

**A STUDY ON EFFECTIVENESS OF TOTAL
QUALITY MANAGEMENT IN INFORMATION
TECHNOLOGY WITH REFERENCE TO FABSYS
TECHNOLOGIES, CHENNAI**

Submitted in partial fulfillment of the requirements for the award of

MASTER OF BUSINESS ADMINISTRATION

by

SATHISH R

Register No.41410280



**DEPARTMENT OF BUSINESS ADMINISTRATION
SCHOOL OF MANAGEMENT STUDIES**

SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

**Accredited with Grade "A" by NAAC I 12B Status by UGC I Approved by
AICTE**

JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHENNAI - 600 119

MAY 2023



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www.sathyabama.ac.in

SCHOOL OF MANAGEMENT STUDIES

BONAFIDE CERTIFICATE

This is to certify that this Project Report is the Bonafide work of **SATHISH R (41410280)** who carried out the project entitled "**A STUDY ON EFFECTIVENESS OF TOTAL QUALITY MANAGEMENT IN INFORMATION TECHNOLOGY WITH REFERENCE TO FABSYS TECHNOLOGIES, CHENNAI**" under our supervision from January 2023 to April 2023.

Dr. DHIVYA SATHISH

Internal guide

External Guide

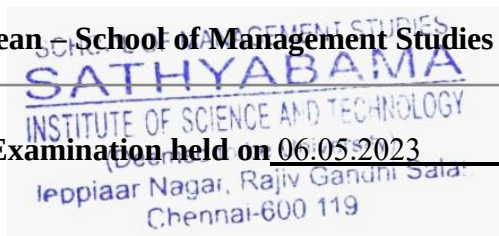
(Dr. BHUVANESWARI. G, MBA.,Ph.D)

Dean, School of Management Studies

Submitted for Viva voce Examination held on 06.05.2023

Internal Examiner

External Examiner



PROJECT COMPLETION LETTER

(Insert the project completion letter)

DECLARATION

I **SATHISH R (41410280)** hereby declare that the Project Report entitled “**A STUDY ON EFFECTIVENESS OF TOTAL QUALITY MANAGEMENT IN INFORMATION TECHNOLOGY WITH REFERENCE TO FABSYS TECHNOLOGIES, CHENNAI**” done by me under the guidance of **Dr. DHIVYA SATHISH, MBA., M.phil., Ph.D.,** at **Fabsys technologies Chennai- 600112** is submitted in partial fulfillment of the requirements for the award of Master of Business Administration degree.

DATE:06.05.2023

PLACE: CHENNAI

Sathish
SATHISH R

DECLARATION

I am pleased to acknowledge my sincere thanks to Board of Management of **SATHYABAMA** for their kind encouragement in doing this project and for completing it successfully. I am grateful to them.

I convey my sincere thanks to **Dr. G. Bhuvaneswari, MBA.,Ph.D., Dean - School of Management Studies** and **Dr. A. Palani, M.Com., M.Phil., MBA., Ph.D., Head of the Department, School of Management Studies** for providing me necessary support and details at the right time during the progressive reviews.

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ABSTRACT

Total quality management (TQM) consists of organization-wide efforts to "install and make permanent climate where employees continuously improve their ability to provide on demand products and services that customers will find of particular value."

The Primary objective is to study on effectiveness of Total quality management (TQM) in software industry, the Secondary objectives to study about the benefits of implementing TQM in IT industry, to study about the concept of TQM from the IT industry employee point of view, to study about the need for TQM in IT industry and to suggest the IT industry about the changes need in TQM

The research problem here in this study is associated with Total Quality Management (TQM). The problem is that some of the small scale software industries are not adopting TQM techniques. It may cause to rework, over processing, waiting time and poor quality. This project is focused on highlighting the effectiveness of TQM with reference to software industry and the importance of TQM in software industry. TQM is a technique, which by focusing on the overall picture and removal programs creates the bottom line profits. Total quality management benefits out of the synergies between various departments. Instead of treating, each department as an individual firm the techniques tends to bind all concerned in one wrapper thereby working on the overall organization's performance.

Descriptive research is used in this study. Descriptive research is also called Statistical Research. The main goal of this type of research is to describe the data and characteristics about what is being studied. The idea behind this type of research is to study frequencies, averages, and other statistical calculations.

Convenience sampling technique is used in the study, Convenience sampling is a non-probability method. This means that subjects are chosen in a nonrandom manner, and some members of the population have no chance of being included. With non-probability sampling, researchers have no way of calculating how well their sample represents the population as a whole. In general, probability sampling is considered to be more stringent and accurate than non-probability sampling, but it is not always feasible.

Sample Unit: The study will be conducted at Fabsys Technologies IT Employees and the data will be collected from the employees working in the organization. The sample Size for the study is 120.

The direct and original data / information collected from the software industries for the project purpose. The primary data for this project will be collected in terms of direct meetings with in organization guided by a structured questionnaire.

The information is that already available from websites, books, literatures and organization brochures. Percentage method, Chi-Square analysis and weighted average method will be used for analysis.

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CHAPTER I

INTRODUCTION

1.1 CONCEPT INTRODUCTION

1.1.1. RATIONALE OF THE STUDY

Total quality management (TQM) consists of organization-wide efforts to "install and make permanent climate where employees continuously improve their ability to provide on demand products and services that customers will find of particular value." "Total" emphasizes that departments in addition to production (for example sales and marketing, accounting and finance, engineering and design) are obligated to improve their operations; "management" emphasizes that executives are obligated to actively manage quality through funding, training, staffing, and goal setting. While there is no widely agreed-upon approach, TQM efforts typically draw heavily on the previously developed tools and techniques of quality control. TQM enjoyed widespread attention during the late 1980s and early 1990s before being overshadowed by ISO 9000, Lean manufacturing, and Six Sigma.

History

In the late 1970s and early 1980s, the developed countries of North America and Western Europe suffered economically in the face of stiff competition from Japan's ability to produce high-quality goods at competitive cost. For the first time since the start of the Industrial Revolution, the United Kingdom became a net importer of finished goods. The United States undertook its own soul-searching, expressed most pointedly in the television broadcast of *If Japan Can... Why Can't We?*. Firms began reexamining the techniques of quality control invented over the past 50 years and how those techniques had been so successfully employed by the Japanese. It was in the midst of this economic turmoil that TQM took root.

The exact origin of the term "total quality management" is uncertain. It is almost certainly inspired by Armand V. Feigenbaum's multi-edition book Total Quality Control (OCLC 299383303) and Kaoru Ishikawa's What Is Total Quality Control? The Japanese Way (OCLC 11467749). It may have been first coined in the United Kingdom by the Department of Trade and Industry during its 1983 "National Quality Campaign". Or it may have been first coined in the United States by the Naval Air Systems Command to describe its quality-improvement efforts in 1985.

Development in the United States

In the spring of 1984, an arm of the United States Navy asked some of its civilian researchers to assess statistical process control and the work of several prominent quality consultants and to make recommendations as to how to apply their approaches to improve the Navy's operational effectiveness. The recommendation was to adopt the teachings of W. Edwards Deming. The Navy branded the effort "Total Quality Management" in 1985.

From the Navy, TQM spread throughout the US Federal Government, resulting in the following:

- The creation of the Malcolm Baldrige National Quality Award in August 1987
- The creation of the Federal Quality Institute in June 1988
- The adoption of TQM by many elements of government and the armed forces, including the United States Department of Defense, United States Army, and United States Coast Guard

The US Environmental Protection Agency's Underground Storage Tanks program, which was established in 1985, also employed Total Quality Management to develop its management style. The private sector followed suit, flocking to TQM principles not only as a means to recapture market share from the Japanese, but also to remain competitive when bidding for

contracts from the Federal Government since "total quality" requires involving suppliers, not just employees, in process improvement efforts.

A core definition of total quality management (TQM) describes a management approach to long-term success through customer satisfaction. In a TQM effort, all members of an organization participate in improving processes, products, services, and the culture in which they work.

1.1.1. PRIMARY ELEMENTS OF TQM

TQM can be summarized as a management system for a customer-focused organization that involves all employees in continual improvement. It uses strategy, data, and effective communications to integrate the quality discipline into the culture and activities of the organization. Many of these concepts are present in modern quality management systems, the successor to TQM. Here are the 8 principles of total quality management:

Customer-focused: The customer ultimately determines the level of quality. No matter what an organization does to foster quality improvement—training employees, integrating quality into the design process, or upgrading computers or software—the customer determines whether the efforts were worthwhile.

Total employee involvement: All employees participate in working toward common goals. Total employee commitment can only be obtained after fear has been driven from the workplace, when empowerment has occurred, and when management has provided the proper environment. High-performance work systems integrate continuous improvement efforts with normal business operations. Self-managed work teams are one form of empowerment.

Process-centered: A fundamental part of TQM is a focus on process thinking. A process is a series of steps that take inputs from suppliers (internal or external) and transforms them into outputs that are delivered to customers (internal or external). The steps required to carry out the process are defined, and performance measures are continuously monitored in order to detect unexpected variation.

Integrated system: Although an organization may consist of many different functional specialties often organized into vertically structured departments, it is the horizontal processes interconnecting these functions that are the focus of TQM.

Micro-processes add up to larger processes, and all processes aggregate into the business processes required for defining and implementing strategy. Everyone must understand the vision, mission, and guiding principles as well as the quality policies, objectives, and critical processes of the organization. Business performance must be monitored and communicated continuously.

An integrated business system may be modeled after the Baldrige Award criteria and/or incorporate the ISO 9000 standards. Every organization has a unique work culture, and it is virtually impossible to achieve excellence in its products and services unless a good quality culture has been fostered. Thus, an integrated system connects business improvement elements in an attempt to continually improve and exceed the expectations of customers, employees, and other stakeholders.

Strategic and systematic approach: A critical part of the management of quality is the strategic and systematic approach to achieving an organization's vision, mission, and goals. This process, called strategic planning or strategic management, includes the formulation of a strategic plan that integrates quality as a core component.

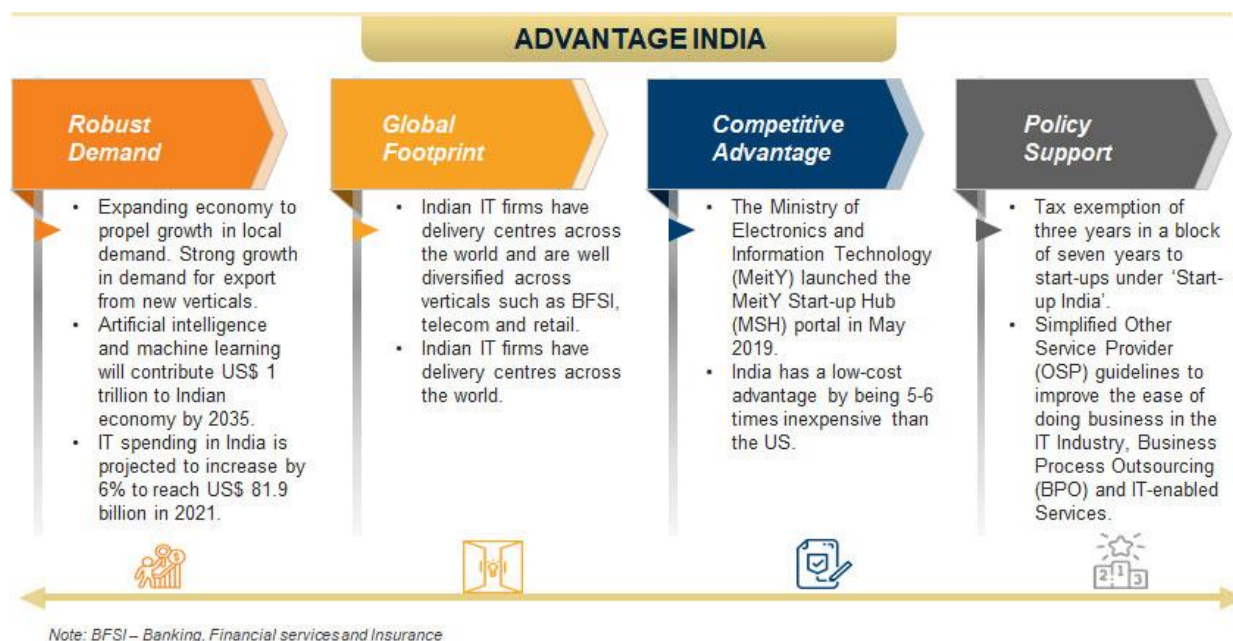
Continual improvement: A large aspect of TQM is continual process improvement. Continual improvement drives an organization to be both analytical and creative in finding ways to become more competitive and more effective at meeting stakeholder expectations.

Fact-based decision making: In order to know how well an organization is performing, data on performance measures are necessary. TQM requires that an organization continually collect and analyze data in order to improve decision making accuracy, achieve consensus, and allow prediction based on past history.

Communications: During times of organizational change, as well as part of day-to-day operation, effective communications plays a large part in maintaining morale and in motivating employees at all levels. Communications involve strategies, method, and timeliness.

These elements are considered so essential to TQM that many organizations define them, in some format, as a set of core values and principles on which the organization is to operate. The methods for implementing this approach come from the teachings of such quality leaders as Philip B. Crosby, W. Edwards Deming, Armand V. Feigenbaum, Kaoru Ishikawa, and Joseph M. Juran.

1.2 INDUSTRY PROFILE



Introduction

The global sourcing market in India continues to grow at a higher pace compared to the IT-BPM industry. India is the leading sourcing destination across the world, accounting for approximately 55% market share of the US\$ 200-250 billion global services sourcing business in 2019-20. Indian IT & BPM companies have set up over 1,000 global delivery centres in about 80 countries across the world. India has become the digital capabilities hub of the world with around 75% of global digital talent present in the country.

