory operational performance. But there are four main hurdles in improving operational performance of a firm (Kanji, 2002). After going in depth of these issues, determining their nature, these hurdles would be removed with the help of TQM principles and statistical measures of quality. The following are the main blockades in the way of achieving higher satisfactory operational performance: Lack of demarcation of Responsibility of short tasks, Dearth of funding or late in disbursing funds, Personal Relationship, and undue influence on profit making.

Similarly, Innovation is a thing that makes a firm’s business develop by leaps and bounds. It brings new things that help business machinery and business minded people do their task with relative ease. Employees are facilitated by technology. Their skills are enhanced and the way of performing tasks become easy and comfortable. Every business entity works on introducing innovation in its products, the way of doing things, and facilitating its employees (Kartha, 2002). Many of them has become accomplishing while others do not. Firms face two main issues when they measure innovation performance: cost of switching and the difficulty in

streamlining.

It is happily and proudly stated that all of our main points were substantiated and proved with relevant data and survey (Kumar, et al, 2009). It was shown in the survey that it is true that the use of statistical measures of quality leads to TQM practices and TQM practices lead to better financial, operational and innovational performance of different business projects. Against each variable, there was a set of questions incorporated in a well-defined questionnaire that was distributed among the well reputed Turkish firms. The aim was to get reliable and authentic information to prove each element of variables. And luckily, the process ended at a positive note.

B. Important Facts of the Study:

In order to make the new reader fully acquainted with the gist of our study, the following facts have been displayed below. These are the facts that provide a hawk eye analyses for both the general readers and spectators.

- First of all, 28 (twenty-eight) General Managers of different Turkish firms were brought into contact who, more or less, were engaged in initiating business projects based upon TQM techniques and tools to improve quality of the projects. Almost half of their response was positive that TQM techniques affect business projects positively.
- During the survey almost 62% companies were those firms whose business resided in full manufacturing process. It is a world-wide accepted fact that statistical measures of quality are more useful in manufacturing companies than in any other type of companies. From the topmost Turkish firms that were engaged in initiating business projects, a handsome amount of them was surveyed to know the exact results that whether the reliance on the statistical tools of quality enhances the effectiveness of the business projects or not.
- Almost 50% (fifty percent) firms had ten years of operation or within it. It was necessary to know the experience of the companies before extracting information so that the information or their responses can be categorized, and the data can be effectively utilized to facilitate the survey process.
- Thirdly, the Quality system of TQM is also an important aspect of quality. In our case around 40% companies being contacted used TQM as a quality tool.

- Out of total responding firms, 34.6% of companies chose quality system on the requirements of customers. Either the customers suggested them, or the firms chose themselves on the basis that a quality system might meet the requirements and needs of the customers.
- Almost sixty one percent firms of the respondents tried their level best to accredit them to facilitate the research on businesses. It is always a two-way process. The contribution and interest of both is needed one company itself and the other employee himself. The former is needs to be willing to accredit its employees while the latter should always be ready to take on the job.
- Almost 17 percent respondents feel it easier to implement the quality system of their choice in order to enhance the quality and effectiveness of their working. Moreover, nearly 47% respondents felt it challenging to implement. This was because of different organizational culture. Demographic and institutional hurdles also play their part in this regard. While 24% percent firms found it difficult to implement and digest. This was also due to the internal environment and challenges. Apart from this, nearly 13% firms found it extremely difficult to implement.
- Out of total responding firms, many firms showed their commitment towards this trend. These firms gave their employees training in order to make them familiar to the quality system. In some cases, one employee was chosen who was given the task of coordinating and assisting the entire staff to become used to the new quality system. The person who was given the task of leading all other employees was an expert one who usually resolved the issues that the quality system produced for the rest of the employees. This information is incorporated in this thesis in the same way as received from the respondents.
- Around 25% firms said that the training period to train the employees needs to be six weeks. As it is more congenial and friendly period wherein employees learn more within short period of time. Others said that the period needs to be extended to eight weeks so that every subtle difference in learning could be highlighted. Almost 33% firms adhered to the suggestion that the training period should be of six months.
- Around 21% responding firms said that they didn’t get accreditation because

incorporating any quality system was too expensive for them. These firms were profit-conscious who don't want to experiment for quality. Other than this, nearly 8% firms were those which said that they are already working on the quality of their business projects therefore they didn't need any quality system to be introduced.

- Around 78% firms said that they had a quality of vision of long-term plans or projects to be initiated. While nearly 22 percent firms said that they didn't have long term plans.
- Almost 20% firms had long term plans in the form of strategic plans. Secondly, nearly 15% percent firms had long term plans in the form of production plans. Apart from this, around twenty percent firms had long term plans in the shape of quality plans. Around 15% firms said that they were having long term plans in the terms of marketing plans. And lastly, around 18% companies said that they had long term plans in the shape of succession plans.
- In this study shows that around 73% firms supported the staff development. The development encompassed every aspect like physical, psychological and emotional in order to match the employees' interests with that of the organization.
- Around sixty six percent firms opined that they have a quality policy in place while around 34% firms said they didn't have it. The purpose of having this policy is to enhance the efficiency of business projects and to reduce the human effort in determining the fault lines in a business task.
- Around 72% Turkish firms found committed to quality standards because their top management was very encouraging and showed a great deal of commitment to quality standards. Only 27.9% firms said that their top management shows a lukewarm interest to quality.
- Around 66% companies involved their employees in decision making. This shows that these firms encourage teamwork and are devotees of quality standards.
- In this study shows that when asked around 62% Turkish firms said that they are real supporters of teamwork. Quality cannot be attained in isolation of teamwork.

