

A STUDY ON TOTAL QUALITY MANAGEMENT IN AUTOKSHI ENGINEERS PVT LTD, CHENNAI

Submitted in partial fulfillment of the requirements for the award of

MASTER OF BUSINESS ADMINISTRATION

by

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

SATHYABAMA

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

**Accredited with Grade "A" by NAAC | 12B Status by UGC | Approved by AICTE
JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHENNAI - 600 119**

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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **I PAULINA HEMISH 41410221** who carried out the project entitled "**A Study on Total Quality Management in Autokshi Engineers Pvt Ltd**" under my supervision from January 2023 to March 2023.

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ACADEMIC PROJECT COMPLETION LETTER

We like to confirm the below student, who is doing MBA in Sathyabama Institute of Science And Technology, Chennai, has successfully completed the academic project in Operations Department in our concern titled “**A Study on Total Quality Management**” from 05/01/2023 to 31/03/2023

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We wish success in all the future endeavors.

For Autokshi Engineers [P] Ltd,


Vairavanathan. A
Managing Director



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DECLARATION

I **PAULINA HEMISH I (41410221)** hereby declare that the Project Report entitled **“A Study on Total Quality Management in Autokshi Engineers Pvt Ltd”** done by me under the guidance of **DR. Dhivya Sathish, MBA., M.Phil., Ph.D.,** at **AUTOKSHI ENGINEERS Private LTD** No.75, Sengundram Road, Malrosapuram village, Maraimalainagar, Chennai-603209 is submitted in partial fulfillment of the requirements for the award of Master of Business Administration degree.

DATE: 05.05.2023

PLACE: CHENNAI



I PAULINA HEMISH

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ABSTRACT

The project entitled “A study on total quality management” was carried out in the Autokshi Engineers Pvt Ltd. The main objective of the project is to study the level of total quality management principles implemented in the organisation and to give suggestions to improve their employee commitment towards the lean tools through the implementation of the world class manufacturing system. This study also shows the importance of world class manufacturing system to maintain and improve the quality of work life of employees.

The researcher had taken the sample size of 120 employees and chooses descriptive research design to derive the descriptive and brief explanation of the result in form of INTERPRETATION. The data used for the study is the primary data. Primary data was collected from the employees and workers of the organisation. The tools and techniques used for the analysis are percentage analysis, chi-square analysis and correlation. On the basis of analysis and findings charts and conclusion were drawn.

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CHAPTER -1

INTRODUCTION

1.1 INTRODUCTION OF THE STUDY

The brief introduction about the study as follows:

The history of Total Quality Management (TQM) can be traced back to early 1920s, when statistical theory was first applied to product quality control. This concept was further developed in Japan in the 40s led by Americans, such as Deming, Juran and Feigenbaum. The focus widened from quality of products to quality of all issues within an organisation.

Total Quality Management (TQM) is a management approach that aims for long-term success by focusing on customer satisfaction. TQM is based on the participation of all members of an organization in improving processes, products, services and the culture in which they work.

Overview of the chapter

The first chapter of the project deals with the industry profile, company profile, product profile and review of literature.

The product profiles describe about the various kind papers produced by SPB and applications of its product. The literature review is evaluative report information found in the literature related to the selected area of study. (S. N Murthy, U. Bhojanna 2004).

The chapter II deals with the objective of the study, research methodology used in the study and scope and limitation of the study.

The main objective is to study the level of total quality management principles implemented in the organisation and to give suggestions to improve their employee

commitment towards the lean tools. The researcher used a descriptive research method. Convenient sampling method is used in the research, to select the sample size of 120 from the total population. The data are collected from the primary data and secondary data. The questionnaire is used as a research instrument to collect the data from the respondents. The chapter III deals with the data analysis and interpretation.

After collecting the data, the next task of the researcher is to analyse and interpret the data. Analyse of the data involves organizing the data in a particular manner. Interpretation of data is a method for driving conclusion from the data analysed. Analysis of data is not complete, unless it is interpreted. (S. N Murthy, U. Bhojanna 2004).

The chapter IV deals with the result analysis, findings, suggestion and conclusion.

In this area researcher will give the findings of his research that is what he had find in his research. According to his finding he will produce suggestion to the company to overcome their problems. At the end the researcher will give a conclusion about the research.

1.2 COMPANY PROFILE

Established in the 1997, Autokshi Components Pvt Ltd is into the manufacturing of auto parts for two-wheeler and other commercial vehicles in India. India being the one among the low-cost countries, yet which is fast developing, benefits the clients through minimum investment and maximum output. The wide range of their products includes commercial vehicle components, main stand and side stand, backing plates, gear shift lever, heavy duty stamp and tubular components and more. All the product developments are done using latest technology and high-quality materials.

Being ISO/TS 16949-2009 certified company, Autokshi Components Pvt Ltd follows the latest and advanced technology that helps in the faster product

development while also providing better support for their clients. A combination over 2 decades of experience and expertise in the industry enables us to deliver superior quality customized products as per the customer requirements.

They have the state-of-the-art infrastructure and cutting-edge technology with which the product development is made faster and accurate. We have manufacturing unit in Tamil Nādu that comprise of separate design office for offering customized designing of components for the clients, with a separate lab where all the products are tested. The team follows the next generation technology and techniques for testing the manufactured products; with this we ensure superior quality of all their products.

Most of their product development processes and even the administration processes are automated to ensure maximum accuracy, perfection and productivity. They have implemented SAP for the administration process. For the successful and accurate completion of product development process, they have implemented the well-known TPM. This concept ensures maximum productivity through cost saving and time saving throughout the production line. Their implementation of robotic line for various manufacturing processes assures faster and perfect product outputs. Robotic lines are used for pick and place of sheets, so that there is only a minimum human interference in such difficult processes which avoids accidents and human errors. Through automation of product development, they can ascertain predictable quality as well as quantity of products.

Autokshi Components Pvt Ltd not only concentrates on its own growth, but also contributes to developing the capabilities of the region. With the association of various organizations, they strive in creating a better development of the company as well as the region and with this motto in mind contribute towards the cause continuously.

With the cutting-edge infrastructure and manufacturing capacity, we can cater to the needs and requirements of larger companies as well as smaller

companies. Their components are supplied to various companies. They take pride in their association with these leading auto manufacturers and look towards associating with more esteemed names from all over the world.