Market Size

IT-BPM industry's revenue was estimated at around US\$ 191 billion in FY20, growing at 7.7% y-o-y. It is estimated to reach US\$ 350 billion by 2025. Moreover, revenue from the digital segment is expected to form 38% of the total industry revenue by 2025. Digital economy is estimated to reach Rs. 69,89,000 crore (US\$ 1 trillion) by 2025. The domestic revenue of the IT industry was estimated at US\$ 44 billion and export revenue was estimated at US\$ 147 billion in FY20.

Total number of employees grew to 1.02 million cumulatively for four Indian IT majors (including TCS, Infosys, Wipro, HCL Tech) as on December 31, 2019. Indian IT industry employed 205,000 new hires, up from the 185,000 jobs added in FY19 and had 884,000 digitally skilled talents in 2019.

Investments/ Developments

Indian IT's core competencies and strengths have attracted significant investment from major countries. The computer software and hardware sector in India attracted cumulative foreign direct investment (FDI) inflow worth US\$ 45.97 billion between April 2000 and June 2020. The sector ranked 2nd in FDI inflows as per the data released by Department for Promotion of Industry and Internal Trade (DPIIT).

Leading Indian IT firms like Infosys, Wipro, TCS and Tech Mahindra are diversifying their offerings and showcasing leading ideas in blockchain and artificial intelligence to clients using innovation hubs and research and development centres to create differentiated offerings.

Some of the major developments in the Indian IT and ITeS sector are as follows:

- November 2020, Wipro partnered with Cisco to deliver managed software-defined wide area network (SD-WAN) transformation services to Olympus, a medical devices and systems company headquartered in Tokyo, Japan.
- In November 2020, Tata Consultancy Services (TCS) announced that it is developing an investment insights solution, leveraging SAP's Business Technology Platform, for the capital markets industry.

- In October 2020, Tata Consultancy Services was selected as a strategic partner for managed IT services by AG Insurance to help enhance the latter's digital channels and modernise IT systems.
- In October 2020, Infosys completed the acquisition of Kaleidoscope Innovation, a US-based product design and development firm for Rs. 308 crore (US\$ 42 million).
- In September 2020, HCL Technologies announced that it will acquire DWS Ltd, an Australian-based IT solutions firm. This acquisition will help HCL Technologies strengthen its position in the Australia and New Zealand market.
- In July 2020, Infosys won a multiyear deal worth US\$ 1.5 billion from investment management company, Vanguard.
- In July 2020, HCL Technologies signed a five-year deal worth US\$ 600 million with telecom equipment maker Ericsson.
- In May 2020, SirionLabs, a software-as-a-service (SaaS) provider, raised US\$ 44 million as part of its Series C round led by Tiger Global and Avatar Growth Capital.
- PE (private equity) investment in the sector stood at US\$ 11.8 billion across 493 deals in 2019.
- In January 2020, Nippon Telegraph and Telephone, a Japanese tech announced its plans to invest a significant part of its US\$ 7 billion global commitments for data centres business in India over the next four years.
- As of February 2020, there were 417 approved SEZs across the country with 274 from IT & ITeS and 143 as exporting SEZs.
- In February 2020, Tata Consultancy Services bagged a contract worth Rs. 10,650 crore (US\$ 1.5 billion) from pharma company Walgreens Boots Alliance.
- In June 2019, Mindtree was acquired by L&T.

- Nasscom has launched an online platform which is aimed at up-skilling over 2 million technology professionals and skilling another 2 million potential employees and students.

Government Initiatives

Some of the major initiatives taken by the Government to promote IT and ITeS sector in India are as follows:

- On May 2019, the Ministry of Electronics and Information Technology (MeitY) launched the MeitY Startup Hub (MSH) portal.
- In February 2019, Government released the National Policy on Software Products 2019 to develop India as a software product nation.
- The Government has identified Information Technology as one of 12 champion service sectors for which an action plan is being developed. Also, the Government has set up a Rs. 5,000 crore (US\$ 745.82 million) fund for realising the potential of these champion service sectors.
- As part of Union Budget 2018-19, NITI Aayog was to set up a national level programme to enable efforts in AI[^] and leverage AI[^] technology for developing the country.
- In the Interim Budget 2019-20, the Government announced plans to launch a national programme on AI* and setting up of a National AI* portal.
- National Policy on Software Products-2019 was passed by the Union Cabinet to develop India as a software product nation.

Achievements

Following are the achievements of the Government during 2019-20:

- About 200 Indian IT firms are present in around 80 countries.

- Total export revenue of the industry is expected to grow 8.1% y-o-y to US\$ 147 billion in FY20. IT-BPM sector accounted for the largest share in the Indian services export at 45%.
- Total number of employees grew to 1.02 million cumulatively for four Indian IT majors (including TCS, Infosys, Wipro, HCL Tech) as on December 31, 2019.

Road Ahead

India is the topmost offshoring destination for IT companies across the world. Having proven its capabilities in delivering both on-shore and off-shore services to global clients, emerging technologies now offer an entire new gamut of opportunities for top IT firms in India. The industry is expected to grow to US\$ 350 billion by 2025 and BPM is expected to account for US\$ 50 55 billion of the total revenue.

1.3 COMPANY PROFILE

Fabsys Technologies

Designing, building and integrating cutting-edge eBusiness solutions that deliver profitable online experiences can be a puzzling challenge. From talent recruitment to full scale application integration, we provide the missing components that you need to complete your puzzle, and make your vision a reality.

Our Mission

We aim to emerge as one of the biggest and most imperative technology solution providers globally and our team is constantly working towards this target.

Our Vision

With Creative thoughts and unique approaches to help Business Houses & individuals to Upgrade and Promote their business in the Age of Information Technology globally.

About us:

Fabsys Solutions, since 2006 with the goal of providing exceptional quality and cost effective IT integration services to web enabled businesses globally. As an eBusiness integrator we provide a broad range of project management, site planning, integration installation and customization services, always taking a client-focused approach. We have chosen a strategic global model combining the best of onshore and offshore software development to deliver premium quality services and products from a very experienced team with deep technical knowledge and expertise. The Fabsys development team have 10 years combined experience with all facets of eBusiness design, development, integration and deployment initiatives.

The Fabsys project management process instills confidence and trust in clients: they provide the technical knowledge and the blueprint, milestones and communication to keep the client involved, informed and better able to manage their business planning and deliverables schedules. Standard protocol is that we employ high levels of security measures to safeguard the client's intellectual property, proprietary software and programming specifications. Clients retain full ownership of all intellectual property rights and software source code throughout the development process and at the completion of the project.

FABSYS SERVICES:

Application Services / Cloud Computing

Cloud Computing Services

These services are broadly divided into three categories: Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS). The name cloud computing was inspired by the cloud symbol that's often used to represent the Internet inflow charts and diagrams.

Infrastructure-as-a-Service like Amazon Web Services provides virtual server instances with unique IP addresses and blocks of storage on demand. Customers use the provider's application program interface (API) to start, stop, access and configure their virtual servers and storage. In the enterprise, cloud computing allows a company to pay for only as much capacity as is needed, and bring more online as soon as required. Because this pay-for-what-you-use model resembles the way electricity, fuel and water are consumed; it's sometimes referred to as utility computing.

MISSION: Our mission is "**To utilize the best talent and the best technologies in the power conditioning industry to provide our customer with optional, cost effective solution for their power requirements**".

FABSYS MANAGEMENT TEAM:

Fabsys Technologies promoted and managed by highly qualified peoples who have excellent expertise in the field of Power electronics and also who have years of technical and marketing expertise in India and abroad. This dedicated team leads Sales and Marketing, R & D and Product Development, Services, Finance and Administration functions of Fabsys Technologies.

Besides this management team, there are professionals comprising of

- Sales Engineers
- Service Engineers
- Design Engineers
- Production Engineers
- Administrative & Account Staffs

BUSINESS FOCUS:

With a clear focus on business requirements We, Fabsys Technologies diversified into Solutions which includes Application development, Product maintenance, Product development. The area of expertise is on the UPS, Inverter and Stabilizer environment.

1.4. OBJECTIVES OF THE STUDY

Primary objectives

- To study on effectiveness of Total quality management (TQM).

Secondary objectives

- To study about the benefits of implementing TQM in IT industry.
- To study about the concept of TQM from the IT industry employee point of view.
- To study about the need for TQM in IT industry.
- To suggest the IT industry about the changes need in TQM

1.5. SCOPE OF THE STUDY

The history of quality management, from mere 'inspection' to Total Quality Management, and its modern 'branded' interpretations such as 'Six Sigma', has led to the development of essential processes, ideas, theories and tools that are central to organizational development, change management, and the performance improvements that are generally desired for individuals, teams and organizations.

These free resources, materials and tools are an excellent guide to the quality management area, for practical application in organizations, for study and learning, and for teaching and training others.

A Study has been made on impact of employee's commitment towards TQM. TQM has already been implemented in this Organization and degree of implementation in the organization, the factors affecting the commitment level and the level of satisfaction on implementation was measured.

1.6. LIMITATIONS OF THE STUDY

For anything there should be some limitations like that my project will also have certain limitations.

- The information provided by majority of the respondents could also be biased or inaccurate. No independent verification of the data is possible.
- Time is one major constraint, which limits the effective data collection.
- The sample size is only 120, so the sample may not be truly representative of the total population.

Reliability and accuracy of the analysis depends on the respondents' openness and trueness towards each question in the questionnaire.

1.7. STATEMENT OF THE PROBLEM

The research problem here in this study is associated with Total Quality Management (TQM). The problem is that some of the small scale software industries are not adopting TQM techniques. It may cause to rework, over processing, waiting time and poor quality. This project is focused on highlighting the effectiveness of TQM with reference to software industry and the importance of TQM in software industry. TQM is a technique, which by focusing on the overall picture and removal programs creates the bottom line profits. Total quality management benefits out of the synergies between various departments. Instead of treating, each department as an individual firm the techniques tends to bind all concerned in one wrapper thereby working on the overall organization's performance.

1.8. NEED FOR THE STUDY

In the present competitive world, the need for total quality management is gaining more and more importance. Competitive pressures in the global manufacturing environment are forcing manufacturing organizations to re-engineer in order to become more competitive in the marketplace. Manufacturing of electronic devices plays a crucial role in all aspects. Logically there are tremendous benefits and this is a sure way of ensuring that the firm is generating revenue regardless of the market trends. Implementing a quality management system is an essential thing to divide activities on some main steps and to maintain the continuous improvement to meeting the customer's requirements, which helps to instill confidence in the organization, in turn leading to more customers, more sales and more business. The actual process and the implementation constraints are effectively stated through this study.

CHAPTER II

REVIEW OF LITERATURE

Sylvain Charlebois , Michael von Massow , (2015), The purpose of this paper is to explore the introduction of the concept of competition in an MBA classroom through the use of a live case study competition. As part of a capstone course at the University of Guelph, teams of three to four MBA students were required to work with a corporate partner in the food industry during a five-day intensive workshop. After spending one week analyzing and working on a plan, students were asked to compete in the MBA Boardroom Challenge, which is held on the last day of the course at the corporate partner's headquarters. During the course of the week, while developing their plans, teams could choose to interact and met on two occasions with the corporate partner as a class to ask questions. This meant that teams operated in both a cooperative and competitive context during the course. While presentations were academically evaluated by the instructor, scholarships were offered to the winning team by the company using another set of criteria. This paper analyzes the effectiveness of blending cooperation and competition in a graduate business classroom and finds that the introduction of competition enhanced outcomes for both students and partners. The limitations of this process are considered, and future research directions are suggested.

Rusmin Rusmin , Emita W. Astami , Bambang Hartadi , (2014), The purpose of this paper is twofold. First, it investigates whether high free-cash-flow companies with low-growth opportunities (surplus free cash flow (SFCF)) are associated with income-increasing earnings management. Second, it scrutinizes the effect of audit quality on the income-increasing earnings management and SFCF and earnings management relationship. This study focusses on companies listed on the Bursa Efek Indonesia, Bursa Malaysia, and Stock Exchange of Singapore over the period 2005-2010. The cross-sectional modified Jones

(1991) model is used to measure discretionary accruals (DACs) (the proxy for earnings management). SFCF is an indicator variable with firm j scored 1 if their retained cash flows is above the sample median and their price to book ratio is below the sample median in fiscal year t ; otherwise is scored 0. Audit quality refers to the quality of the auditor. Indicator variable with firm j scored one (1) if their auditor in fiscal year t is a Big 4 audit firm; otherwise scored zero (0). The empirical result provides supports for the hypothesis suggesting that company managers with high free cash flow and low-growth opportunities tend to use their discretion to select income increasing accounting choices. Investigation based on each of the three-country sub samples indicates that the relationship between SFCF and managers' income-increasing accounting choice is applicable in Malaysia, partially applicable in Singapore but it is not valid in Indonesia. In addition, the statistical analyses based on all sample and country sub-samples indicate that audit quality has negative relationships with earnings management measure. The result of univariate analysis suggests that mean of DACs in companies audited by Big 4 auditors are significantly smaller compared to that of in non-Big 4 audited firms. However, the results of multivariate analysis suggest that audit quality has only partially significant association with earnings management. Moreover, this study finds that Big 4 auditors insignificantly moderate the SFCF-earnings management relationships.