All the departments of a company need to be linked in this regard.

- In this regard, 85.5% firms said that they usually measure customer satisfaction level and in case of no customer satisfaction they initiate different tasks to motivate and satisfy the customers with their requirements.
- Nearly 66.4% companies' employees were satisfied with their companies and about 30.6% firms' employees were not satisfied with their organization. This was due to the different internal atmosphere of the companies and different cultural divergence between employees.

C. Limitations of the Study:

The survey of a research is not an easy task to accomplish. It always faces some hurdles and limitations. Same is the case with our study. It has to encounter various limitations. First, the respondents for this study are the middle and top management of business companies along with educationists related with the business field **(**Lee, 2004). They sometimes refuse to cooperate, depending upon their mood. Second, the study is limited within a few cities of Turkey. Third, since the researchers are unable to get into direct contact with each respondent, the survey may become limited. However, the efforts would be put in to make the quality essence of research survey.

D. Implications of the Research:

First of all, this study helps a business firm in many ways. The academia can also benefit from this research as it is multifaceted. Every business comprises of some basic pillars and the performance these pillars become directly proportional to its estimated life (McDonald, et al, 2002). These pillars are operational, financial and innovation performance of a business. If a business is lacking in these areas, it becomes short-lived. It cannot achieve its agendas and goals. That is why we claim that this thesis helps business especially those which initiate business projects.

Because, in this study all of these basic elements of business firm are well-studied and well-defined. We have tried to know that how much the operational, financial and innovation performance is critical for a business to survive in the light of TQM techniques. This becomes more critical and valuable to know when you are

living in the scientific age where competition is the rule of the day. Every firm uses different techniques of quality to go a step ahead of its rival. Let's have a concluding look over these pillars/ hypotheses.

Traditional practices are inadequate to provide a comprehensive solution for improvement. Since they only provide information to an organization's past performance. They do not cater for the daily operational information (Dale, et al, 2001).

The statement of Mr. Dale highlights the importance of this study as he notices that the past literature on the use of operational performance is inadequate in today's world as it is fraught with modern tools and techniques. To meet the modern operational challenges, we need modern literature and recent studies on the subject because, the requirement of performance is different everywhere. Therefore, we cannot universalize any hypothesis. This thing made us reach a conclusion that was to initiate a new research on this subject that highlights this issue and its critical aspects in the light of Turkey.

After going through the labyrinths of research survey, we reached a point. That point was that the use of statistical measures of quality positively affects the performance of a business project. No matter what quality system you implement **(**Najmi and Kehoe, 2000). But the step made towards improving quality is a step towards delivering quality to customers. This conclusion of the study can help business to adhere to the quality standards in their operations and the academia can be benefited by taking ready-made conclusions from this paper for future research.

Secondly financial performance is the most important aspect of any business. The life of any business is directly connected with the financial potential it has. The more financially strong a firm is the more days it shall run. But the issue is that whether it is rightly assessed or not.

Implementation of TQM tools largely affects the financial performance of a business (Flynn, et al, 1995). This is substantiated that without using TQM techniques and statistical measures of quality, financial performance of any organization cannot be improved.

Worldwide, many of the businesses get bankrupt only because they fail to gauge their financial performance and also fail in finding the ways to make it

effective. We find numerous examples of merger and privatization. This occurs because of lack of financial management. And the financial management is very important task especially for the small businesses and the firms which depend on short-term and long-term projects.

That is the reason we claim that this thesis can help businesses in many ways. Because it is consisting of suggestions how to improve financial performance of the business **(**Öztas, et al, 2004). After going through a hectic survey we found these suggestions that can help improve financial performance of a business project: use of database system to retain daily vouchers information, use of internal audit and CCTV cameras to make accounts staff vigilant, use of regular training programs to make the employees cautious of corruption, making the financial statements of the firm public so as to give accurate knowledge to the shareholders.

If these suggestions are implemented somehow the financial performance of business projects can be enlarged. But one is to be very clear that these steps cannot be implemented in isolation with the TQM principles. Most of the participated when inquired about this, said that these suggestions need the strength of TQM principles to make the use of financial resources effective.

Thirdly, innovation performance is another element that becomes very critical to the life cycle of a business. Innovation is a thing that makes a firm's business develop by leaps and bounds. It brings new things that help business machinery and business minded people do their task with relative ease. Employees are facilitated by technology **(**Povey, 1998). Their skills are enhanced and the way of performing tasks becomes easy and comfortable. Every business entity works on introducing innovation in its products, the way of doing things, and facilitating its employees. Some of them become successful while others do not. Firms face two main issues when they measure innovation performance: cost of switching and the difficulty in streamlining.

Different business projects are launched by every business firm in order to bring innovation in their products and methodology of working. The aim is to improve quality and increase the chances of earning handsome profit **(**Xie, et al, 1998). For that purpose, they change their products features, color and design to attract the customers. To ensure efficiency, they bring modern machinery and techniques for their working. Usually, the less popular or newly born firms switch to

innovation. They need something unique to popularize their product that is the case with the old firms having great market value and customer chain.