Development Capabilities

The ISO/TS 16949:2009 certified company, Autokshi Components Pvt Ltd is one of the foremost sheet metal & fabricated auto parts and press tools manufacturers in India. The stringent methods used in the quality assurance and production of various auto parts for two wheelers and three-wheeler commercial vehicles, ensures that they are of the best quality.

They deploy the cutting-edge technology for the product development and designing process; internationally acclaimed machinery is deployed for the manufacturing purposes. A constant enhancement of the technology and processes is the part of their work-culture as a leading sheet metal parts & tools manufacturer in India. Their team attends periodic and adequate training programs so as to keep themselves well-conversant with the new technologies and skills.

They have robotic lines for welding and pick & place mechanism of steel sheets and other heavy works and thereby reducing errors for such tasks. They process more than 80 tons of steel per day and have automated most of the processes to minimize the mistakes caused. They have sharp focus on TPM which reduces wastage of resources and reduces cost of production. Additionally, their business processes are automated with the implementation of SAP enterprise business solutions for faster business.

Autokshi Components Pvt Ltd manufactures and supplies auto parts for various companies including small, medium and big scale organizations; their forte is not restricted just to auto parts. Their specialty as a press tools manufacturer and sheet metal parts manufacturing in India lies in their futuristic approach towards

technology and overall business which enables creation of flawless auto parts for three-wheeler commercial vehicles and motorcycles.

Their development activities are monitored through Team Centre software.

Stamping Capabilities

With more than 4 manufacturing units in Tamil Nādu, Autokshi Components Pvt Ltd is one of the foremost companies who specialize in precision stamping. With their high quality and efficient precision metal stamping, they have set a benchmark among the companies offering precision stamping. They employ the latest cutting-edge technology for the designing and manufacturing of all their precision metal stampings.

At Autokshi Components Pvt Ltd, they have a stamping facility of over 10,000 square metres with facilities for hydraulic shearing and bending. They offer precision stamping in various ranges. Their precision metal stamping in mechanical press ranges from 10 ton to 500 ton with a bed size of 2500X 1500 mm. The hydraulic press ranges from 30 ton to 500 tons with a maximum bed size of 3200 X 2000 mm.

Autokshi Components Pvt Ltd is preferred by most of the automotive manufacturers for their expertise and years of experience in precision metal stamping; they process 80 tons of steel per day. They have transfer press at their 6 stations and produce up to 1250 tons. They make use of technologies like Tandem line, Auto blanking and Pneumatic pick and place for precision stamping process. Prompt and customized services and support are offered by their team as per the client's requirements.

With the vast experience and expertise in the field of precision stamping, they are capable of offering superior quality products and futuristic designs for their

customers. They also use advanced technologies and concepts to maintain perfection and accurateness in precision metal stamping.

Welding Capabilities

Autokshi Components Pvt Ltd has been offering auto parts manufacturing facility for commercial vehicles and two-wheeler vehicles since year 1997. Integrated welding assembly systems have been implemented all 4 manufacturing plants. Specially designed robotic lines have been placed targeting maximum accuracy and augmented productivity. Their welding capabilities include robotic welding assemblies, mig welding assembly so as to ensure enhanced accuracy and productivity.

At Autokshi Components Pvt Ltd, they believe in delivering predictable quality and quantity which can be achieved if optimum automation is used in these processes. Therefore, to avoid complexity reduce manual error and accidents caused due to manual interference mig welding assembly and robotic welding assemblies are used.

Their robotic lines are capable of taking care of the spot weld assembly. They use pick and place arrangements for sheet metal pressing. It minimizes manual intervention. Additionally, automation assists in accelerating the manufacturing processes remarkably.

They are the OEM manufacturer of Body-in-white for 3-wheeler auto motives. Spot welding is used in the manufacturing of tray for goods carrier vehicles. The robotic welding used for faster production of passenger body component required for commercial vehicles.

With the help of spot welding, they manufacture deep drawn front mud guards and also dashboard metal skeleton. Almost 50 goods carriers' tray are delivered by

their manufacturing capacity on daily basis. The entire repair procedures are seamlessly completed using mig welding assembly.

Quality & Systems

The leading manufacturer of auto parts for commercial vehicles and two wheelers, Autokshi Components Pvt Ltd, has a meticulously designed set of policies and systems in place to check the quality of products developed. They have a strong engineering and development team along well-equipped tool room and lab.

They received ISO 9001:2000 certification in 2001 and ISO/TS 16949:2009 in 2007. Various internationally approved systems are in place at Autokshi Components Pvt Ltd for enhancing quality and quantity of products developed. A successful implementation of TPM for superior quality product development is also effectively supported by the implementation of SAP enterprise software solution for various business processes. Their cost-efficient and energy saving robotic lines help us in reducing errors caused by human interference while boosting qualitative and increased product development.

With robotic assembly and robotic welding lines, they ensure that all the manufactured products are perfect and of predictable quality as well as quantity.

Commercial Vehicle Components/ parts

Autokshi Components Pvt Ltd offers customized three wheeler commercial vehicle parts to India's top most commercial vehicle manufacturers. They have been in the field since 1997 and supply more than 200 three-wheeler commercial vehicle and two wheelers' components per day. Autokshi Components Pvt Ltd is an ISO/TS 16949:2009 certified company; they design, develop and manufacture the complete range of two & three-wheeler commercial vehicle parts as per the different requirements of the customers.

They ensure that all the three wheelers commercial vehicle components developed comply with the needs and requirements of the modern commercial vehicles. Excellent safety, finest quality and highest efficiency are the qualities of the commercial vehicle's parts produced at their units. They are the OEM manufacturer of Body in White (BIW) for three-wheeler commercial vehicles.

They manufacture up to 900 units of commercial vehicle passenger body per day and also 120 units of large commercial vehicle passenger bodies per day. We are also the manufacturer of superior quality deep drawn mud guard which we manufacture and supply up to 2500 quantity per day. All commercial vehicle components developed by us are done using advanced technology and robotic lines for better and accurate designs and products. Their years of experience and expertise in developing commercial vehicle parts help in the timely delivery and perfection of products developed.