Norzuwana Sumarjan, Susan W. Arendt, Mack Shelley, (2013), Using the Malcolm Baldrige National Quality Award (MBNQA) criteria, the purpose of this study is to compare perceptions of Malaysian hotel quality managers (HQMs) and employees on leadership and workforce practices. A mixed methods approach was used. Questionnaires were distributed to 35 HQMs and 576 employees of three- , four- , and five- star hotels. Interviews were conducted with HQMs. Descriptive statistics, t - test, and analysis of variance were used to analyze the data. All interviews were transcribed, hand coded, and analyzed for themes.

Compared to hotel employees, HQMs had higher scores for all leadership and workforce items. Comparing managers' perceptions revealed a statistically significant difference between three- and four- star with five- star hotels on developing explicit quality policies and measurable objectives. For employees, there were statistically significant differences for most of the questionnaire items between three- and four- star with five- star hotels. HQMs identified inefficient communication systems and failure to develop explicit quality policies and objectives as main reasons for perception in congruence between employees and managers.

Gurjeet Kaur, Jyoti Sharma, Tejveer Lamba, (2012), The purpose of the present study is to evaluate total quality service (TQS) from employees' perspective, as they have direct contact with both customers and management. The study is descriptive and exploratory in nature. The data were collected from 195 frontline employees of a leading Indian private sector bank. The study is confined to that bank's branches operating in a northern city of India. The study reveals that though employees have made serious contributions towards the success of TQS, bank policies do not leave much scope for their autonomy and management lags in its efforts in implementing TQS properly. SEM analysis indicates that TQS has a significant impact on employees' organizational commitment. TQS is a systematic way of guaranteeing that all activities within an organization happen as per plan and meet the customers' expectations. TQS aids the service marketers in the task of establishing and maintaining the customer base, which is the greatest challenge in today's competitive world. In this context, the present study seeks to evaluate the overall TQS prevalent in banking services.

Vathsala Wickramasinghe, (2012), The purpose of this paper is to explore changes occurring in the human resource (HR) function and human resource management (HRM)

practices due to the implementation of total quality management (TQM) in Sri Lanka. Quality managers and HR managers from 77 export- based firms with ISO 9001 certification that have implemented a formal TQM programme, running for at least three years, participated in the survey. Factor analysis, correlation and regression were used for the data analysis. It was found that firms introduce process improvement initiatives within the HR department by upgrading the role of the HR function, and by redesigning HRM practices of performance management, competence development and career planning, rewards and recognition, recruitment and selection, HR planning, and satisfaction and well- being to bring those in line with TQM requirements.

Faisal Talib, Zillur Rahman, M.N. Qureshi, (2011), Total quality management (TQM) has begun to influence national business systems and is widely seen as a “revolution” in management. TQM initiatives continuously search the needs of the customers and incorporate them in the organization on an ongoing basis. For this reason, the majority of research study has been undertaken in this field and is still going on across the world, especially in the developing countries, which are lagging behind in the implementation of TQM. Considering the above reasons, the purpose of this paper is to assess the awareness of TQM program in the Indian service industries. By means of a literature review and empirical data collected using a self- administered instrument distributed to select Indian service companies, the awareness of TQM was investigated. A total of 172 useable survey instruments were included for the final analysis. This study sample consisted of a group of selected Indian service companies from healthcare, information and communication technology (ICT), banking, and hospitality industries. The data were analyzed using graphical representation approach, descriptive statistical analysis, and correlation analysis. The analysis revealed the significance and usage of TQM in Indian service industries. The results also suggested that the Indian service industries are well aware of the TQM program, though more

efforts need to be focused on implementing it properly, use of TQM models and frameworks, and continuously improving the ongoing TQM practices.

Begum Sayeda, Chandrasekharan Rajendran, Prakash Sai Lokachari, (2010), The purpose of this paper is to explore the adoption of quality management practices in engineering educational institutions (EEIs) in India from management's perspective. A questionnaire was developed based on a literature review of research in quality management and based on the responses of the pilot survey among the senior faculty/management. The psychometric properties of this instrument were examined using tests of reliability and validity. Correlation and multiple regression analyses were used to analyze the impact of the total quality management (TQM) dimensions on institutional performance (effectiveness). Findings highlight 27 critical factors/dimensions of quality management, which analyzed the relationship between TQM dimensions and institutional performance, which has been formulated using five dimensions. Positive and significant relationships among the TQM dimensions and institutional performance have been observed.

Pei- Lee Teh, Chen- Chen Yong, Veeri Arumugam, Keng- Boon Ooi, (2009), The purpose of this paper is to examine the total quality management (TQM) practices of both manufacturing and service firms in order to determine the relationship between the multidimensionality of TQM practices and role conflict of employees. Questionnaires are distributed to 433 employees of 98 different firms from manufacturing and service industries in Malaysia. The results support significant negative correlation among all TQM practices (i.e. leadership, strategic planning, customer focus, human resource focus, process management and information analysis) and role conflict. By employing multiple regression analysis, leadership, process management and information analysis are found to

have significant and negative relationship with role conflict. Human resource focus is reported to have a significant and positive relationship with role conflict.

Raj Kumar, Dixit Garg, T.K. Garg, (2009), The purpose of this paper is to analyze the various factors important for total quality management implementation in various manufacturing organizations and to assess their relevance for Indian manufacturing organizations. A literature review was conducted for important factors and a survey approach was used to collect relevant data from industries. Further data were used to establish a model. It is shown that customer focus must be the prime objective for various industries to achieve total quality management. All the factors must be used systematically to achieve total quality management (TQM) and it can be done efficiently by using a model having four phases to implement TQM. The paper will be useful for manufacturing as well as service industries that are in the starting phase of TQM implementation or have already failed to implement TQM at their works.

Mehmet Demirbag, Sunil Sahadev, (2008), The purpose of this paper is to explore the major factors that impact the quality commitment of employees in organizations. The paper uses a cross-sectional design and the propositions are validated through two sample surveys conducted in two separate organizations in Turkey. The study presents four independent variables as the major factors affecting quality commitment of employees, viz. the leadership commitment towards quality; the quality orientation of the organization; team effectiveness and effectiveness of quality-related communication. The four hypotheses are found to be valid. The paper attempts to contribute towards the literature on quality commitment of employees. So far, studies on quality commitment have been quite limited and hence this effectively fills a gap in the literature. Examination of data collected from a government

ministry and a manufacturing company reveals some significant findings, which contributes to quality management literature.

Ali Mohammad Mosadegh Rad, (2006), The purpose of the paper is to determine the impact of cultural values on the success of TQM implementation in Isfahan University Hospitals (IUHs), Iran, 2004. In this paper survey questionnaires were used to elicit responses from hospital managers and employees. Data collected included the characteristics of organizational culture in IUHs and the degree of TQM success and its implementation problems in these hospitals. The paper finds that TQM success in IUHs was medium. Implementation of TQM was very low, low, medium and highly successful respectively in 16.7, 16.7, 58.3 and 8.3 percent of hospitals. TQM had the most effect on process management, focus on customers and leadership and management and less effect on focus on suppliers, performance results, strategic planning and focus on material resources. Human resource problems, performance appraisal and strategic problems were the most important obstacles to TQM success respectively. A total of 75 and 25 percent of hospitals had mechanistic and organic structure respectively. In total 41.6 percent of hospitals had weak organizational culture versus 58.4 percent medium culture. The success of TQM in hospitals with organic organizational structure and medium organizational culture was higher than mechanistic and bureaucratic hospitals with weak organizational culture ($p < 0.05$).

Noorliza Karia, Muhammad Hasmi Abu Hassan Asaari, (2006), The purpose of this paper is to examine the impact of total quality management (TQM) practices on employees' work-related attitudes, such as job involvement, job satisfaction, career satisfaction, and organizational commitment. The paper proposes and tests 16 hypotheses on the relationship between TQM practices and work-related attitude. The results indicate that training and education have a significant positive effect on job involvement, job satisfaction, and

organizational commitment. Empowerment and teamwork significantly enhance job involvement, job satisfaction, career satisfaction, and organizational commitment. Continuous improvement and problem prevention significantly enhance job satisfaction and organizational commitment. Customer focus does not contribute to job involvement, job satisfaction, career satisfaction, or organizational commitment. The study was unable to evaluate the wider dimensions of TQM practices.

Daniel I. Prajogo, Amrik S. Sohal, (2004), Presents an empirical case study of a large manufacturing firm in Australia that has been successfully maintaining its competitive advantage and growth. Analysis of the research findings suggests five major lessons that can be learned from the company. First, organisations need to keep vigilant in observing the changes occurring in the business environment and adjust their strategy in accordance with these changes. Second a quality management system needs to be implemented and aligned with the company's business strategy. Third, TQM principles that were developed in the manufacturing area can be adapted in the design and development area and provide a greater leverage for the business in the future. Fourth, the case study demonstrates a recursive learning process. Finally, it is highly important for organisations to redefine and broaden the application of the principles of total quality management and to understand the need to tailor these principles.

Fareena Sultan, Merlin C. Simpson, Jr, (2000), The primary objectives of this study are to determine if consumer expectations and perceptions of airline service quality vary by nationality. The study also examines whether the relative importance attributed to service quality dimensions in domestic settings can be replicated internationally. An empirical examination of airline passengers is conducted for airlines competing on the transatlantic corridor using a survey instrument in three languages. The study is the first

application of an existing model, SERVQUAL, to examine consumer expectations and perceptions in an international environment. It differs from earlier published SERVQUAL research in two significant respects; first, it applies the model internationally in a general classification of business, i.e. international airline service, rather than to individual domestic business enterprises. Second, it applies a portion of the SERVQUAL model to assess service quality by comparing the expectations and perceptions that European and US airline passengers have of both European and US airline groups.

David Weller, (2000), Deming's quality management principles (TQM) are widely used as a school restructuring vehicle and produce increases in student achievement and self- esteem and increased teacher morale and self- confidence. Application of Deming's principles and the TQM problem- solving tools and techniques can be used to solve non instructional problems of schooling. These areas, which create unnecessary costs to the school and community, include vandalism, school dropouts and student absenteeism. This case study presents a model for principals to apply to provide quality outcomes, at reduced cost, in non instructional areas. Using teachers, parents, community members, and applying the problem- solving tools and techniques of TQM to identify root problem causes, principals can identify realistic solutions which yield positive results and reduce costs in academic and nonacademic areas.

Anderson (2001) in his theory of quality management had emphasized that the leadership efforts play a crucial role in creating a quality management culture in the organization. The effective implementation results in better customer satisfaction and sustainability of the organization. The control mechanism existing in the organization also plays a vital role in the ensuing quality

Seetharaman (2006) had made an attempt to examine the reasons for the TQM implementation failure in many organizations. Even though the organization are committed towards the cause and adopt the TQM process, there are certain unavoidable factors which cause either delay or even failure of the process. If the root cause for failure is not analysed and rectified, the TQM process does not yield any fruitful results at all.

Nwabueze (2001) in his study had insisted that organizations should focus on partnership development – both internal and external partnerships. Internal partnership among labour and management is essential for cooperation while external partnership with suppliers, customers and training facilitators enable success. Effective internal and external partnerships results in mission accomplishment.

Oakland (2003) had summarized that the management approach determines the performance with respect to quality. It is the duty of the management to prescribe proper guidelines for the effective implementation of quality process.

Motwani (2001) in his research, had identified seven factors critical to TQM implementation. The seven factors include top management commitment; product design; employee training and empowerment; vendor quality management; and customer involvement and satisfaction.

Nofal (2005) through his research has identified various factors for successful TQM implementation. Involvement of senior executives, comprehensive policy development and effective deployment of goals; entire workforce commitment to quality goals of the organization; active participation of functional level managers and workers, effective communication, recognition of efforts are some of the noteworthy factors.

Bou-Llusar (2009) had categorized the factors of quality as hard and soft. Systems and quality tools and techniques are referred to as the hard factors of quality. Benchmarking, performance measurement, quality control tools, cost of quality, supplier customer management and quality management systems are included in the hard category of factors. Leadership, involvement and training are the soft factors. He has proposed a combination of 19 elements of TQM. The elements include leadership; employee involvement and empowerment; middle management role; training and education; rewards and recognition; teamwork; role of employee unions; policy and strategy; resources management; communicating management; managing suppliers; accredited quality management system; organizing for quality; managing by process; benchmarking; self-assessment; cost of quality; quality control techniques; and measuring customer wants and satisfaction. These reviews make clear that every organization would have issues in the adoption and implementation of quality process and it would not be a smooth sail altogether. The factors may vary depending on the complexity of the organization, its level of preparedness, involvement of management and employees and the intensity of efforts. Based on these reviews, this study is undertaken to obtain a better perspective over the TQM process.

CHAPTER III

RESEARCH METHODOLOGY

3.1. RESEARCH METHODOLOGY

Research type	: Descriptive Research
Population	: Employees in IT Departments
Sample size	: 120
Sampling Method	: Convenient Sampling
Research Method	: Survey
Data source	: Primary data, Secondary data
Research Instrument	: Structured Questionnaire

3.2.. RESEARCH DESIGN

Descriptive research is used in this study. Descriptive research is also called Statistical Research. The main goal of this type of research is to describe the data and characteristics about what is being studied. The idea behind this type of research is to study frequencies, averages, and other statistical calculations.

3.3. SAMPLE SIZE

Sample Technique: convenience sampling

Convenience sampling is a non-probability method. This means that subjects are chosen in a nonrandom manner, and some members of the population have no chance of being included. With non-probability sampling, researchers have no way of calculating how well their sample represents the population as a whole. In general, probability sampling is

considered to be more stringent and accurate than non-probability sampling, but it is not always feasible.

Sample Unit: The study will be conducted at Fabsys Technologies IT Employees and the data will be collected from the employees working in the organization. The sample Size for the study is 120.