Firstly, the new firms rush towards bringing innovation. They feel insecure having old features or static features. They tend to change their products features, coloring and design in order to attract maximum number of customers. In this pursuit they do not measure their capacity of sustaining the innovation or change, their employee's skill level to master innovative techniques, and their market value to motivate the customers not to switch on account of having changed product of the same company.

Secondly, the old firms hesitate in bringing innovation. They are preoccupied with the cost of switching product's features, design, color and texture **(**Mohammad, 2005). They feel that they have no need of this because they already have a good market value and customers. They opine that innovation is brought to increase the market value of new firm while the old firms don't have such need. They bring innovation as change only to race with the rival firms. This innovation is sometimes brought in name only.

Hence, it becomes pertinent to say that innovation performance is the second most important element that determines the sustainability of a business. Without having sound strategy of bringing innovation performance par with the operational and financial one, a business may lose its way in the face numerous challenges posed by its rivals.

According to the survey conducted for this study innovation performance can be enhanced by following ways:

- Removing profit-minded hurdles that bar innovation only because of its cost.
- Making the organizational culture congenial for innovation experiences.
- Taking the employees into confidence that the new standards will not harm them.
- Performance measuring tools for different innovations being tried.
- Habit of quickly responding to customers queries that arise from innovational experience.
- Custom of quick jump to innovative techniques.

- Adherence to TQM principle that means the innovation being brought conforms to the quality standards laid down by TQM principles.

To conclude is to say that using TQM principles to maintain is not an easy task. It requires the commitment of conforming to the promise of keeping operational, financial and innovational elements intact with the TQM standards. Without this, quality cannot be achieved. Adhering and implementing these elements in the business projects is another hurdle in itself.

E. Suggestions and Recommendations

1. Recommendation One:

Use of TQM results in numerous advantages for a business; its benefits have been discussed in various business projects (Agus & Abdullah, 2000). This particular claim of Agus and Mokhtar forms the basis of our very first recommendation which is use of TQM principles rewards a business in many ways. The very first benefit that emanates from the use of TQM and statistical measures of quality is financial improvement and enhancement. Afterwards, internal and external customer satisfaction is upheld and ensured. Company-based benefits also come to light.

According to (Osuagwu, 2002) the use of TQM benefits in the following ways:

- First of all, TQM implementation enhances the overall management process of an organization
- Its operational processes and proceedings are speeded up
- Customer, employees and shareholder satisfaction is kept intact, more specifically effective.

The mentality to go after TQM is supported by the fact that many of the researchers pay a great deal of emphasis on it. Therefore, it is another benefit for the organization to pursue TQM with full zeal (Abdullah Hokoma, et al, 2008). The second most important benefit for the companies that operate in Muslim countries is that the TQM principles are not in confrontation with Islamic principles that is why they are being implemented in Muslim countries like Turkey (Abdullah Hokoma, et al, 2008).

Keeping in view these claims, we reach the conclusion that the use of TQM and other statistical measures of quality are the main tools by which an organization can develop into a multinational firm on the grounds that quality is maintained and retained. It is worldwide accepted rule that it is only quality of a product that leads a business towards the glory of success.

Many businesses have been translated into success stories only because they have run after quality. Quality and standards are the soul of any company. Especially, the firms whose sole business is dealing with business projects become exposed to many challenges of quality. It recommends that TQM implementation, in this context, becomes very useful for these types of businesses to become successful.

2. Recommendation Two:

When it comes to implement TQM principles, companies are stuck with variety of problems resulting from their internal environment (Ljungstrom & Klefsjo, 2002). Identifying these problems become very fruitful for a company to implement TQM. Once implemented TQM helps managers in devising policies and procedures that give birth a well-coordinated internal environment that always welcome innovation and change. That particular environment also helps policymakers identify and root out obstacles that come in the way of improving quality (Jun, 2004)

This is particular aspect holds a great importance in our recommendations list because Turkish firms are stuck with many problems when they tend to implement TQM. They also face numerous challenges and fail to streamline the staff to the implanted change **(**Rees & Ed, 2001). This is because of different psychological divergences of the employees that make them oppose the change brought up by TQM implementation. They fear that the change will disturb their daily routine of working. In order to resolve this issue, Turkish firms need to implement TQM tools with full commitment in the form of following strategies:

- Initiating different measures to check the activity of employees that discourage TQM implementation and find out ways to fix this issue immediately
- Demography should not blanket the internal environment of an organization. This can happen by exposing the employees to a competitive environment where their grooming is ensured

- Company needs to hire vigilant and observant managers and policymakers that keep an eye on everything that takes place within the boundaries of an organization. This can happen with the help of I sentries. The main aim is to maintain internal environment of an organization stronger and congenial for TQM principles to be implemented.

Once the businesses take this recommendation and work on it, there shall be no more internal or external challenge to TQM tools. And the smooth TQM implementation leads to a smoother way by which a company starts the journey of success within no time. It recommends that is only because TQM implementation enhances not only operational performance but also helps in enlarging a firm's capacity to develop its financial horizon and innovation performance that are ultimate resources for a firm to survive in the competitive environment begot by technological advancement.

3. Recommendation Three:

Honestly speaking, TQM is very fruitful for both types of sectors services and in manufacturing despite the fact that they differ from each other. However, they encounter almost similar problems when it comes to extract maximum benefits from the use of TQM principles (Huq & Stolen, 1998).