These commercial vehicle components manufactured are of superior quality with futuristic designs; hence they are much appreciated and accepted by their clients. We supply commercial vehicle components for their esteemed clients. We have the capacity and resources to extensively manufacture commercial vehicle parts for heavy vehicles as well.

1.3 INDUSTRY PROFILE

The Indian auto-components industry has experienced healthy growth over the last few years. Some of the factors attributable to this include: a buoyant enduser market, improved government framework, increased purchasing power, large domestic market, and an ever-increasing development in infrastructure have made India a favourable destination for investment consumer sentiment and return of adequate liquidity in the financial system.

The auto-components industry accounts for almost seven per cent of India's Gross Domestic Product (GDP) and employs as many as 19 million people, both directly and indirectly. A stable government framework, increased purchasing power, large domestic market, and an ever-increasing development in infrastructure have made India a favourable destination for investment.

Market Size

The Indian auto-components industry can be broadly classified into the organised and unorganised sectors. The organised sector caters to the Original Equipment Manufacturers (OEMs) and consists of high-value precision instruments while the unorganised sector comprises low-valued products and caters mostly to the aftermarket category.

Over the last decade, the automotive components industry has scaled three times to US\$ 39 billion in 2015-16 while exports have grown even faster to US\$ 10.8 billion. This has been driven by strong growth in the domestic market and increasing globalisation (including exports) of several Indian suppliers.

The Indian Auto Component industry is expected to grow by 8-10 per cent in FY 2017-18, based on higher localisation by Original Equipment Manufacturers

(OEM), higher component content per vehicle, and rising exports from India, as per ICRA Limited.

According to the Automotive Component Manufacturers Association of India (ACMA), the Indian auto-components industry is expected to register a turnover of US\$ 100 billion by 2020 backed by strong exports ranging between US\$ 80- US\$ 100 billion by 2026, from the current US\$ 11.2 billion.

Investments

The cumulative Foreign Direct Investment (FDI) inflows into the Indian automobile industry during the period April 2000 – September 2016 were recorded at US\$ 15.80 billion, as per data by the Department of Industrial Policy and Promotion (DIPP).

Some of the major investments made into the Indian auto components sector are as follows:

- Gestamp, a Spanish automobile component manufacturing company, has invested Rs 260 crore (US\$ 38.63 million) in a new hot stamping plant in Pune, in order to cater to the increasing demand for lighter vehicles in India.
- Exide Industries, India's biggest automotive battery maker, plans to invest around Rs 300 crore (US\$ 45 million) in West Bengal to expand its capacity for advanced motorcycle batteries over a period of 18 months.
- Motherson Sumi Systems Ltd, an automobile components manufacturer, has acquired Finland-based truck wire maker PKC Group Pic for € 571 million (US\$ 609.57 million), which will help the company expand its presence in the global wiring harness business for commercial vehicles.

- Sundaram Clayton, part of the TVS group, plans to invest US\$ 50 million in US and Rs 400 crore (US\$ 59.76 million) in India over the next three years.
- Mercedes Benz India Private Limited has set up India's largest spare parts warehouse in Pune, with an area of 16,500 square meters which can stock up to 44,000 parts. It will also include a vehicle preparation centre that can stock up to 5,700 cars to customize them before delivery.
- JK Tyre and Industries Ltd, India's leading tyre manufacturer, has acquired Cavendish Industries Ltd (CIL) for Rs 2,200 crore (US\$ 329.2 million), which will enable JK's entry into the fast-growing two-wheeler and three-wheeler tyre market.
- Japanese auto major Honda is planning to step up supply and target exporting of auto components worth Rs 1,500 crore (US\$ 224.45 million) from India to its various international operations.
- Auto components maker Bharat Forge Ltd (BFL), the flagship company of the US\$ 3 billion Kalyani Group, has formalised agreement with Rolls-Royce Plc which will supply BFL with critical and high integrity forged and machined components
- Canada's Magna International Incorporated has started production at two facilities in Gujarat's Sanand, which will supply auto parts to Ford Motor Co in India
- Everstone Capital, a Singapore-based private equity (PE) firm, has purchased 51 per cent in Indian auto components maker SJS Enterprises for an estimated Rs 350 crore (US\$ 51.35 million).
- ArcelorMittal signed a joint venture agreement with Steel Authority of India Ltd (SAIL) to establish an automotive steel manufacturing facility in India.
- German auto components maker Bosch Ltd opened its new factory at Bidadi, near Bengaluru, which is its fifth manufacturing plant in Karnataka. The company has also signed a memorandum of understanding (MoU) with Indian Institute of Science (IISc), Bengaluru with a view to strengthen Bosch's research and development in areas including mobility and healthcare thereby driving innovation for India-centric requirements.

- French tyre manufacturer Michelin announced plans to produce 16,000 tonnes of truck and bus tyres from its Indian facility this year, a 45 per cent rise from last year.
- Amtek Auto Ltd acquired Germany-based Scholz Edelstahl GmbH through its 100 per cent Singapore-based subsidiary Amtek Precision Engineering Pte Ltd.
- MRF Ltd plans to invest Rs 4,500 crore (US\$ 660.231 million) in its two factories in Tamil Nadu as part of its expansion plan.
- Hero MotoCorp is investing Rs 5,000 crore (US\$ 733.59 million) in five manufacturing facilities across India, Colombia and Bangladesh, to increase its annual production capacity to 12 million units by 2020.

Government Initiatives

The Government of India's Automotive Mission Plan (AMP) 2006–2016 has come a long way in ensuring growth for the sector. It is expected that this sector's contribution to the GDP will reach US\$ 145 billion in 2016 due to the government's special focus on exports of small cars, multi-utility vehicles (MUVs), two and three-wheelers and auto components. Separately, the deregulation of FDI in this sector has also helped foreign companies to make large investments in India. The Government of India's Automotive Mission Plan (AMP) 2016–2026 envisages creation of an additional 50 million jobs along with an ambitious target of increasing the value of the output of the sector to up to Rs 1,889,000 crore (US\$ 282.65 billion).

Road Ahead

The rapidly globalizing world is opening up newer avenues for the transportation industry, especially while it makes a shift towards electric, electronic and hybrid cars, which are deemed more efficient, safe and reliable modes of transportation. Over the next decade, this will lead to newer verticals and opportunities for auto-component manufacturers, who would need to adapt to the change via systematic research and development.