FUTURE DIRECTION FOR RESEARCH

In Information Technology TQM environment is customer-driven and focused on quality. Teams are process-oriented, and interact with their internal customers to deliver the required results. Management's focus is on controlling the overall process, and rewarding teamwork.

3.4. DATA COLLECTION

Primary Data

The direct and original data / information collected from the software industries for the project purpose. The primary data for this project will be collected in terms of direct meetings with in organization guided by a structured questionnaire.

Secondary Data

The information is that already available from websites, books, literatures and organization brochures.

3.5. TOOLS FOR ANALYSIS

- **PERCENTAGE METHOD**

In this project Percentage method test was used. The percentage method is used to know the accurate percentages of the data we took, it is easy to graph out through the percentages. The following are the formula

$$\text{Percentage of respondent} = \frac{\text{No of Respondent}}{\text{Total no. of Respondents}} \times 100$$

From the above formula, we can get percentages of the data given by the respondents.

- **CHI-SQUARE ANALYSIS**

In this project chi-square test was used. This is an analysis of technique which analyzed the stated data in the project. It analysis the assumed data and calculated in the study. The Chi-square test is an important test amongst the several tests of significant developed by statistical. Chi-square, symbolically written as χ^2 (Pronounce as Ki-Spare), is a statistical measure used in the context of sampling analysis for comparing a variance to a theoretical variance.

Formula

$$\chi^2 = \frac{(O-E)^2}{E}$$

O = Observed frequency

E = Expected frequency

- **WEIGHTED AVERAGE METHOD**

- Weighted average can be defined as an average whose component items are multiplied by certain values (weights) and the aggregate of the products are divided by the total of weights.
- In certain cases relative importance of all the items in the distribution is not the same. Where the importance of the items varies.
- It is essential to allocate weight applied but may vary in different cases. Thus weight age is a number standing for the relative importance of the items.

CHAPTER IV

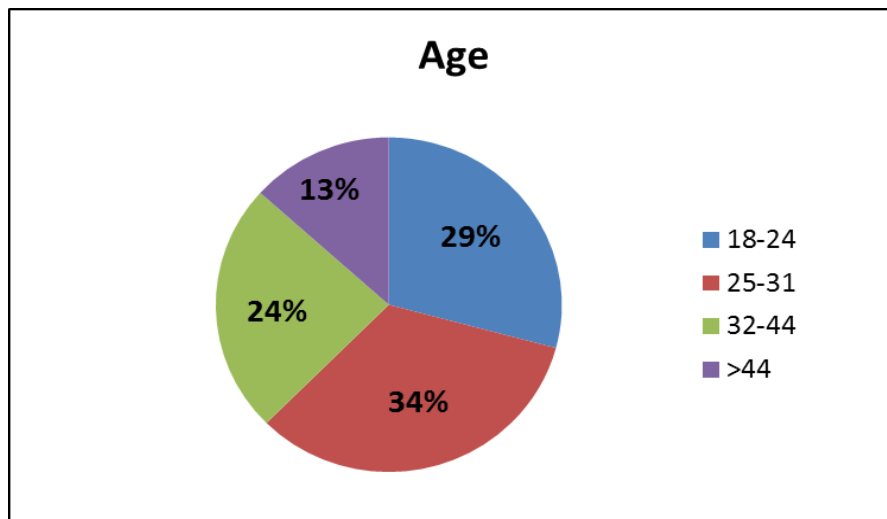
DATA ANALYSIS AND INTERPRETATION

4.1. PERCENTAGE ANALYSIS

TABLE 4.1.1 – RESPONDENTS AGE

S. No	Particulars	No of Respondents	Percentage
1	18-24	35	29.1667
2	25-31	40	33.333
3	32-44	29	24.1667
4	>44	16	13.333
Total		120	100

CHART 4.1.1 – RESPONDENTS AGE



Interpretation

From the shown table it is interpreted that the number of respondents between 18-24 age of respondents are 29% , between 25-31 age of respondents are 33%, between 32-44 age respondents are 24% and above 44 age of respondents are 13%

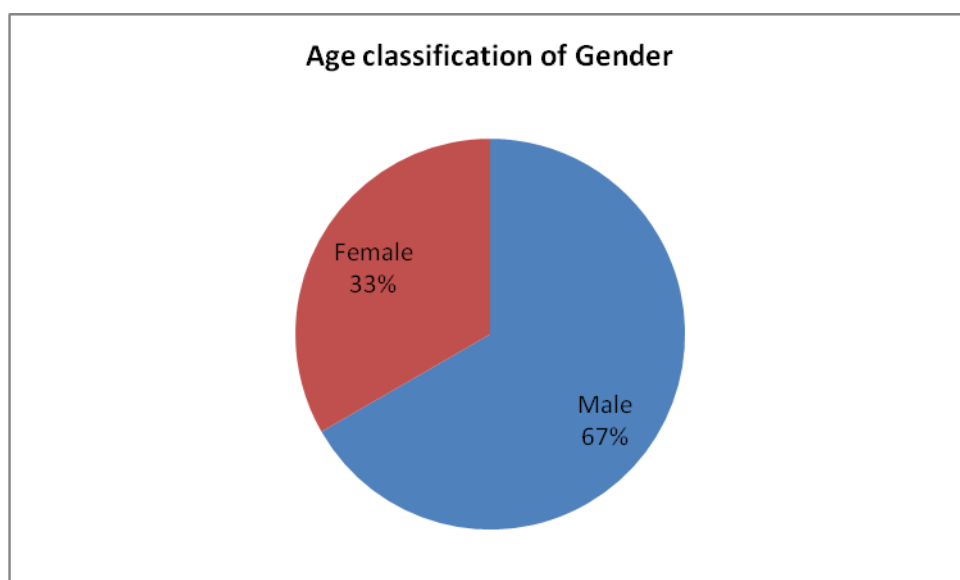
Inference:

From the above chart we got 29% of the respondents 18-24, 34% of the respondents 25-31, 24% of the respondents 32-44 and 13% of the respondents >44

TABLE 4.1.2 –AGE CLASSIFICATION OF GENDER

S. No	Particulars	No of Respondents	Percentage
1	Male	80	66.6667
2	Female	40	33.3333
Total		120	100

CHART 4.1.2 – AGE CLASSIFICATION OF GENDER



Interpretation

From the above table it is interpreted that the number of male respondent is 66% and female respondent is 33%

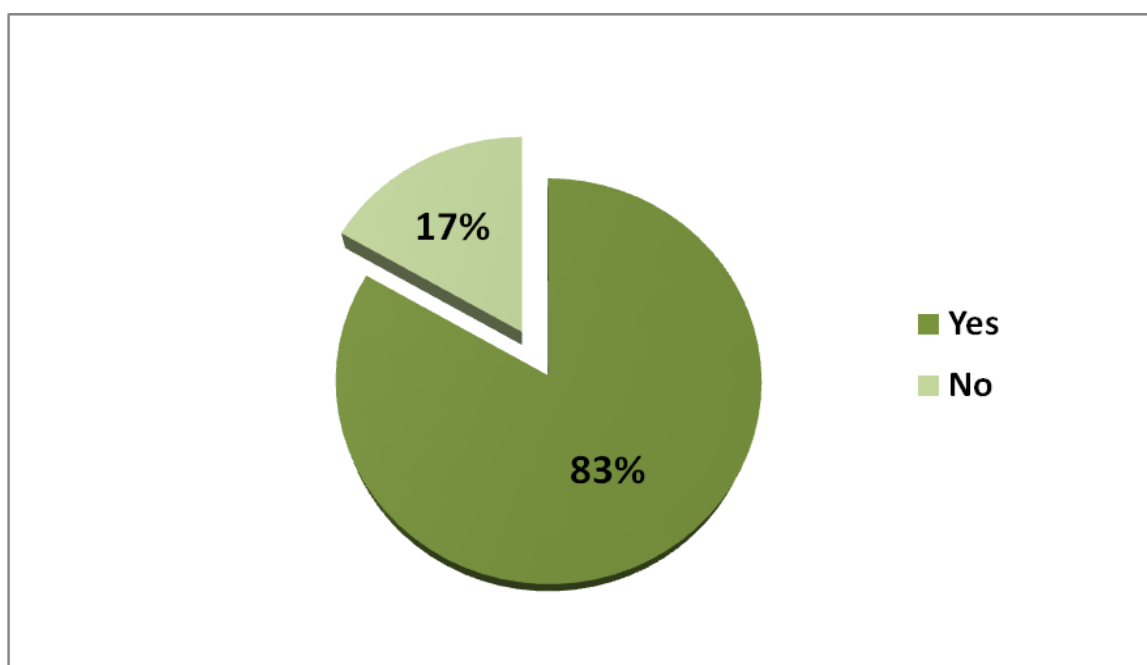
Inference:

From the above chart we concluded 67% of the respondents are male and 33% of the respondents are female.

TABLE 4.1.3 – NEED FOR TQM IN SOFTWARE INDUSTRY

S. No	Particulars	No of Respondents	Percentage
1	Yes	100	83.3333
2	No	20	16.6667
Total		120	100

CHART 4.1.3 – NEED FOR TQM IN SOFTWARE INDUSTRY



Interpretation

From the shown table it is interpreted that the 100 respondents are 83%, and the other 20 respondents are 16%

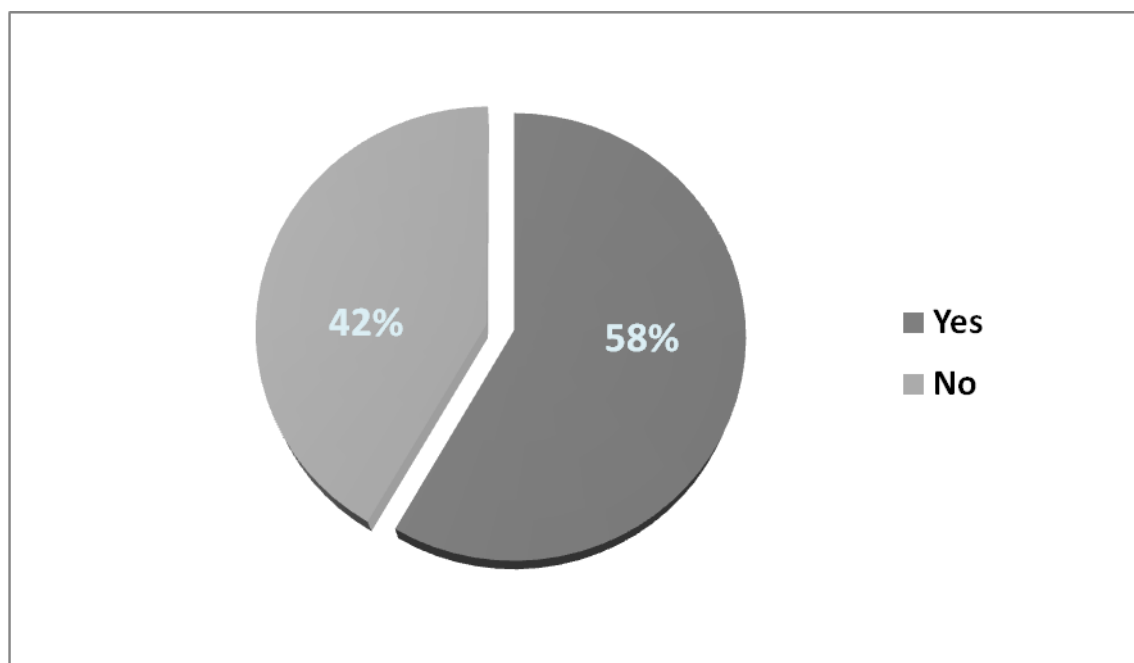
Inference:

From the above chart we found 83% of the respondents said yes and 17% of the respondents said no.

TABLE 4.1.4 – KNOWLEDGE ABOUT TQM

S. No	Particulars	No of Respondents	Percentage
1	Yes	70	58.3333
2	No	50	41.6667
Total		120	100

CHART 4.1.4 – KNOWLEDGE ABOUT TQM



Interpretation

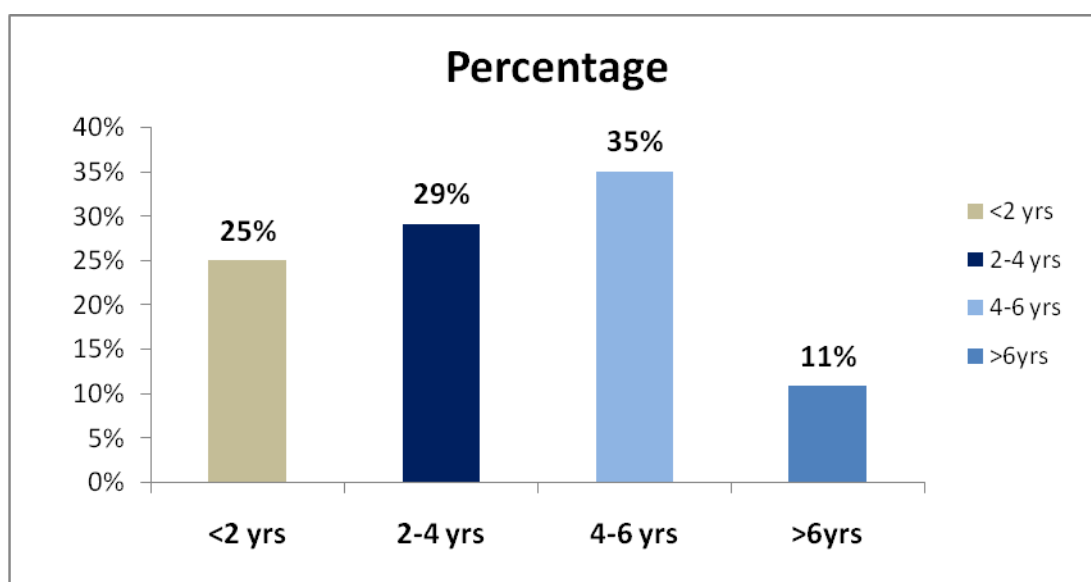
From the shown table it is interpreted that the given data regarding knowledge about TQM is that out of 120 respondents surveyed, 70 respondents answered yes when asked if they had knowledge about TQM, while 50 respondents no. This suggests that a majority of the respondents have some knowledge about TQM.