Many of the times, a business lacks behind when it comes to maintaining their quality of work owing to variety of factors. Implementing quality is not an easy go. It requires mettle. It needs both material and capital sacrifices.

Therefore, in order to excel in terms of enhancing the quality and content of the business projects a company has to go for implementing one of the quality systems. TQM is the best fit for Turkish firms as it has been implemented here over the years. The people of turkey are used to it. Customers are also accustomed to it.

The very first reason of preferring TQM over the other quality systems is that the Turkish firms can save their cost by resorting to it. Adhering to a used to quality system does not requires much training programs for the employees to learn how to operate it; because, the employees are already hardened to it in some way or the other. They become knowledge-full in operating the quality system **(**Sadikoglu, 2008).

The second most important benefit of preferring TQM over the other quality systems is to lower the chances of error. When you implement entirely a different quality system, there remains higher risk even if going through the much training. And errors in the practice of quality system may prove lethal for the company.

Thirdly, the use of TQM can help us find already trained employees and managing staff. As already discussed, TQM technique is very widely used here so there are a lot of trained employees **(**Samat, et al, 2006). When a company is unable to direct its existing staff members to use TQM effectively, it can resort to another option that is new hiring. It does not mean that the company has to hire against all the existing employees. But it has to replace those who are continuously not improving themselves and are proving dangerous to the quality system. So, if this misshape happens to any company it can hire already trained employees form the market. This market is flooded with the trained employees it does not have the headache of finding trained employees. From this fear, most of the companies retain their staff which really is a drain on their resources. According to this its recommended that take the training variable and check with TQM practices how that affect.

4. Recommendation Four:

Operational performance is greatly improved, especially for the businesses which are engaged in initiating short term and long-term projects, by bringing TQM into the practice (Abusa, 2011).

As previously discussed, most of the businesses are stuck with the issue of how to improve the quality of their business projects. Improving operational performance is another headache for them. Therefore, we made this issue a focal point in this thesis to reach the conclusion that what are the best suitable ways by which the operational performance of a business can be improved by using TQM and statistical measures of quality.

We came to the following conclusions:

- Operational performance of a business is subject to various issues. These issues can be resolved if they are diagnosed and cured timely. If not, they become very severe and harmful for a company. Therefore, TQM becomes the only option by which these issues are diagnosed and treated well.

- Check and balance from the essence of TQM principles. Most of the businesses fail due to lack of check and balance and if you are having business projects where there is a great chance of irregularities, the use of TQM becomes the best option. TQM tells how the businesses are checked; how the irregularities in operations can harm the future of a business; to what kind of issues a business projects can be subjected, and so on. When these aspects are considered and worked out, a business becomes a success story.

- Effective division of resources. Most of the times it happens that resources are not properly distributed to speed up the operational performance. Behind this lie numerous issues **(**Saraph, et al, 1989). Lack of commitment, monetary consciousness, and employee interest are some causes that affect the division of resources. In order to make the operational performance of a business project effective, division of resources is the main thing that needs to be upheld and ensured. And the use of TQM helps us find where this issue resides.

- Internal integration. In many cases, integration of employees becomes another issue that negatively affects the operational performance of a business. Even after ensuring strong internal control, many firms fail to ensure that. This is because of psychological and personal divergences of employees. It becomes very difficult to diagnose the psychological and personal divergences of employees. This results in negative impact for the company. In order to take salvage from this, we have to rush to the use of TQM techniques that help us find these subtle factors that hinder the operational performance of a business. Hence, TQM is preferred over other quality systems.

- Research and Development. In order to save the operational cost, many businesses today avoid research. On the other hand, research is the main part of any business that explores new ways and avenues for a business to develop and fill the gap where it is found. Without research innovation cannot be achieved. Even if a country implements a new mechanism it may not be operated well because the organization lacks research. And research is the base of TQM principles. In TQM practices research and development is greatly emphasized. Everyday businesses are expanding due to changing dynamics of customers' needs and requirement. In order to conform to these new changings, research and development becomes very important. And that research and development

must be carried out under the auspices of TQM and statistical measures of quality. According to this its recommended that take the research and development variable and check with TQM practices how that affect.

5. Recommendation Five:

Financial performance of a business is very critical for growth of a business project. The lifecycle of any business is directly connected with the pool of funds that it has. The shorter the financial performance of a business means the shorter the life it going to have.

It is widely assumed assumption that the businesses run only when they record a satisfactory financial performance. Every activity of a business is initiated by funds. This becomes a common thing, when a business is starting projects.

The use of TQM techniques proves to be important when it comes to improving the financial performance of business projects because TQM principles lead to following things:

- Use of TQM emphasizes the use of internal and external audit
- It makes a record of flow of funds and checks their validity
- Makes financial managers shorten unnecessary expenses

In turn, the financial performance of a business is improved, and quality is achieved. Hence, we recommend that TQM is best option to rely upon.

6. Recommendation Six:

Innovation is the essence of success. It is innovation that makes a business develop by leaps and bounds. But innovation without quality is of no use. Therefore, most of the businesses go for bringing innovation but for only a few get true benefits from its implantation**.** Other firms fail to capitalize on it because they don't have an effective quality system.

Innovation becomes very important aspect of operations especially for the companies whose business consists of business projects. To succeed a new business project, we need innovation to make it attractive and effective.