The Indian auto-components industry is set to become the third largest in the world by 2025. Indian auto-component makers are well positioned to benefit from the globalisation of the sector as exports potential could be increased by up to four times to US\$ 40 billion by 2020.

1.4 NEED FOR THE STUDY

Total Quality Management (TQM) is a comprehensive and structured approach to organizational management that seeks to improve the quality of products and services through ongoing refinements in response to continuous feedback. Management of Autokshi Engineers Pvt Ltd felt that efficiency in processes shows a kind of stagnation and reduction in the morale of employees.

This study has been proposed by the management of Autokshi Engineers Pvt Ltd to improve the effectiveness of TQM and to increase customer satisfaction and larger market share for the product.

1.5 SCOPE OF THE STUDY

The success of an organization depends upon commitment of employees in their job. "A happy employee is producing employee". The main emphasis will be on to find out quality employee's commitment toward their work as a result total quality implementation. It helps to identify the hurdles that affecting the commitment of employees in world class manufacturing system.

1.6 OBJECTIVES OF THE STUDY

PRIMARY OBJECTIVE

To study the level of total quality management principles implemented in Autokshi Engineers Pvt Ltd and to give suggestions to improve their employee commitment towards the lean tools.

SECONDARY OBJECTIVES

- 1 To find the degree of TQM implemented in the organization.
- 2 To study the level of commitment of employees toward their Lean tools.
- 3 To know the steps taken by the management to make employees to work in world class manufacturing (WCM) system.
- 4 To find out the factor influencing the commitment of employees in WCM system.
- 5 To find out the impact of the training in TQM implementation.
- 6 To study the extent to which quality is needed in any system.

1.7 LIMITATION OF THE STUDY

This study will be restricted in scope by certain inherent limitation that is caused by research design sampling procedure and respondent reflection.

- Due to lack of time the sample size is restricted.
- Entire analysis of the study, its findings and conclusion are based on the data collected from 120 samples which may differ for other employees.
- The study is applicable only to Autokshi Engineers Pvt Ltd., and not to any other similar organization.

- Some of the employees are not giving their opinion, since the study deals with the policy of organization. Therefore, it is difficult to extract accurate information from the employees.
- Employees are bias towards the researcher in telling the truth, because they thought that researcher may be the spy of the management.

CHAPTER – 2

REVIEW OF LITERATURE

Deming's approach to TQM (1999), the theoretical essence of the Deming approach to TQM concerns the creation of an organizational system that fosters cooperation and learning for facilitating the implementation of process management practices, which, in turn, leads to continuous improvement of processes, products, and services as well as to employee fulfilment, both of which are critical to customer satisfaction, and ultimately, to firm survival (Anderson et al.,1994a).

Juran's approach to TQM (1993), TQM is the system of activities directed at achieving delighted customers, empowered employees, higher revenues, and lower costs (Juran and Gryna, 1993). Juran believed that main quality problems are due to management rather than workers. The attainment of quality requires activities in all functions of a firm. Firmwide assessment of quality, supplier quality management, using statistical methods, quality information system, and competitive benchmarking.

Crosby's approach to TQM (1979), identified a number of important principles and practices for a successful quality improvement program, which include, for example, management participation, management responsibility for quality, employee recognition, education, reduction of the cost of quality (prevention costs, appraisal costs, and failure costs), emphasis on prevention rather than after-the-event inspection, doing things right the first time, and zero defects.

Feigenbaum's approach to TQM (1991), defined TQM as: An effective system for integrating the quality development, quality-maintenance, and quality-improvement efforts of the various groups in a firm so as to enable marketing, engineering,

production, and service at the most economical levels which allow for full customer satisfaction.

Ishikawa's approach to TQM (1985), argued that quality management extends beyond the product and encompasses after-sales service, the quality of management, the quality of individuals and the firm itself. He claimed that the success of a firm is highly dependent on treating quality improvement as a never-ending quest. He advocated employee participation as the key to the successful implementation of TQM. QC (Quality circles), he believed, are an important vehicle to achieve this.

Ishikawa used the term TQC (total quality control) instead of TQM in his book. According to ISO 8402 – Quality management and quality assurance – vocabulary, TQM is sometimes called “total quality”, “company-wide quality control”, “total quality control”, etc.

After the approaches to TQM of the five quality gurus have been reviewed, it has become evident that each has his own distinctive approach. Nevertheless, the principles and practices of TQM proposed by these quality gurus do provide the author with a better understanding of the concept of TQM. Their insights offer a solid foundation for conducting this study. Although their approaches to TQM are not totally the same, they do share some common points which are summarized as follows:

- It is management's responsibility to provide commitment, leadership, empowerment, encouragement, and the appropriate support to technical and human processes.
- The strategy, policy, and firm-wide evaluation activities are emphasized.

- The importance of employee education and training is emphasized in changing employee's beliefs, behaviour, and attitudes; enhancing employee's abilities in carrying out their duties.
- It is very important to control the processes and improve quality system and product design.
- Quality is a systematic firm-wide activity from suppliers to customers.

Many people have work on this topic. They found that apply TQM has directly increased their morale, increase the satisfaction level and commitment toward their work. These are the finding of various researchers. But the effect of TQM on employee's commitment in the company has so far not undertaken. This project has been done first time in this company.

Faisal Talib; Zillur Rahman; M.N. Qureshi (2002), Over the last two decades, service organisations have embraced total quality management (TQM) as an effective management tool to improve their service quality. They have begun to show a keen interest in TQM by working on quality and related areas. TQM has become a major area of attention to practitioners, managers and researchers due to its strong impact on business performance, customer satisfaction and profitability. In the light of this, an attempt has been made to study and understand the theory and concept of TQM, its benefits as well as various facets of service components and its classification. This study also explores the literature on the implementation of TQM in selected service industries. The finding of this study provides a rich contribution towards TQM theory, its role in service sector, as well as presents the different components of services. This paper can help business managers and quality practitioners in better understanding TQM, service systems concept as well as TQM implementation in service sector. The scope for future study is presented at the end.

Sila and Ebrahimpour (2002), they have analysed and compared empirically validated TQM factors and their impact on various performance measures across countries. The findings showed that top management commitment and leadership, customer focus, information and analysis, training, supplier management, strategic planning, employee involvement, human resource management, process management, teamwork, product and service design, process control, benchmarking, continuous improvement, employee empowerment, quality assurance, social responsibility, and employee satisfaction were the most commonly extracted factors across these studies. They covered most of the empirical studies; focusing QM research up to the year 2002.