Inference:

From the above chart we found 58% of the respondents said yes and 42% of the respondents said no

TABLE 4.1.5 – WORKING EXPERIENCE IN SOFTWARE INDUSTRY

S. No	Particulars	No of Respondents	Percentage
1	<2 yrs	30	25
2	2-4 yrs	35	29.16667
3	4-6 yrs	42	35
4	>6yrs	13	10.8333
Total		120	100

CHART 4.1.5 – WORKING EXPERIENCE IN SOFTWARE INDUSTRY

Interpretation

From the shown table it is interpreted that the given data regarding working experience in the software industry is that out of the 120 respondents surveyed, the majority have some level of experience in the software industry. Specifically, 30 respondents have less than 2 years of experience, 35 respondents have 2-4 years of experience, 42 respondents have 4-6 years of experience, and 13 respondents have more than 6 years of experience. This suggests that the surveyed population has a diverse range of experience levels, with a significant number of respondents having 4-6 years of experience. However, this information alone does not provide insight into the specific roles or areas of expertise of the respondents, which may impact their

level of experience and knowledge within the software industry. Further analysis of the data, such as a breakdown of the respondents' job titles or specific areas of work within the industry, may be necessary to gain a more comprehensive understanding of the level of experience within the surveyed population.

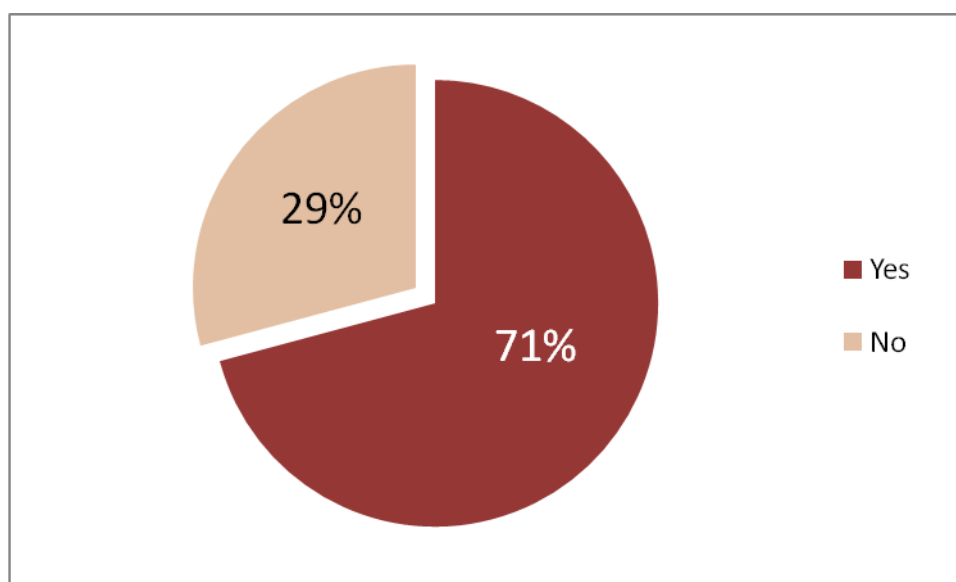
Inference:

From the above chart we discuss about year of experience, 25% of the respondents <2years, 29% of the respondents 2-4years, 35% of the respondents 4-6 years and 11% of the respondents >6years.

TABLE 4.1.6 – IDENTIFICATION OF TQM IMPLEMENTATION

S. No	Particulars	No of Respondents	Percentage
1	Yes	85	70.8333
2	No	35	29.16667
Total		120	100

CHART 4.1.6 – IDENTIFICATION OF TQM IMPLEMENTATION



Interpretation

From the he given data regarding identification of TQM implementation is that out of the 120 respondents surveyed, a significant majority of 85 respondents answered "yes" when asked if they could identify TQM implementation, while 35 respondents answered "no". This suggests that a large proportion of the surveyed population has some level of knowledge or experience with TQM implementation, and may have the ability to identify it within a given context. However, this information alone does not provide insight into the specific areas or contexts in which the respondents have identified TQM implementation, or their level of understanding

or expertise in this area. Further analysis of the data, such as a breakdown of the respondents' job titles or areas of expertise, may be necessary to gain a more comprehensive understanding of the level of knowledge and experience within the surveyed population with respect to TQM implementation.

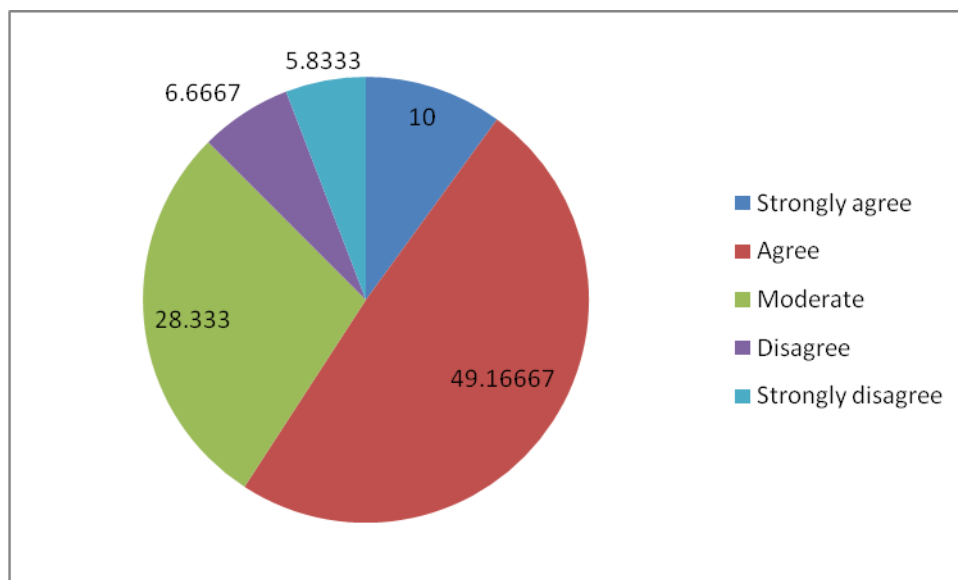
Inference:

From the above chart we found 71% of the respondents said yes and 29% of the respondents said no.

TABLE 4.1.7 – CUSTOMER’S RECOMMENDED TQM IN SOFTWARE INDUSTRY

S. No	Particulars	No of Respondents	Percentage
1	Strongly agree	12	10
2	Agree	59	49.16667
3	Moderate	34	28.333
4	Disagree	8	6.6667
5	Strongly disagree	7	5.8333
Total		120	100

CHART 4.1.7 – CUSTOMER’S RECOMMENDED TQM IN SOFTWARE INDUSTRY



Interpretation

From the he given data Based on the responses of the 120 customers surveyed, the interpretation of the recommendation for TQM (Total Quality Management) in the software industry is as follows:

Out of the total respondents, 71% (12+59) agree that TQM should be implemented in the software industry, while 28% (34+8+7) are either unsure or do not recommend TQM.

More specifically, 10% of respondents strongly agree, 49% agree, 28% have a moderate stance, 7% disagree, and 6% strongly disagree. Overall, the majority of respondents support the implementation of TQM in the software industry, although some have reservations or disagree with the recommendation. It is worth noting that TQM is a philosophy that emphasizes continuous improvement and customer satisfaction, and its successful implementation can lead to improved quality, efficiency, and competitiveness in the software industry.

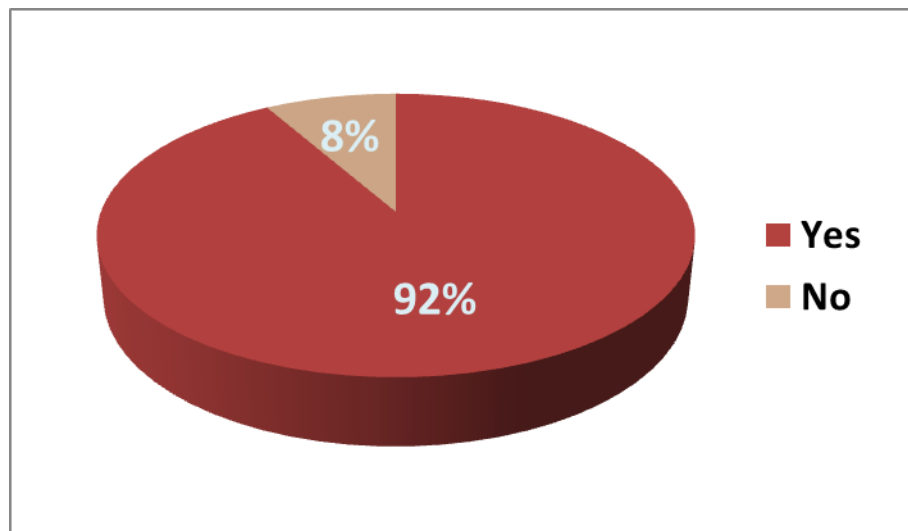
Inference:

From the above chart we surveyed about TQM recommended the TQM now days in software industry, 10% of the respondents strongly agree, 49% of the respondents agree, 28% of the respondents moderate, 7% of the respondents disagree and 6% of the respondents strongly disagree.

TABLE 4.1.8 – TQM CAN BE MEASURES APPROPRIATE QUALITY IN SOFTWARE INDUSTRY

S. No	Particulars	No of Respondents	Percentage
1	Yes	110	91.6667
2	No	10	8.3333
Total		120	100

CHART 4.1.8 – TQM CAN BE MEASURES APPROPRIATE QUALITY IN SOFTWARE INDUSTRY



Interpretation

Based on the responses of the 120 customers surveyed, the interpretation of whether TQM can be used to measure appropriate quality in the software industry is as follows:

Out of the total respondents, 92% (110) agree that TQM can be used to measure appropriate quality in the software industry, while only 8% (10) disagree. This indicates that the majority of respondents believe that TQM is a suitable approach for measuring quality in the software industry. TQM provides a structured approach to quality management that focuses on customer satisfaction, continuous improvement, and employee involvement. By

implementing TQM principles, software companies can ensure that they are delivering high-quality products that meet the needs of their customers.

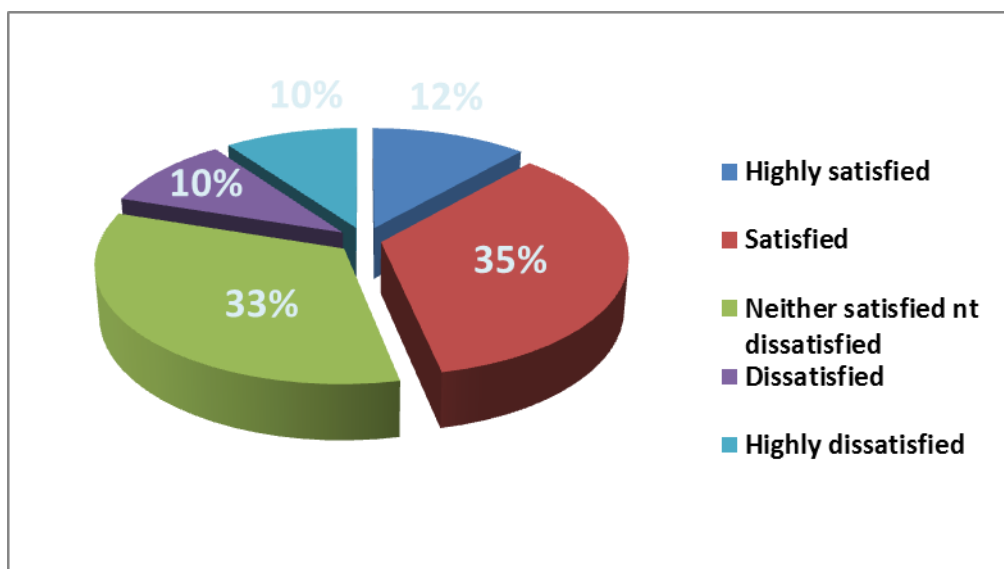
Inference:

From the above chart we found 92% of the respondents said YES and 8% of the respondents said NO.

TABLE 4.1.9 – TQM IS THE LONG-TERM SUCCESS THROUGH CUSTOMER SATISFACTION IN SOFTWARE INDUSTRY

S. No	Particulars	No of Respondents	Percentage
1	Highly satisfied	14	11.6667
2	Satisfied	42	35
3	Neither satisfied nor dissatisfied	40	33.3333
4	Dissatisfied	12	10
5	Highly dissatisfied	12	10
Total		120	100

CHART 4.1.9 – TQM IS THE LONG-TERM SUCCESS THROUGH CUSTOMER SATISFACTION IN SOFTWARE INDUSTRY



Interpretation

From the he given interpretation of TQM being the long term success through customer satisfaction in the software industry is as follows:

Out of the total respondents, 44% (14+42) are satisfied or highly satisfied with TQM as a means for achieving long-term success through customer satisfaction in the software industry, while 40% (40) neither agree nor disagree, and 16% (12+12) are dissatisfied or highly dissatisfied. More specifically, 12% are highly satisfied, 35% are satisfied, 33% are neutral, 10% are dissatisfied, and 10% are highly dissatisfied.