We need innovation in every aspect of working not only in the terms of

product shape. It is needed to develop the way of working of all the departments of a business. It is critical in the following conditions:

- Innovation leads to the improved working of financial managers. They get new ways of recording financial information and analyzing them. They are facilitated by innovation to summarize the whole data within a few minutes because they get a database for it.
- Innovation is also beneficial for the marketing of business projects. New ways of doing marketing are explored to popularize the business projects. For example, the use of social media and other electronic means become very congenial in this regard. These means are the part of innovation strategy. Apart from this, if continued research on innovation is carried out, we can find other ways to popularize business projects.
- Innovation improves integrity. Integrity is very important for every business. Without it, desired goals and objectives cannot be achieved. Today, most of the businesses are preoccupied with the dilemma of not having proper and effective integrated teamwork. This issue is met by TQM **(**Sharma & Talwar, 2007). It helps businesses to chart out new ways by which integrity is ensured. One of these ways is innovational mindset. Businesses are hereby advised to work on innovational ideas that lead to new creation. These new creations, later on, are molded to suit the interests of and requirements of a particular business or its project. According to this its recommended that take the entrepreneurial activity variable and check with TQM practices how that affect.

7. Recommendation Seven:

TQM practices and statistical measures of quality go hand in hand with each other (Osuagwu, 2002). Both of them complement each other for the fulfillment of quality. In isolation of TQM practices, statistical measures of quality are of no use. That is the reason we try to explore the significance of statistical measures in company with the TQM standards in this research.

For example, one of the standards of TQM is the satisfaction of customers' needs and expectations. This objective cannot be achieved without using statistical measures of quality such as Budgeting techniques, Frequency Distribution, Regression tests, probability tests, Charts, etc. these tools help a pioneer advance his

project with relative ease. Time is saved. Not too much quantity is required for recording and analyzing the financial data. This task is easily done **(**Taiwo, 2001).

TQM and statistical measures of quality go hand in hand in the following ways and prove to be very beneficial for the positive performance of business projects:

- Firstly, Redundancy test improves the quality of business projects by a great deal. When a project is launched, it entirely hovers around new assumptions, new predictions and new variables that are often conflicting or having similarities. This is a universal case. Therefore, it becomes very difficult for the newly budding business to have quality and efficiency. Hence, the redundancy test weighs each variable, each forecast and each expectation regarding the process of maintaining and retaining quality. The test measures closely the similarities between the variables. It consolidates the harmonious relationship between them. Noting gets repeated or overvalued. In this way, the Redundancy Test of statistical measures of quality positively affects the business projects.

    - Diversity Test is the second important aspect connected to Redundancy test. Quality is comprised of different components that are diverse from each other. Each project must contain elements that are different, their difference is upheld. When this principle is applied, the quality of the projects improves. Every manager tries to bring authentic elements and data that are diverse enough and capable of producing quality. Financial procedures are dealt with effective tools and techniques. Operational performance is gauged by different models of management. Innovation performance is enhanced when you have diversified minds with you having diverse experience and expertise. After all, the quality of business projects is improved along with their efficacy.

    - Change Management is important element under TQM principles. It is the technique that reminds all the stakeholders of business world to make themselves habitual of entertaining new changes in the system. It awakens them to introduce new trends and methods of doing financial work so that the financial viability of a project can be made stronger and long-lasting. Change management educates the managers how a change can be welcomed in the

undergoing financial system. How the hardened employees can be streamlined. How the overall financial performance of a business project is to be improved.

Hence, keeping in view the above-mentioned benefits of imparting statistical measures of quality along with TQM it is suggested that they must be relied and applied while improving the performance of business projects. According to this its recommended that take the statistical diagrams variable and check with TQM practices how that affect.

8. Recommendation Eight:

TQM techniques are the soul of quality. These techniques lead to the use of statistical measures of quality that in turn make the business projects successful.

TQM has been widely used in the world of business today. Its techniques are of immense importance when it comes to determining the efficiency and effectiveness of the business projects. (Prajogo & Hong, 2008).

TQM techniques help us in forecasting the outflow of funds. It also assists us in maintaining the quality of the raw material so that the material can be saved from damage. Different techniques are employed in order to motivate team members. Their retention is the soul of a project to make its way to the completion. Almost lot of projects are failed in the market.

TQM practices are frequently used in the short-term projects for enhancing the marketing of the projects. Social media and social platforms like Facebook, twitter, WhatsApp and billboards, dash boards, make public relations and other advertising agencies has been supported.

TQM implementation brings innovations in the business projects. Managers are subject to regular scrutiny. They had pressure from the top management to retain quality in their projects. Therefore, they take full care of all the assets and commodities. Companies are making their warehouses where they can store their raw materials and finished goods. Being researcher on this point it will be recommended that take inventory management variable and shows relationship with TQM Practices.

9. Recommendation Nine:

The concluding suggestion of this study is that the use of statistical measures of quality positively affects the performance of business projects. In other words, in order to make the performance of business projects, companies need the help from statistical measures of quality and TQM practices.

Quality Assurance system is the major factor to increase the performance of business projects. Along with this, from starting point long time ago there were disagreements were blanketed the takes place of ISO 9000 to satisfy customers internal, external, and changing needs regarding products and services (Vouzas & Psychogios, 2007). The main objective of ISO 9000 is to maintain and retain the quality of a product and services by introducing such qualitative measures (Kartha, 2002). Most of the authors and scholars admit that the ISO 9000 lacks in implementation. It operates as a paper driven work in some cases (Curkovic & Pagell, 1999). In order to maintain its standards of quality, human resource must be given to it.