The review of literature indicated that many divergent perspectives which constituent quality management practices or “constructs” also consented by several scholars as “critical factors”. Benson & Saraph et al. Established seven factors of QM and paved the frame work for how to “best cut the TQM cake” into factors or elements. Black and Porter conducted factor analysis on a questionnaire administered to quality practioner, to establish the list of ten factors that are described as critical to TQM. Ahire also developed a model using similar techniques of Black and Porter, to provide ten constructs of TQM. They defined these “constructs” as latent variables, which cannot be measured directly. However, critical factors or constructs can be measured indirectly from their manifestations. For example, customer focus is a critical factor that cannot be measured directly and when a company is customer-focused, manufacturing managers will be aware of the results of customer satisfaction surveys.

Samson and Terziovski (1999), The benefits of an effective TQM implementation can be studied with three different perspectives. Firstly, from the operating angel, the reason that TQM has become a hot topic in both industry and academia is that it can be applied to improve/enhance global competitiveness (Samson and Terziovski, 1999

Corbett et al., (2005), Firms with effective TQM implementation can accomplish the internal benefits such as improving quality, enhancing productivity enhancement, or realizing better operating income (Corbett et al., 2005; Hendricks and SinghalS, 1997). Secondly, from the financial performance perspective, careful design and implementation of consistent and documented quality management systems can contribute significantly to superior financial performance (Corbett et al., 2005).

Linderman et al., (2004), The knowledge management (KM) viewpoint, the implementation of TQM can also increase and enhance organizational knowledge, which in turn helps more understanding of how quality management practices can affect firm performance (Linderman et al., 2004).

Hsu and Shen (2005), they compared with TQM and KM, there are many similarities between these two management philosophies. If properly planned, they can complement one another effectively (Hsu & Shen, 2005)

Management leadership Soltani (2005), they considered to be another major driver of TQM and it has a significant influence on determining whether or not a TQM program can be implemented effectively (Soltani, 2005). Management leadership in fact, refers to how management level guides and supervises personnel of a firm in an appropriate manner. Management level provides the necessary resources for training employees to meet the new requirements and/or changes that are resulted from TQM implementation, and consequently, creates a work environment which is conducive to employee involvement in the process of changes (Kaynak, 2003; Wilson & Collier, 2000). In addition, effective management leadership is critical to influence the decision of selecting qualified suppliers and certifying suppliers for quality material (Flynn et al., 1995; Trent & Monczka, 1999). Management level is also responsible for mentoring product design and considering market demands & consumer needs (Deming, 1986; Flynn et al., 1995). In other words, the focus of management is essential for firms to produce goods that are manufacturable and

meet the needs of customers (Flynn et al., 1995; Juran, 1981). In conclusion, management level plays a significant role on conducting organizational operation and also highly influences the decision-making and resource allocation processes for supplier management and design management, respectively. Therefore, the authors propose that management level has positive effects on human resource, suppliers' management, and design management.

Firm's performance, Kaynak (2003), there are plentiful studies investigated the relationship between TQM and firm performance. Kaynak (2003) indicated that quality improvement had positive effects on improving a firm's financial and market performance. However, as the effects of TQM have different impacts on internal quality and external quality, TQM implementation that directly and positively improves firm's operating performance by increasing quality performance (Kaynak, 2003), has indirect effects on increasing customer satisfaction as well as market share (Handfield et al., 1998; Hendricks & Singhal, 1997). It is further noted that quality management can improve operating efficiency by reducing defect rate, scrap rate, and the occurrence of rework. The improvement of operating efficiency will improve customers' satisfaction and eventually the company's financial performance. In addition, the improvement of customers' satisfaction and loyalty may sustain or enlarge market share, which can be eventually transformed into better firm's financial performance (Ahire & Dreyfus, 2000; Choi & Eboch, 1998). Thus, the authors propose that operating performance resulting from TQM implementation will increase customers' satisfaction and improve financial performance, respectively.

Malcolm Baldrige (1993), Total quality management (TQM) is a revolutionary approach to effective management. The research in TQM has emerged from practical needs of organizations embracing this philosophy, and the literature is mostly conceptual and practitioner-oriented. There is a lack of sound theoretical framework classifying past efforts and guiding future research. To fill the void, a

study of the published TQM literature is undertaken. A review, classification, and analysis of the research in TQM spanning the last two decades is presented. A total TQM-related articles are identified from refereed management journals published from 1970 to 1993. These articles are then classified and analyzed using the following two-dimensional scheme: article orientation (conceptual, case study, empirical, analytical, simulation, and overview) and article focus using the Malcolm Baldrige National Quality Award criteria. The analysis of the literature presents pertinent developments in each of the seven criteria. In addition, it provides future research directions as well as a ready reference of the TQM literature. The suggestions for research should guide future developments in the TQM field and help transform it into a formal discipline.

Juneja et al, (2011), Earlier evolution of TQM focused on manufacturing and production industries more than service industries. However, the high level of competition and the raise in service industry share increased the need for TQM in services firms (Juneja, et al., 2011). Jain, Sinha, and Sahney (2011) argue that the debate on the concept of service quality drawn from the main debate on definition on TQM. The authors further argued that principles shaped different definitions by gurus of TQM are based on quality definition: quality is excellence; quality is value; quality is conformance to specifications; and quality is meeting or exceeding customers' expectations. From TQM implementation approach, services somehow are different from products. The main differences are that service is intangibility and depend more on customer's evaluation. The intangibility of service creates measurement problem while dependency on customer evaluation creates lead firms to be customer led (Juneja et al, 2011).

Lenka, Suar, and Mohapatra (2010), Assert that TQM practices services firms are different from manufacturing firms, Manufacturing organizations vary from service organizations in process, operation, product features and customer relationship. Manufacturing organizations focus on the process and product quality, while service

organizations focus more on customer satisfaction. Factors like social responsibility and adoption of environmental management system like the ISO certificate are more found in manufacturing organizations. Service organizations employ less hard aspects of TQM practices, such as information and analysis and statistical focuses more on suppliers and contractor's relationships. In manufacturing firms training is more important especially training in advanced statistical methods.