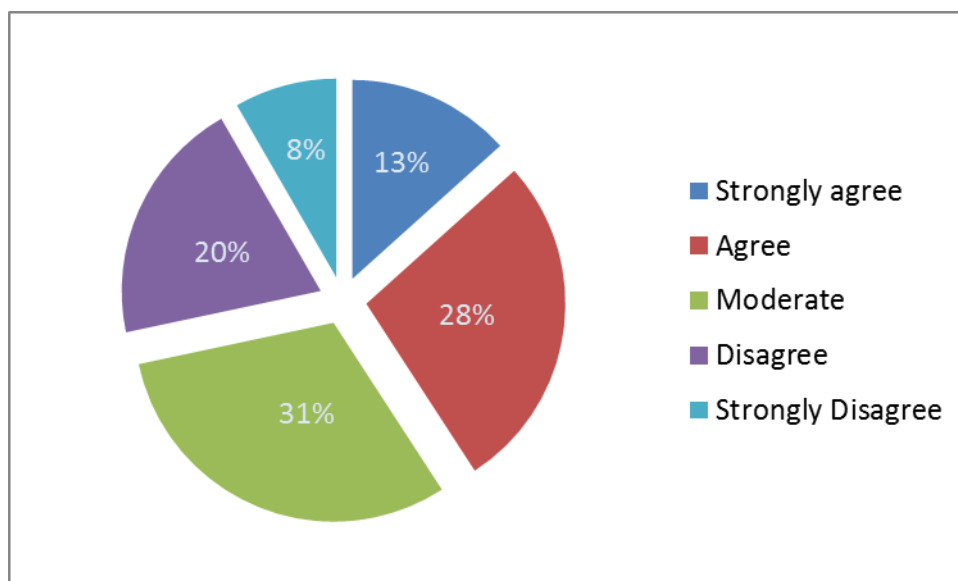
Overall, the majority of respondents neither agree nor disagree with the idea that TQM can lead to long-term success through customer satisfaction in the software industry. However, those who have an opinion on the matter are more likely to be satisfied than dissatisfied.

Inference:

From the above chart we got result about long-term success through customer satisfaction in software industry, 12% of the respondents strongly agree, 35% of the respondents agree, 33% of the respondents moderate, 10% of the respondents disagree and 10% of the respondents highly dissatisfied

TABLE 4.1.10 – MENTION THE OVERALL SATISFACTION ABOUT THE TQM

S. No	Particulars	No of Respondents	Percentage
1	Highly satisfied	9	7.5
2	Satisfied	39	32.5
3	Neither satisfied nor dissatisfied	33	27.5
4	Dissatisfied	22	18.3333
5	Highly dissatisfied	17	14.1667
Total		120	100

CHART 4.1.10 – MENTION THE OVERALL SATISFACTION ABOUT THE TQM**Interpretation**

From the he given data Based on the data provided, it can be interpreted that the overall satisfaction level for Total Quality Management (TQM) implementation is mixed. The percentage of respondents who are highly satisfied with TQM is 7.5%, which is relatively low. The percentage of respondents who are satisfied with TQM is 32.5%, indicating that a

significant proportion of respondents are content with the implementation. On the other hand, 22% of respondents are dissatisfied with TQM implementation, and 17% are highly dissatisfied. This suggests that a significant proportion of respondents are unhappy with the implementation of TQM in their organization. Additionally, 27.5% of respondents indicated that they are neither satisfied nor dissatisfied with TQM implementation, which could indicate that they are unsure about its effectiveness or that they have not yet formed an opinion. Overall, the satisfaction level for TQM implementation is mixed, with a slight majority indicating satisfaction.

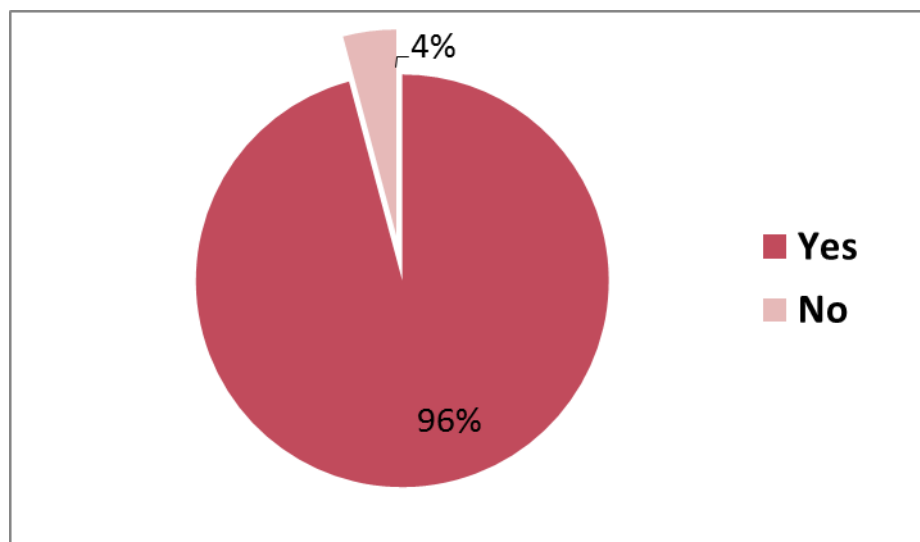
Inference

From the above chart we surveyed about benefits of all organization employees, 9% of the respondents highly satisfied, 33% of the satisfied, 29% of the respondents neither satisfied nor dissatisfied, 18% of the respondents dissatisfied and 14% of the respondents highly dissatisfied.

TABLE 4.1.11 – TQM IS REDUCE THE DEFECTS AND REWORK IN SOFTWARE DEVELOPMENT PROCESS AT IT INDUSTRY

S. No	Particulars	No of Respondents	Percentage
1	Yes	115	95.8333
2	No	5	4.1667
Total		120	100

CHART 4.1.11 – TQM IS REDUCE THE DEFECTS AND REWORK IN SOFTWARE DEVELOPMENT PROCESS AT IT INDUSTRY



Interpretation

From the the given responses, it seems that a majority of the respondents (115 out of 120) agree with the interpretation that TQM aims to reduce defects and rework in software development in the IT industry. This suggests that there is a general consensus among the respondents that TQM is an approach that emphasizes the importance of quality control and continuous improvement in software development.

However, it's worth noting that a small number of respondents (5 out of 120) disagreed with this interpretation. It would be interesting to explore their reasons for disagreement and see if there are any alternative interpretations of TQM that they might suggest. Overall, this survey provides some evidence to support the idea that reducing defects and rework is an important aspect of TQM in software development, but it's important to remember that TQM is a multifaceted approach that encompasses many other aspects of quality management as well.

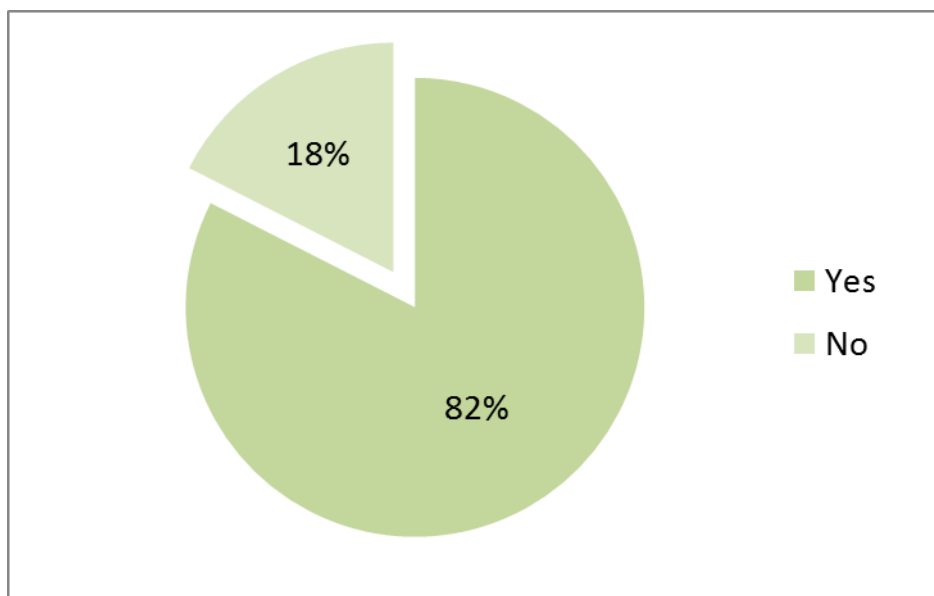
Inference:

From the above chart we found 96% of the respondents said yes and 4% of the respondents said no.

TABLE 4.1.12 – TQM IS EFFECTIVE TO SOFTWARE INDUSTRY

S. No	Particulars	No of Respondents	Percentage
1	Yes	99	82.5
2	No	21	17.5
Total		120	100

CHART 4.1.12 – TQM IS EFFECTIVE TO SOFTWARE INDUSTRY



Interpretation

From the the given responses, it appears that the majority of respondents (82.5%) agree that TQM is effective in the software industry. This suggests that TQM is perceived as a valuable approach to quality management that can help organizations in the software industry improve their processes and produce high-quality software.It's worth noting, however, that a significant minority of respondents (17.5%) disagree with this interpretation.

Overall, the survey results suggest that TQM is generally seen as an effective approach to quality management in the software industry, but opinions may vary depending on the specific context and circumstances of the organization in question.

Inference:

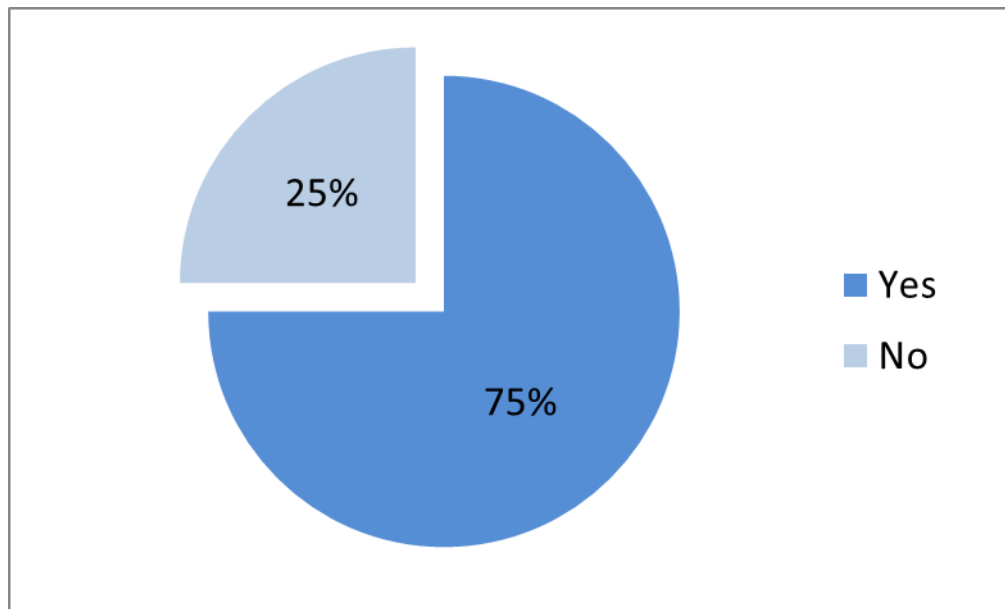
From the above chart we found 82% of the respondents said yes and 18% of the respondents said no

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TABLE 4.1.13 – RESPONDENT’S FEEDBACK ABOUT QUALITY

S. No	Particulars	No of Respondents	Percentage
1	Yes	90	75
2	No	30	25
Total		120	100

CHART 4.1.13 – RESPONDENT’S FEEDBACK ABOUT QUALITY



Interpretation

From the the given responses, it appears that a majority of respondents (75%) agree that there is a need to improve the quality of the product or service in question. This suggests that these respondents believe that the quality of the product or service could be improved in some way, and that there is room for improvement. On the other hand, a minority of respondents (25%) disagree with this interpretation, suggesting that they believe that the quality of the product or service is already satisfactory and that there is no need for improvement.

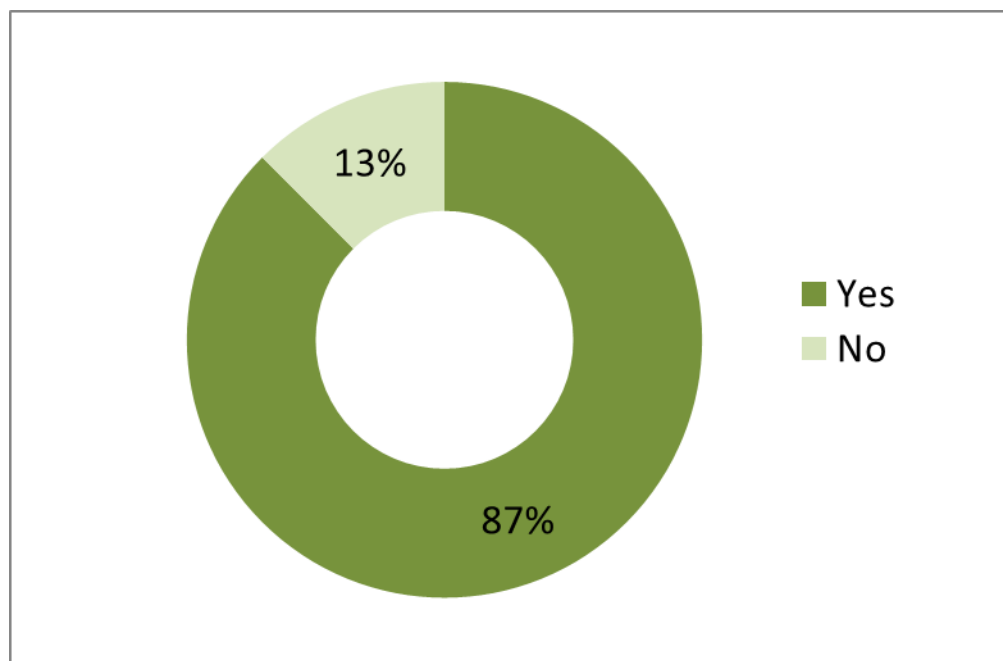
Inference:

From the above chart we found 75% of the respondents said yes and 25% of the respondents said no.