New version (ISO 9000:2000) an attempt is made to reinvigorate its document and meet its deficiencies (Najmi and Kehoe, 2000). In the new version there is nothing negative, but the benefits are seeming less than the previous one that is very significant (Vouzas & Gotozamani, 2005).

The issue is that the organizations which are ISO certified enter half into the quality standards i-e TQM practices. This is due to many demographic changes in the business organizations from country to country. Still the ISO is under consideration for further improvement (Laszlo, 2000).

Owing to ISO certification, the most important benefit that accrues is sustainability of business. It came to those firms which heartedly implemented quality standards. Due to this implementation, there were fewer customer loss, customer complaints, and product wastage (Chittenden, et al, 1996).

For small business, ISO certification also holds some fruits. As they were able to evaluate their progress with modern techniques. They got a comprehensive idea of their employees working, and this information enabled them to a greater understanding of their company's overall functioning (McTeer & Dale, 1996).

This research has studied with limited region only in Istanbul Province of

Turkey, it is highly recommended that apply the same model of TQM Practices and Performance of Business Projects in other provinces of Turkey like in Ankara, Antalya, Izmir and Konya, also carried the research as international level apply in different countries and continents and to formulate the hypothesis.

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APPENDIX

Appendix 1: Research Questionnaires

Appendix 2: Ethic Approval Form.

Appendix 1: Research Questionnaires:

Title: Impact of Statistical Measures of Quality on Business Projects Performance.

Place of Study: A Study on Istanbul – Turkey Firms.

Dear Respondents:

I am a graduate student at Istanbul Aydin University, I would like to write my thesis on the **Impact of Statistical Measures of Quality on Business Projects**. I would like to get your views and opinions regarding Quality aspects of business projects. I hope that you will give me few moments to contribute in my thesis. I will be grateful for your time and efforts in answering the attached questionnaire.

This research study is purely for academic purposes and will be used for scientific purposes only. Your answers will be kept strictly confidential, and the results of this research will be provided to the enterprises participating in our research as general and average characteristics without specifying the business name.

We thank you in advance for your cooperation and understanding and wish you success in your business.

Name of the company/factory: _____

Name of the Respondent: _____

Position of respondent in the company: _____

* Required

Part-A

1.Number of employees *

- O 1-19
- O 20-100
- O 100 +
- O Unknown

2.Does your company have a full manufacturing process? *

- O Full process
- O Sub-contractor
- O Unknown

3.Years in operation? *

- O 0-10 years
- O 11-25 years
- O More than 25 years
- O Unknown

4.Is your company accredited? *

- O Yes
- O No
- O Unknown

5.Which quality system does your company have? *

- O ISO 9000-2000
- O SIX SIGMA
- O TQM
- O Others

6.The reasons for implementing a quality system were? *

- O Customers' requirement
- O Marketing purpose
- O Others

7.The implementation process was: *

- O Easy
- O Challenging
- O Difficult
- O Extremely difficult

8. Was anyone trained to maintain the system? *

- O Yes
- O No

9. How long should be the training period? *

- O 6 weeks
- O 8 weeks
- O 6 months
- O More than 6 months

1. Reasons for not getting the accreditation? *

   - O Not Applicable
   - O Too expensive
   - O Does not need a quality system
   - O No support for the accreditation
   - O Too complicated
   - O Not suitable for the business
   - O Others

2. Did your company attempt to get accreditation?*

   - O Yes
   - O No

3. Does the company have a long-term plan? *

   - O Yes
   - O No

4. Which type of plan does the company have? *

   - ☐ Strategic plan
   - ☐ Production plan.
   - ☐ Quality plan.
   - ☐ Marketing plan.
   - ☐ Succession plan.
   - ☐ Others

5. Does the company encourage staff development? *

   - O Yes
   - O No

6. How often does your company send employees to training? *

   O Regularly

   O Whenever there is a need

7. Does the company have a quality policy in place? *

   O Yes

   O No

8. Does top management show commitment to quality? *

   O Yes

   O No

9. Does the company have a quality manual? *

   O Yes

   O No

10. Does the company involve employees in decision making? *

    O Yes

    O No

11. Does the company encourage teamwork? *

    O Yes

    O No

12. Does the company communicate company objectives to staff? *

    O Yes

    O No

13. Does company measure quality performance? *

    O Yes

    O No

14. Does company measure customer satisfaction? *

    O Yes

    O No

15. Does company seek customer views? *

- O Yes
- O No

16. Are employees satisfied with the company? *

- O Yes
- O No

Part-B

TQM PRACTICES	= Strongly Disagree	= Disagree	= Neither Disagree nor	= Agree	= Strongly agree	= Don't Know
1. The senior executives provide highly visible leadership in maintaining an environment that supports quality improvement.	1	2	3	4	5	9
2. The industry collects a wide range of data and information about the quality.	1	2	3	4	5	9
3. Middle managers (e.g., department heads, program directors, and first line supervisors) are playing a key role in setting priorities for quality planning	1	2	3	4	5	9
4. Continuous improvement tools (brainstorming, check sheet and other statistical process control) are applied on regular basis.	1	2	3	4	5	9
5. Employees' participation in industry's success reduces the turnover and therefore reduces the cost of hiring and training new employees.	1	2	3	4	5	9
6. As well as being fully aware of customers' needs and expectations, each person must respect the needs and expectations of their suppliers.	1	2	3	4	5	9