CHAPTER – 3

RESEARCH METHODOLOGY

3.1 METHODOLOGY

Research methodology is a way to systematically solve the research problem as it guides how research is done scientifically. It consists of different steps that are generally adopted by the researcher to study her research problem with the logic behind them. The research had used Descriptive research method. The main purpose of the descriptive research is to describe the state of view as it exists at present. (S. N Murthy, U. Bhojanna 2004). It can be simply described as a fact-finding investigation.

3.2 RESEARCH DESIGN

Research design constitutes the blue print for the collection measurement and analysis of data. Thus, research design is a conceptual framework within the research is conducted. The researcher has used convenient sampling method to collect the data from the respondent.

3.3 METHOD OF DATA COLLECTION

The two methods of data collection are

- 1.Primary Data
2. Secondary Data

Primary data

Primary data are those which are collected for the first time by the researcher. It is the fresh data. In this project, the primary data was collected through questionnaire.

Secondary data

Secondary data are those which have already been collected. In this project, secondary source such as the company website, annual report, internet, certain published journals of the company have been used to collect the information.

3.4 RESEARCH INSTRUMENT

The instrument which has been utilized for the collection of data is the questionnaire. Questionnaire is a Performa containing sequence of questions to collect information from the respondent. Thus, questionnaire consists of number of questions printed in a definite order on a form or set of forms. Here the researcher has used the structured and non – disguised questionnaire. The researcher has framed the questionnaire in the following way.

The first part questions comprise of the personal details of the respondents. The second part question talk about the respondents rating about company and TQM system. The third part enquires about respondents view on quality and organizational quality system certification. The fourth part questions deal with the respondent knowledge about various TQM tools. The fifth part deals with the level of respondent awareness towards world class manufacturing system. The final part question describes the respondents view about lean tools and its nature.

3.5 SAMPLE SIZE

Samples were collected from employees and workers of the organization. The total sample size of both is 120.

2.6 ANALYTICAL TOOLS

The data collected were edited, coded and processed. Percentage technique is used in order to simplify the figure for diagrammatic representation. The following techniques are used to analyze the collected data and information.

- Percentage Analysis
- Chi-Square Analysis
- Correlation
- One-way Anova

CHAPTER-4

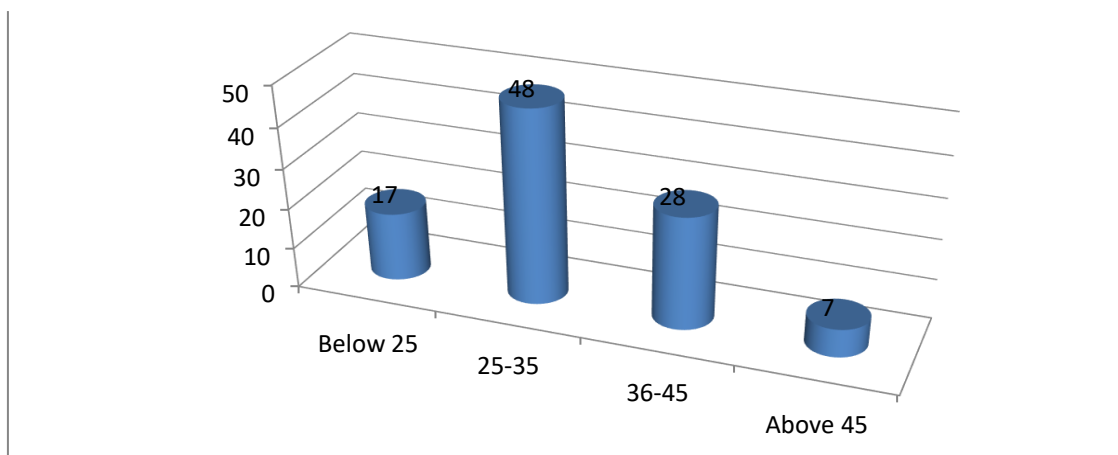
DATA ANALYSIS AND INTERPRETATION

4.1 Percentage Analysis

Table 4.1.1 Age

Particulars	No. of Respondents	No. of Percentage
Below 25	21	17
25-35	57	48
36-45	33	28
Above 45	09	7
Total	120	100%

Chart 4.1.1 Age



INTERPRETATION:

The above table shows, 48 percent of the respondent belongs to the age group of 26-35 years, and 28 percent of the respondent belongs to the age group of 36-45 years.

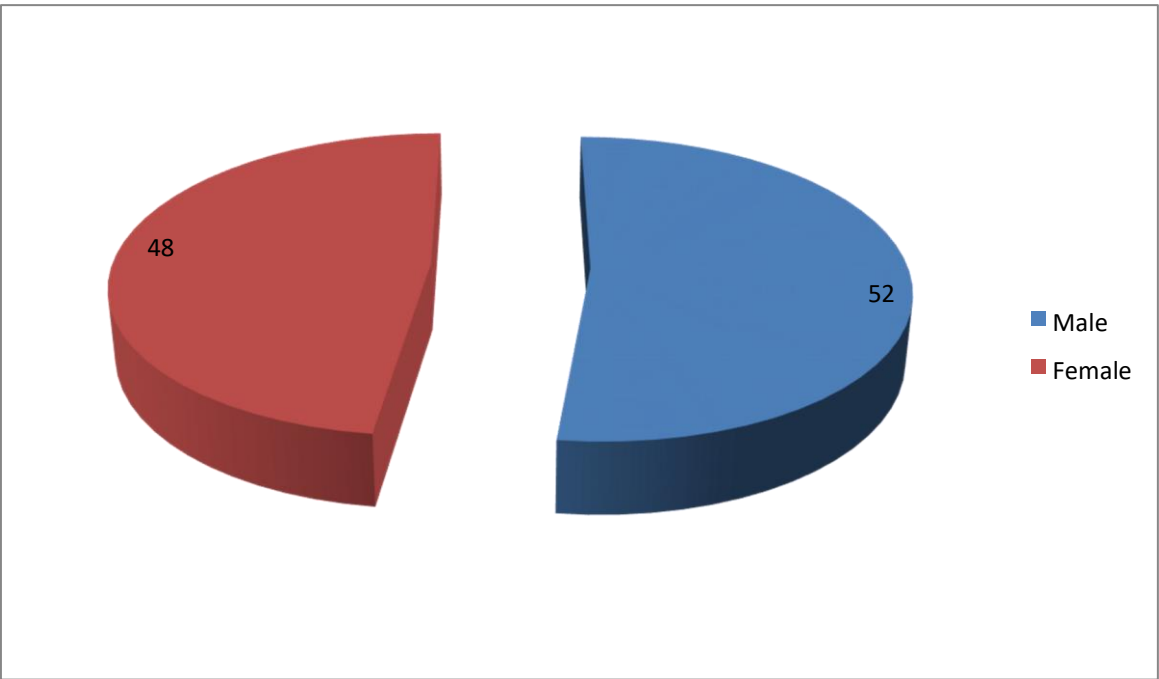
INFERENCE:

Therefore, 48% of the respondent belongs to the age group of 26-35 years.