TABLE 4.1.14 – SOFTWARE INDUSTRIES ARE IMPROVING QUALITY OF THEIR WORK THROUGH TQM TECHNIQUES

S. No	Particulars	No of Respondents	Percentage
1	Yes	105	87.5
2	No	15	12.5
Total		120	100

CHART 4.1.14 – SOFTWARE INDUSTRIES ARE IMPROVING QUALITY OF THEIR WORK THROUGH TQM TECHNIQUES



Interpretation

From the the given responses, it appears that a majority of respondents (87.5%) agree that software industries are improving the quality of their work through TQM techniques. This suggests that TQM is seen as a valuable approach to quality management that can help software industries improve their processes and produce high-quality software. It's worth noting, however, that a minority of respondents (12.5%) disagree with this interpretation. Overall, the survey results suggest that TQM is generally seen as an effective

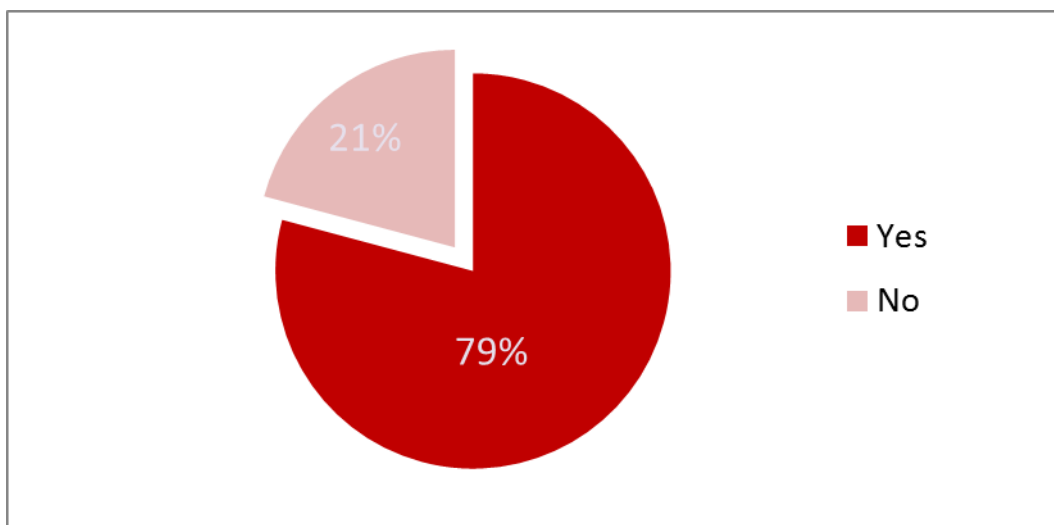
approach to quality management in the software industry and that it is being used to improve the quality of work in this field.

Inference:

From the above chart we found 87% of the respondents said yes and 13% of the respondents said no.

TABLE 4.1.15 – SATISFIED WITH THE OBJECTIVES OF TQM

S. No	Particulars	No of Respondents	Percentage
1	Yes	95	79.1667
2	No	25	20.8333
Total		120	100

CHART 4.1.15 – SATISFIED WITH THE OBJECTIVES OF TQM**Interpretation**

From the the given responses Based on the survey results, it can be interpreted that a majority of the respondents (87.5%) believe that software industries are improving the quality of their work through Total Quality Management (TQM) techniques. TQM is a management approach that focuses on continuous improvement, customer satisfaction, and reducing waste and errors in business processes. Furthermore, a small percentage of respondents (12.5%) indicated that they do not believe that software industries are improving the quality of their work through TQM techniques. It is unclear why they hold this belief, as the survey results do not provide any additional information on their reasons for disagreeing with the statement.

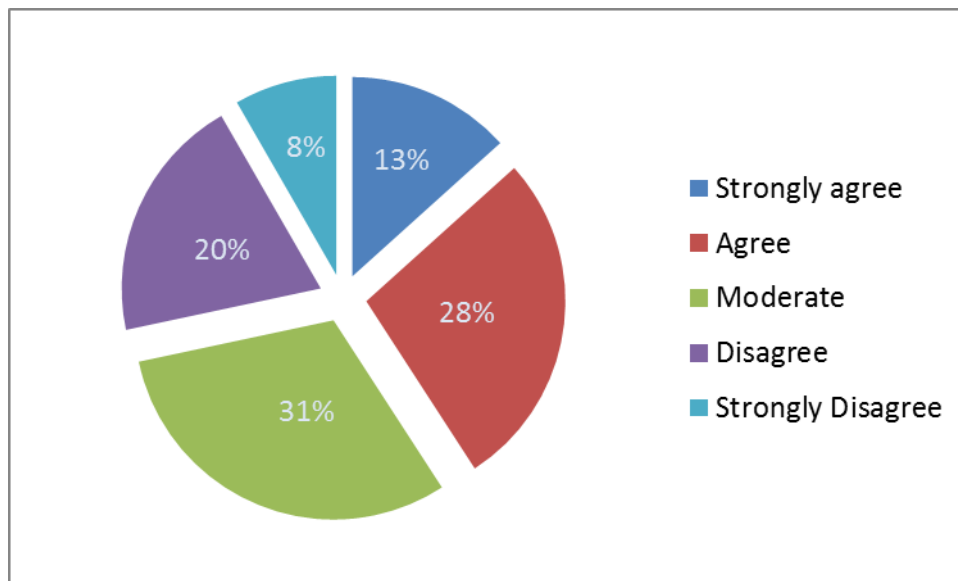
Inference:

From the above chart we found 79% of the respondents said yes and 21% of the respondents said no.

TABLE 4.1.16 – TQM IS PROVIDE BY A BETTER QUALITY IN SOFTWARE DEVELOPMENT PROCESS

S. No	Particulars	No of Respondents	Percentage
1	Strongly agree	16	13.3333
2	Agree	33	27.5
3	Moderate	37	30.8333
4	Disagree	24	20
5	Strongly Disagree	10	8.3333
Total		120	100

CHART 4.1.16 – TQM IS PROVIDE BY A BETTER QUALITY IN SOFTWARE DEVELOPMENT PROCESS INFERENCE



Interpretation

From the the given responses, it can be interpreted that there is a mixed perception among the respondents regarding whether Total Quality Management (TQM) provides better quality in software development processes. Approximately 13.34% of the respondents strongly agree that TQM provides better quality in software development processes, while 27.5% agree with this statement. Additionally, around 30.83% of respondents have a moderate view on this statement, which means that they neither agree nor disagree with the statement.

On the other hand, 20% of the respondents disagree that TQM provides better quality in software development processes, and 8.333% strongly disagree with this statement.

Inference:

From the above chart we surveyed about better quality in software development process, 13% of the respondents strongly agree, 28% of the respondents agree, 31% of the respondents moderate, 20% of the respondents disagree and 8% of the respondents strongly disagree.

4.2. CHI- SQUARE TEST

There is significant relation between gender of the employees and need for TQM in IT industry.

Hypothesis Ho:

There is relation between the gender of the employee and need for TQM in IT industry.

OBSERVED COUNT

Sl.No	Gender of the Respondents	Is TQM Required for Software Industry		
		Yes	No	Total
1	Male	70	10	80
2	Female	30	10	40
	Total	100	20	120

Source: Primary Data

EXPECTED COUNT

Sl.No	Gender of the Respondents	Is TQM Required for Software Industry		
		Yes	No	Total
1	Male	65	15	80
2	Female	35	5	40
	Total	100	20	120

Source: Primary Data

FORMULA

$$\chi^2 = \frac{(O-E)^2}{E}$$

O = Observed frequency

E = Expected frequency

COMPUTATION OF CHI-SQUARE (χ^2)

Sl. No.	O	E	(O-E)	(O-E) ²	(O-E) ² / E
1	70	65	5	25	0.384615
2	10	15	-5	25	1.666667
3	30	35	-5	25	0.714286
4	10	5	5	25	5.000000
	TOTAL				7.765568

Source: Primary Data

The calculated value is 7.765568

Degree of freedom = $(R-1)(C-1) = (2-1)(2-1) = 1$

Level of significance = 5%

Table value 1 of DGF and 5% level of significance = 3.841

$7.765568 > 3.841$ - Calculated Value is greater than Tabulated Value Hence, hypothesis H_0 is rejected.

INFERENCE

Thus Chi-Square test infers that there is no relation between the gender of the employee and need for TQM in software industry.

4.3. WEIGHTED AVERAGE METHOD

	Strongly agree (5)	Agree (4)	Neither Agree nor disagree (3)	Disagree (2)	Strongly Disagree (1)
Improve the response time	14	66	27	13	0
Inventory reduction	12	60	30	10	8
Space requirement	9	37	46	20	8
Reduces over processing	14	62	27	12	5
Benefits to employees	12	59	34	8	7

	Strongly agree (5)	Agree (4)	Neither Agree nor disagree (3)	Disagree (2)	Strongly Disagree (1)	$\sum XiWi$	$\sum XiWi/R$	RANK
Improve the response time	70	264	81	26	0	441	29.4	1
Inventory reduction	60	240	90	20	8	418	27.86667	4
Space requirement	45	148	138	40	8	379	25.26667	5
Reduces over processing	70	248	81	24	5	428	28.53333	2
Benefits to employees	60	236	102	16	7	421	28.06667	3

Inference

From the above weighted average method, the respondents are ranked Improve the response time is ranked one, Reduces over processing is ranked two, Benefits to employees is ranked third, Inventory reduction is ranked fourth, Space requirement is ranked fifth.

CHAPTER V

FINDINGS, SUGGESTIONS AND CONCLUSION

5.1. FINDINGS

- The employees Knowledge should be improved to know about the TQM.
- Response time should be improved to customer order in software industry.
- The TQM reduces the over processing in software industry, it should be develop in the future.
- The satisfaction about the TQM among the people is not so good; it has to develop in the future.
- The satisfaction about the objectives of the TQM is not so well, the objectives should improve in the future.
- Quarter of the people didn't accept that TQM provide better quality, company should educate employees about TQM and develop the quality by developing the quality business will be improved.

5.2. SUGGESTIONS

For managers, they must be aware that the impact of IT on competitive performance need not to be direct; it can exert its influence through the complementarily of other organizational practices such as QM practices. Likewise, IT benefits depend on conceiving IT as the firm's ability to acquire, develop and direct its IT resources to support its business strategy.

Our study also provides a detailed description of IT-related capabilities key to ensuring the IT implementation success, as well as a analysis of the main QM practices common to the most important QM programs (ISO, EFQM, Malcolm Baldrige, etc.). Thus, managers are able to take advantage of the synergies derived for implementing both QM and IT programs.

- To make everybody in the organization conscious of the need to consider quality in all the processes.
- To familiarize employees with the technique for identifying and analyzing problems as well as finding solutions to them.
- The TQM manager also encourages the formation of quality groups within the organization that will help in problem solving.
- TQM manager is seen as the facilitator of work process.
- Lastly the TQM manager coordinates all the process related to quality improvements.

5.3. CONCLUSION

The concept of TQM is adapted to manufacturing industry. This study analyzes about the TQM concepts in software industry. The essential of TQM in software industry has been clearly highlighted. The result of TQM in software industry is also been included. It is found that the TQM in software industry can increase the quality of the software. The quality is the key for customer satisfaction. By applying the TQM techniques in software industry, they can satisfy their existing customers and it results to good name to the company. The TQM in software industry is essential and now days it creates positive impact in the industry.

By increasing the quality company can satisfy the customer. In IT TQM environment is customer-driven and focused on quality. Teams are process-oriented, and interact with their internal customers to deliver the required results. Management's focus is on controlling the overall process, and rewarding teamwork

ANNEXURE 1 - QUESTIONNAIRE

1. Name :

2. Age

a)18-24 b) 25-31 c) 32-44 d) >44

3. Gender

a) Male b) Female

4. Designation: _____

5. Department: _____

6. Need for TQM in software industry

a)Yes b) No

7. Knowledge about TQM in Fabsys Technologies

a)Yes b) No

8. Working experience in Software Industry

a)<2 yrs b)2-4 yrs c)4-6 yrs d)>6yrs

9. Identification of TQM implementation in Fabsys Technologies

a)Yes b) No

10. Customer's recommended TQM in software industry

a) Strongly agree b) Agree c) Moderate d) Disagree e) Strongly Disagree

11. TQM can be measures appropriate quality in software industry

a) Yes b) No

12. TQM is the long-term success through customer satisfaction in software industry

a) Highly satisfied b) Satisfied c) Neither satisfied nor dissatisfied d) Dissatisfied
e) Highly dissatisfied

13. Mention the overall satisfaction about the TQM in Fabsys Technologies

a) Highly satisfied b) Satisfied c) Neither satisfied nor dissatisfied d) Dissatisfied
e) Highly dissatisfied

14. TQM is reduce the defects and rework in software development process at IT industry

a) Yes b) No

15. TQM is effective to software industry

a) Yes b) No

16. Respondent's feedback about quality in Fabsys Technologies

a) Yes b) No

17. Software industries are improving quality of their work through TQM techniques

a)Yes b) No

18. Satisfied with the objectives of TQM in Fabsys Technologies

a)Yes b) No

19. TQM is provide by a better quality in software development process

a) Strongly agree b)Agree c)Moderate d)Disagree e)Strongly Disagree

20. TQM Process

	Strongly agree (5)	Agree (4)	Don't know (3)	Disagree (2)	Strongly Disagree (1)
Improve the response time					
Inventory reduction					
Space requirement					
Reduces over processing					
Benefits to employees					

21. Suggestions if any_____

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ANNEXURE II - RESEARCH ARTICLE
A STUDY ON EFFECTIVENESS OF TOTAL QUALITY MANAGEMENT IN
INFORMATION TECHNOLOGY WITH REFERENCE TO FABSYS
TECHNOLOGIES, CHENNAI

Dr. DHIVYA SATHISH , Associate Professor

School of management studies, Sathyabama institute of Science and
Technology Chennai

dhivya.sathish05@gmail.com

MR R SATHISH , student

School of management studies, Sathyabama Institute of Science and
Technology Chennai

ashishsathish25@gmail.com

ABSTRACT

The research problem identified in this study is the lack of adoption of Total Quality Management (TQM) techniques by small scale software industries. The primary objective of the study is to investigate the effectiveness of TQM in the software industry. This will involve exploring the benefits of implementing TQM in the IT industry, as well as examining the concept of TQM from the perspective of IT industry employees. Additionally, the study aims to understand the need for TQM in the IT industry and provide suggestions for changes that may be necessary for successful implementation. By addressing this research problem, the study can provide valuable insights into the benefits of TQM for small scale software industries, as well as the potential challenges that may arise during implementation. The findings can help to inform industry practices and policies related to quality management, ultimately leading to improved quality, increased efficiency, and greater customer satisfaction in the IT industry.