7. The industry emphasizes on assessing current customers' needs and expectations.	1	2	3	4	5	9
8. Structural changes (less complexity, reduction of through put time and losses) are appreciated in your industry.	1	2	3	4	5	9

STATISTICAL MEASURES						
1. Industry employees are given education and statistical training in how to identify and act on quality improvement opportunities.	1	2	3	4	5	9
2. Industry employees are given education and training in statistical and other quantitative methods that support quality improvement.	1	2	3	4	5	9
3. Industry employees have the authority to correct problems in their area when quality standards are not being met.	1	2	3	4	5	9
4. Industry employees are supported when they take necessary risks to improve quality.	1	2	3	4	5	9
5. The industry has an effective system for employees to make suggestions to management on how to improve quality.	1	2	3	4	5	9
OPERATION PERFORMANCE						
1. Industry employees are given adequate time to plan for and test improvements.	1	2	3	4	5	9
2. Each department and work group within this industry maintains specific goals to improve quality.	1	2	3	4	5	9
3. Middle managers (e.g., department heads, program directors, and first line supervisors) are playing a key role in setting priorities for quality planning.	1	2	3	4	5	9
4. External customers are playing a key role in setting priorities for quality planning.	1	2	3	4	5	9
5. Non-managerial employees are playing a key role in setting priorities for quality planning.	1	2	3	4	5	9

6. The senior executives have demonstrated an ability to manage the changes (e.g., organizational, technological) needed to improve the quality.	1	2	3	4	5	9
7. The senior executives generate confidence that efforts to improve quality will succeed.	1	2	3	4	5	9

FINANCIAL PERFORMANCE						
1. Liquidity cash on hand	1	2	3	4	5	9
2. Solvency (as little liabilities as possible)	1	2	3	4	5	9
3. Efficiency (time-efficient processes)	1	2	3	4	5	9
4. Effectiveness (performing economically)	1	2	3	4	5	9
5. Existence (remaining in operation)	1	2	3	4	5	9
6. Profitability (most profit as possible)	1	2	3	4	5	9

INNOVATION PERFORMANCE						
1.Competitors are slow to copy our product introductions.	1	2	3	4	5	9
2. New product development projects often don’t finish on time.	1	2	3	4	5	9
3. Managers receive lots of support developing new ideas	1	2	3	4	5	9
4. We don’t penetrate all possible channels, customer groups, and regions with new products and services.	1	2	3	4	5	9

Appendix 2: Ethic Approval Form.

T.C.
İSTANBUL AYDIN ÜNİVERSİTESİ REKTÖRLÜĞÜ
Lisansüstü Eğitim Enstitüsü Müdürlüğü

Sayı : 88083623-020
Konu : Etik Onay Hk.

Sayın MUSA MOHAMMAD MUSA MANSOR

Tez çalışmanızda kullanmak üzere yapmayı talep ettiğiniz anketiniz İstanbul Aydın Üniversitesi Etik Komisyonu'nun 12.07.2019 tarihli ve 2019/10 sayılı kararıyla uygun bulunmuştur.

Bilgilerinize rica ederim.

e-imzalıdır
Dr.Öğr.Üyesi Hüseyin KAZAN
Müdür a.
Müdür Yardımcısı

11/02/2020 Enstitü Sekreteri Büke KENDER

Evrakı Doğrulamak İçin : https://evrakdogrula.aydin.edu.tr/enVision.Dogrula/BelgeDogrulama.aspx?V=BEKA38PDM

Adres:Beşyol Mah. İnönü Cad. No:38 Sefaköy , 34295 Küçükçekmece / ISTANBUL
Telefon:444 1 428
Elektronik Ağ:http://www.aydin.edu.tr/

Bilgi için: Büke KENDER
Unvanı: Enstitü Sekreteri

RESUME

Name: Musa Mohmmad Musa Mansor

Contact: Mobile: +90 538 4633305 - E-Mail: mosa2010@yahoo.com

Nationality: Jordanian

Material status: Married.

Place and Date of Birth: Saudi Arabia **-** 13/04/1978

Language: First Language is Arabic**,** second language is English, and basic in Turkey language.

Education:

Master's degree in Business Management (MBA) – (Grade: 3.81 from 4)
Istanbul Aydin University, years 2018-2020, Istanbul – Turkey.
B.Sc. Degree in Computer Science and **System Analysis**.
Philadelphia University, years 1996-2000, Amman – Jordan.

Article Published:

https://www.ijsr.net/archive/v8i12/ART20203602.pdf

Professional and Technical Certification:

- **Program Management Professional (PgMP),** Certified through Project Management Institute (PMI), **(PgMP ID: 1926775).**
- **Project Management Professional (PMP),** Certified through Project Management Institute (PMI), **(PMP ID: 1418874).**
- **ITIL Certified, License ID: CD182226.**

Summary:

PMO Consultant, IT Programs and Projects manager with more than 15+ years of broad experience in IT business, experienced in leading and handling large scale projects in multi-functional areas and public sectors basis, managing $50-$70 Million budget projects with deferent solutions and teams. Performance and delivery greatly exceeded expectations.

Objective:

Working in a good environment with highly qualified team that has a high level of experience where I can share my experience as a PMO Manager or Program Manager by using the latest technology and development tools.