Table 4.1.2 Gender

Particulars	No. of Respondents	No. of Percentage
Male	63	52
Female	57	48
Total	120	100%

Chart 4.1.2 Gender



INTERPRETATION:

The above table shows, 52 percent of the respondents are male and 48 percent of the respondents are female.

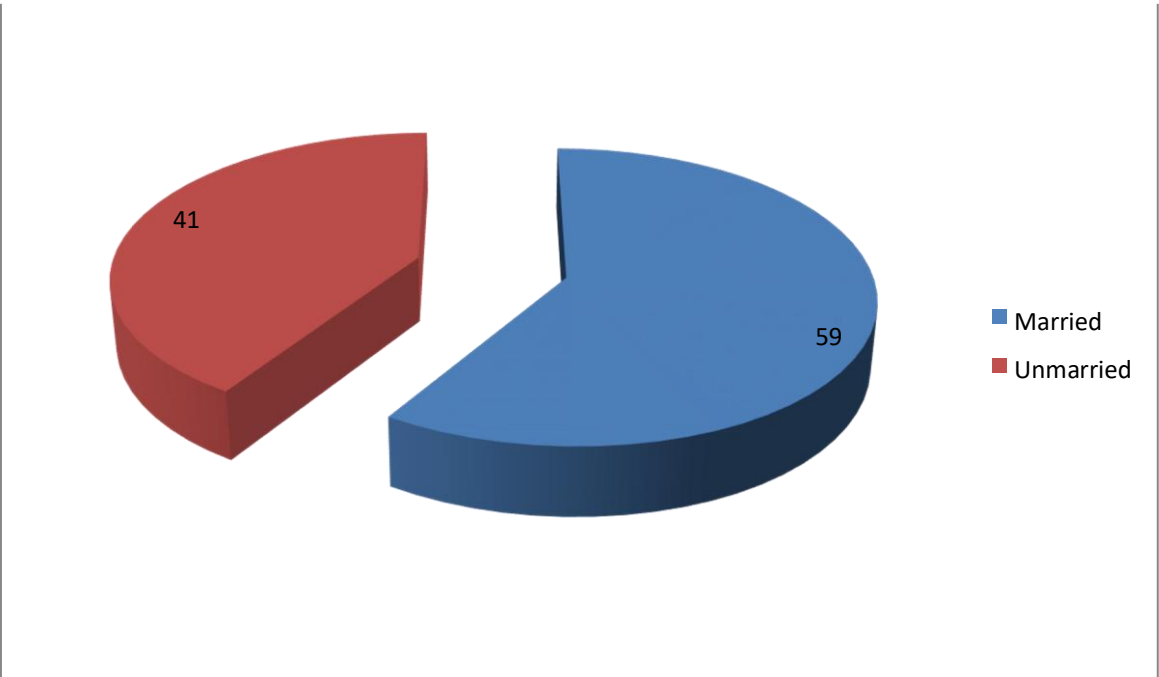
INFERENCE:

Therefore, 52% of the respondents are male.

Table 4.1.3 Marital Status

Particulars	No. of Respondents	No. of Percentage
Married	69	59
Unmarried	51	41
Total	120	100%

Chart 4.1.3 Marital Status



INTERPRETATION:

The above table shows, 59 percent of the respondents are married people and 41 percent of the respondents are unmarried people.

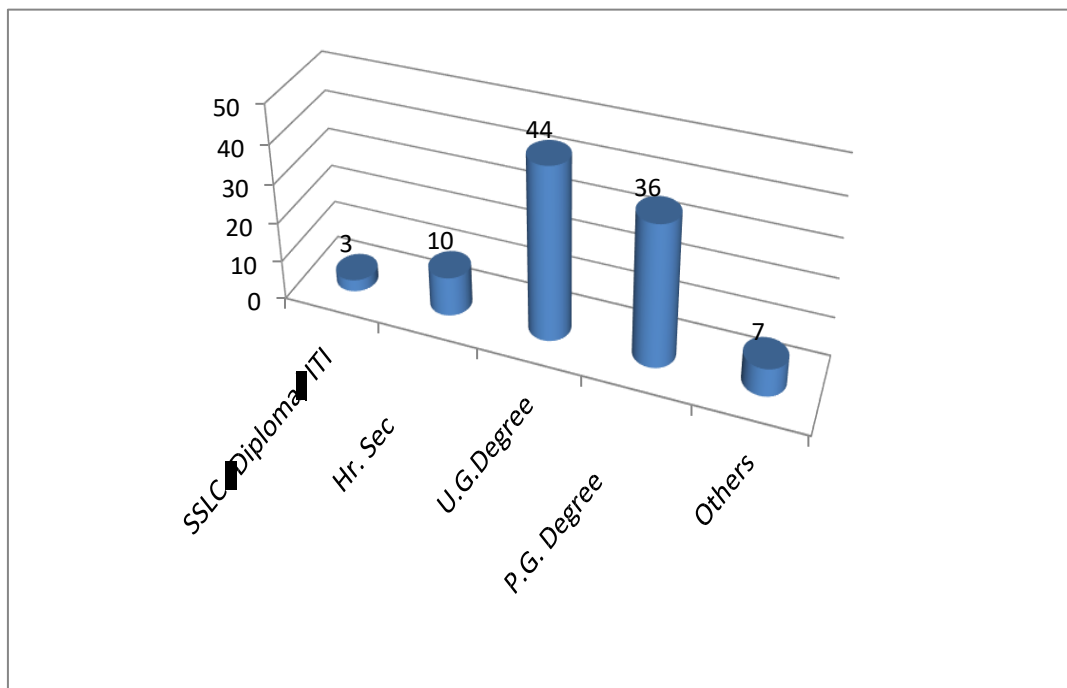
INFERENCE:

Therefore, 41% of the respondents are married.