KEYWORDS: Customers Satisfaction, Employees, Perception, TQM, Top Management.

I. INTRODUCTION

Total quality management (TQM) is a management approach that emphasizes the importance of continuously improving the quality of products and services to meet or exceed customer expectations. It involves the entire organization in efforts to achieve this goal, not just the production department. The management team is responsible for actively managing quality through funding, training, staffing, and goal setting. TQM has its roots in quality control, but it goes beyond that by involving all areas of the organization in the effort to improve quality. The goal of TQM is to create a culture of continuous improvement in which employees are empowered to identify and solve problems and make improvements to processes and products. This approach can result in increased customer satisfaction, improved employee morale, and greater efficiency and effectiveness in the organization. Although TQM enjoyed widespread attention in the late 1980s and early 1990s, it has since been overshadowed by other management approaches such as ISO 9000, Lean manufacturing, and Six Sigma. However, TQM principles continue to be relevant and can be applied in a variety of industries and organizations.

INDUSTRY

According to recent data, the global sourcing market in India is growing at a faster pace compared to the IT-BPM industry. India is currently the leading sourcing destination worldwide, holding a market share of approximately 55% of the US\$ 200-250 billion global services sourcing business in 2019-20. Indian IT & BPM companies have established over 1,000 global delivery centres in about 80 countries around the world. This has resulted in India. The growth of the sourcing market in India can be attributed to various factors such as the availability of skilled talent, cost-effectiveness, a favorable business environment, and a strong technology infrastructure. Indian IT & BPM companies have also been actively expanding their offerings to include emerging technologies such as artificial intelligence, machine learning, and the Internet of Things, further bolstering their position in the global market. Overall, the growth of the sourcing market in India presents significant opportunities for the country's IT & BPM industry, as well as for international businesses looking to outsource their services.

With a robust digital infrastructure and a talented workforce, India is well-positioned to continue leading the global services sourcing market.

COMPANY

Fabsys Technologies

Designing, building and integrating cutting-edge eBusiness solutions that deliver profitable online experiences can be a puzzling challenge. From talent recruitment to full scale application integration, we provide the missing components that you need to complete your puzzle, and make your vision a reality.

II. REVIEW OF LITERATURE

Seetharaman (2006) had made an attempt to examine the reasons for the TQM implementation failure in many organizations. Even though the organization are committed towards the cause and adopt the TQM process, there are certain unavoidable factors which cause either delay or even failure of the process. If the root cause for failure is not analysed and rectified, the TQM process does not yield any fruitful results at all.

Nwabueze (2001) in his study had insisted that organizations should focus on partnership development – both internal and external partnerships. Internal partnership among labour and management is essential for cooperation while external partnership with suppliers, customers and training facilitators enable success. Effective internal and external partnerships results in mission accomplishment.

Oakland (2003) had summarized that the management approach determines the performance with respect to quality. It is the duty of the management to prescribe proper guidelines for the effective implementation of quality process.

Motwani (2001) in his research, had identified seven factors critical to TQM implementation. The seven factors include top management commitment; product design; employee training and empowerment; vendor quality management; and customer involvement and satisfaction.

Nofal (2005) through his research has identified various factors for successful TQM implementation. Involvement of senior executives, comprehensive policy development and effective deployment of goals; entire workforce commitment to quality goals of the organization; active participation of functional level managers and workers, effective communication, recognition of efforts are some of the noteworthy factors.

OBJECTIVES

Primary objectives

To study on effectiveness of Total quality management (TQM).

Secondary objectives

To study about the benefits of implementing TQM in IT industry.

To study about the concept of TQM from the IT industry employee point of view.

To study about the need for TQM in IT industry.

To suggest the IT industry about the changes need in TQM

METHODOLOGY

Sample Unit: The study will be conducted at Fabsys Technologies IT Employees and the data will be collected from the employees working in the organization. The sample Size for the study is 120.

Research type: Descriptive Research

Population : Employees in IT Departments

Sample size : 120

Sampling Method : Convenient Sampling

Research Method : Survey

Data source: Primary data, Secondary data

Research Instrument: Structured Questionnaire

Hypothesis questions : There is significant relation between gender of the employees and need for TQM in IT industry.

Hypothesis Ho:

RESEARCH DESIGN

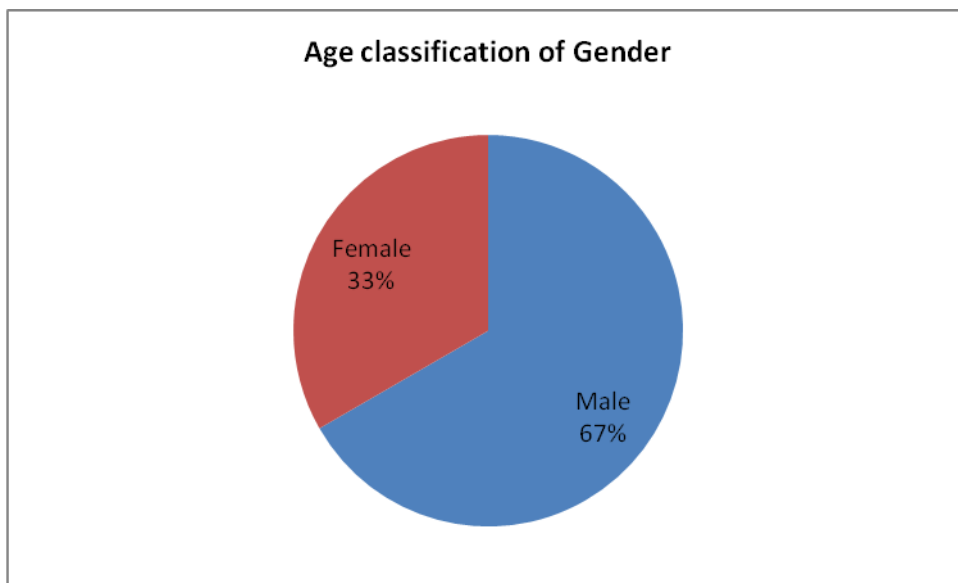
Descriptive research is used in this study. Descriptive research is also called Statistical Research. The main goal of this type of research is to describe the data and characteristics about what is being studied. The idea behind this type of research is to study frequencies, averages, and other statistical calculations.

DATA ANALYSIS AND INTERPRETATION

TABLE 4.1.2 –AGE CLASSIFICATION OF GENDER

S. No	Particulars	No of Respondents	Percentage
1	Male	80	66.6667
2	Female	40	33.3333
Total		120	100

CHART 4.1.2 – AGE CLASSIFICATION OF GENDER



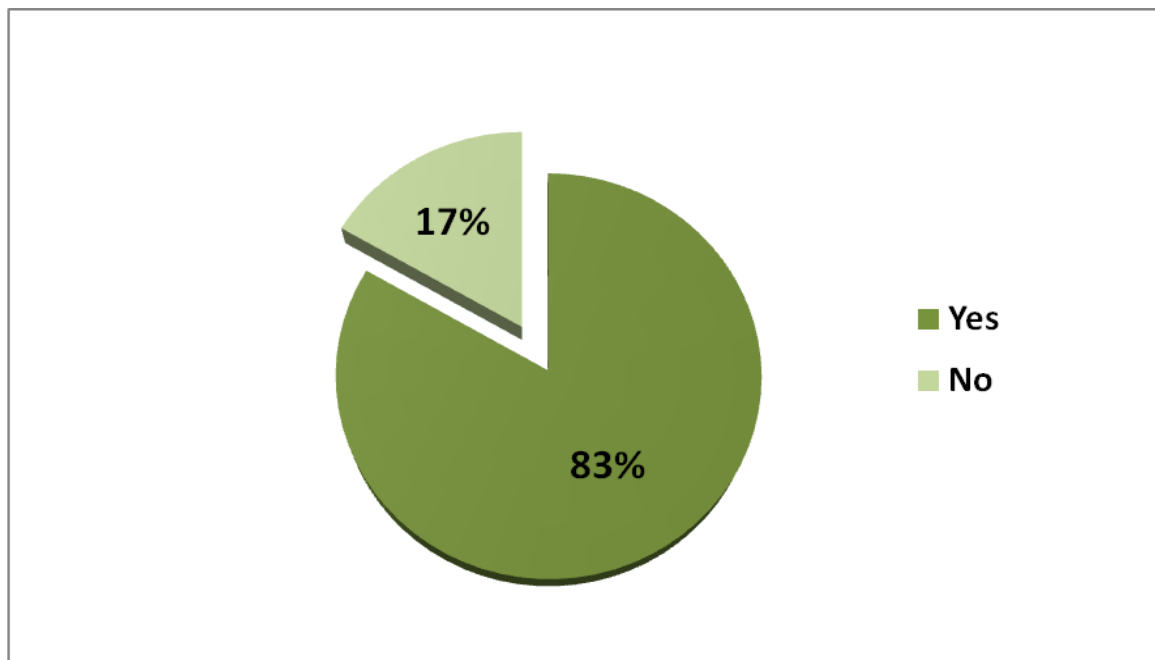
Interpretation

From the above table it is interpreted that the number of male respondent is 66% and female respondent is 33%

TABLE 4.1.3 – NEED FOR TQM IN SOFTWARE INDUSTRY

S. No	Particulars	No of Respondents	Percentage
1	Yes	100	83.3333
2	No	20	16.6667
Total		120	100

CHART 4.1.3 – NEED FOR TQM IN SOFTWARE INDUSTRY



Interpretation

From the shown table it is interpreted that the 100 respondents are 83%, and the other 20 respondents are 16%

CHI- SQUARE TEST

There is significant relation between gender of the employees and need for TQM in IT industry.

Hypothesis Ho:

There is relation between the gender of the employee and need for TQM in IT industry.

OBSERVED COUNT

Sl.No	Gender of the Respondents	Is TQM Required for Software Industry		
		Yes	No	Total
1	Male	70	10	80
2	Female	30	10	40
	Total	100	20	120

COMPUTATION OF CHI-SQUARE (χ^2)

Sl. No.	O	E	(O-E)	$(O-E)^2$	$(O-E)^2 / E$
1	70	65	5	25	0.384615
2	10	15	-5	25	1.666667
3	30	35	-5	25	0.714286
4	10	5	5	25	5.000000
	TOTAL				7.765568

Source: Primary Data

INFERENCE Thus Chi-Square test infers that there is no relation between the gender of the employee and need for TQM in software industry.

WEIGHTED AVERAGE METHOD

	Strongly agree (5)	Agree (4)	Neither Agree nor disagree (3)	Disagree (2)	Strongly Disagree (1)
Improve the response time	14	66	27	13	0
Inventory reduction	12	60	30	10	8
Space requirement	9	37	46	20	8
Reduces over processing	14	62	27	12	5
Benefits to employees	12	59	34	8	7

	Strongly agree (5)	Agree (4)	Neither Agree nor disagree (3)	Disagree (2)	Strongly Disagree (1)	$\sum X_i W_i$	$\sum X_i W_i / R$	RANK
Improve the response time	70	264	81	26	0	441	29.4	1
Inventory reduction	60	240	90	20	8	418	27.86667	4
Space requirement	45	148	138	40	8	379	25.26667	5
Reduces over processing	70	248	81	24	5	428	28.53333	2
Benefits to employees	60	236	102	16	7	421	28.06667	3

Inference

From the above weighted average method, the respondents are ranked Improve the response time is ranked one, Reduces over processing is ranked two, Benefits to employees is ranked third, Inventory reduction is ranked fourth, Space requirement is ranked fifth.

CONCLUSION

The concept of TQM is adapted to manufacturing industry. This study analyzes about the TQM concepts in software industry. The essential of TQM in software industry has been clearly highlighted. The result of TQM in software industry is also been included. It is found that the TQM in software industry can increase the quality of the software. The quality is the key for customer satisfaction. By applying the TQM techniques in software industry, they can satisfy their existing customers and it results to good name to the company. The TQM in software industry is essential and now days it creates positive impact in the industry.

REFERENCE

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