Areas of Expertise:

- Establishing and implementing PMO offices.
- Implementing the PMO templates, procedures, and flowcharts.
- Implement and use the PMI methodology and templates.
- Managing, lead, and implemented large complex IT projects include ERP's, infrastructure, cabling, DC preparation, networking, storage, servers, visualization, migration, and backup solution.
- Vast knowledge on program and project management.
- Vast knowledge on technical knowledge of my project areas.
- Vast knowledge on budgeting, finance, product technology, contracting, establishes PMO office, PMI methodology, and cash flow.
- Managing, control, negotiating, and monitoring the vendors and subcontracting.
- Mitigated risks, managed requirements, and worked with project stakeholders while managing expectations at the department and project levels.
- Manage project procurements and Quality standard

Summary of Skills:

- Communicating with stakeholders to provide accurate reporting and information.
- An experienced team leader with the ability to initiate/manage cross-functional teams and multi-disciplinary projects.
- Critical thinking, decision making, problem solving, planning, organizing, and executing.
- Influencing, Leading, Negotiating, Delegating, Conflict resolution, Adaptability, and Tolerance.

- Potential of learning new methodologies and technologies.
- Spirit of proficiency and creativity.
- Strategic planning and implementation
- My strengths include an extensive Programs & Projects Management background with IT experience that focuses on results. I am an ambitious leader who can deliver results to meet a diversity of business needs.
- Interacting with project staff in a way that builds confidence and conveys teamwork
- Vast knowledge of team management principles and techniques

Experience:

Mar 2019 **Freelance** (Istanbul- Turkey)

Until Now **PMO Consultant & Project Management Trainer:**

- Establish and implement PMO Offices.
- Establish and implement Project Management Methodology.
- Establish Strategic planning process.
- Build strategic plans for PMO Department and companies.
- Establish, implement, and Ensure project management standards.
- Establish and manage a project methodology incorporating structures, standards, processes, documentation and reporting.
- Maintain processes to ensure project management documentation, reports and plans are relevant, accurate, and complete.
- Track and report on project portfolio performance, provide a real-time, comprehensive, and prioritized view of all projects.
- Provide consultation for all aspects of Project Management.
- Provide consultancy in accreditation by PMI (Project Management Institute).
- Trainer in all aspects of Project Management in several universities, companies, and academic centers in Istanbul-Turkey.

Aug 2017 **UGRUP** (Istanbul- Turkey)

Until Now **PMO DIRECTOR - EXECUTIVE DIRECTOR:**

- Establish and implement PMO Office.
- Establish Strategic planning process
- Build strategic plans for PMO Department and company at whole.

- Supervision for Planning, implementing and leading Programs/Projects.
- Supervision for Managing various implementation of programs and projects in addition to ongoing operations.
- Define the project management process, standards, deliverables and operational cadence necessary to ensure consistent project execution.
- Oversee Project Manager billing, to ensure targeted utilization is achieved, while monitoring overall Customer satisfaction.
- Manage and balance Project Manager's workload and assignments.
- Work closely with the Customer and Sales organization to resolve service delivery issues with a continuous focus on maximizing sales productivity.
- Ensure development of all PM's including appropriate certifications and training as part of a comprehensive development plan.
- Establish the Risk Analyze process and instigate avoidance activities.
- Establish contingency plans and identify trigger events are in place.
- Track progress on all project plans and provide up-dates to executives as requested.
- Collaborate with various departments to execute various activities and prepare effective strategies to monitor its implementation

May 2013 **MATCO – EMC, VMware, Cisco, RSA, Oracle Partners** (Riyadh- Saudi Arabia)

Aug 2017 **IT Program Manager:**

- Establish and implement PMO in MATCO.
- Planning, implementing and leading MATCO Programs/Projects.

- Managing various implementation of programs and projects in addition to ongoing operations for IT, Telecommunication, and Software development.
- Defining Program & Projects scope, goals and deliverables.
- Setting and managing Program & Projects budgets.
- Developing the Program & Projects plan.
- Defining the Program & Projects tasks and resources requirements.
- Allocating the needed resources and assigning individual responsibilities.
- Planning and scheduling Program & Projects timelines.
- Tracking and reporting team hours and expenses on weekly basis.
- Ensuring documents are complete, current, and stored appropriately.
- Preparing quality assurance procedures and Minimizing risk exposures.
- Managing day-to-day operational aspects of a Program & Projects.
- Identifying Program & Projects requirements.
- Meeting the Program & Projects deliverables.
- Balancing the Program & Projects competing demands (quality, scope, time and cost).
- Enforcing Program & Projects standards.
- Providing direction and support to the Program & Projects team.
- Presenting reports defining the Program & Projects progress, problems and solutions.
- Evaluating Program & Projects and assessment of results.

May 2006 **Natcom – HP, Cisco, Oracle Partners** (Riyadh- Saudi Arabia)

May 2013 **Senior IT Projects Manager:**

- Planning and implementing projects.
- Defining projects scope, goals and deliverables.

- Developing the project plan and Setting and managing projects budgets.
- Manage implementation enterprise solutions.
- Manage implementation Business applications (HR, Finance, Stock, etc).
- Manage implementation Hospital Information System Solution.
- Manage implementation Servers, Exchange and ISA.

June 2000 **I am Worked in 2 another positions.**

May 2006 **In Saudi Arabia and Jordan.**