Table 4.1.4 Educational Qualification

Particulars	No. of Respondents	No. of Percentage
SSLC /Diploma/ ITI	03	03
Hr. Sec	11	10
U.G. Degree	53	44
P.G. Degree	44	36
Others	9	7
Total	120	100%

Chart 4.1.4 Educational Qualification



INTERPRETATION:

The above table shows, 44 percent of the respondents are having UG qualification and 36 percent of the respondents are having PG qualification.

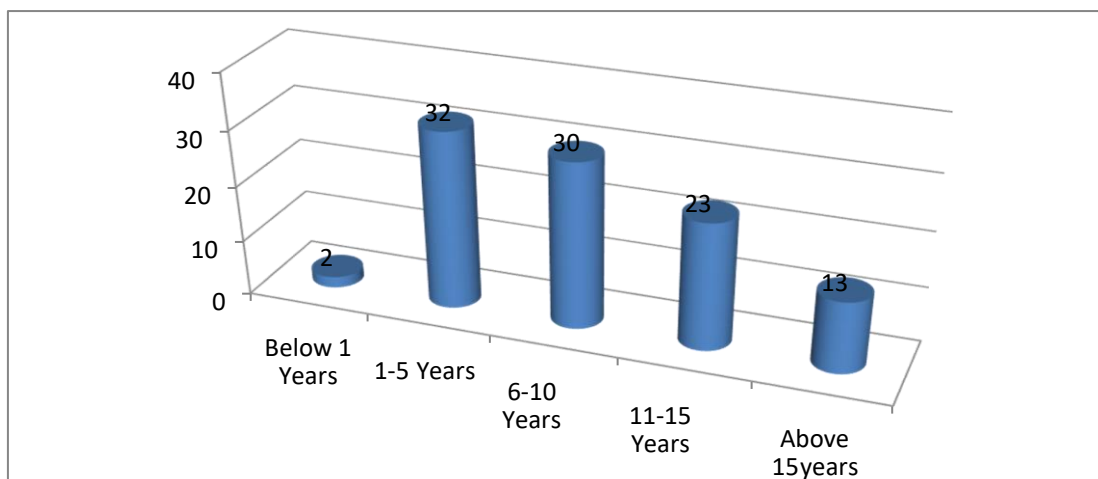
INFERENCE:

Therefore, 44% of the respondents are having UG qualification.

Table 4.1.5 Experience

Particulars	No. of Respondents	No. of Percentage
Below 1 Years	03	2
1-5 Years	38	32
6-10 Years	36	30
11-15 Years	27	23
Above 15years	16	13
Total	120	100%

Chart 4.1.5 Experience



INTERPRETATION:

The above table infers that, 32 percent of the respondents are having 1-5 years of experience and 30 percent of the respondents are having 6-10 years of experience.

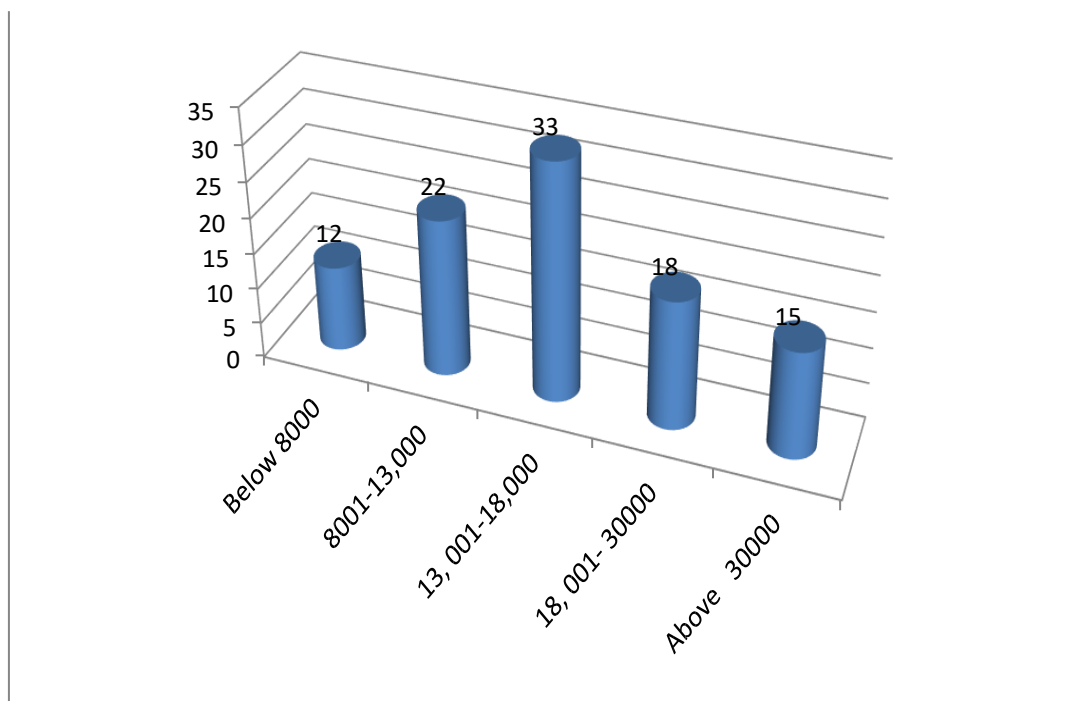
INFERENCE:

Therefore, 32% of the respondents are having 1-5 years of experience.

Table 4.1.6 Monthly Income

Particulars	No. of Respondents	No. of Percentage
Below ₹8000	15	12
₹ 8001-13,000	26	22
₹ 13, 001-18,000	39	33
₹18, 001- ₹30000	22	18
Above ₹ 30000	18	15
Total	120	100%

Chart 4.1.6 Monthly Income



INTERPRETATION:

The above table infers that, 33 percent of the respondents earning 13,001-18,000 of Monthly Income and 22 percent of the respondents earning 8001-13,000 of Monthly Income.

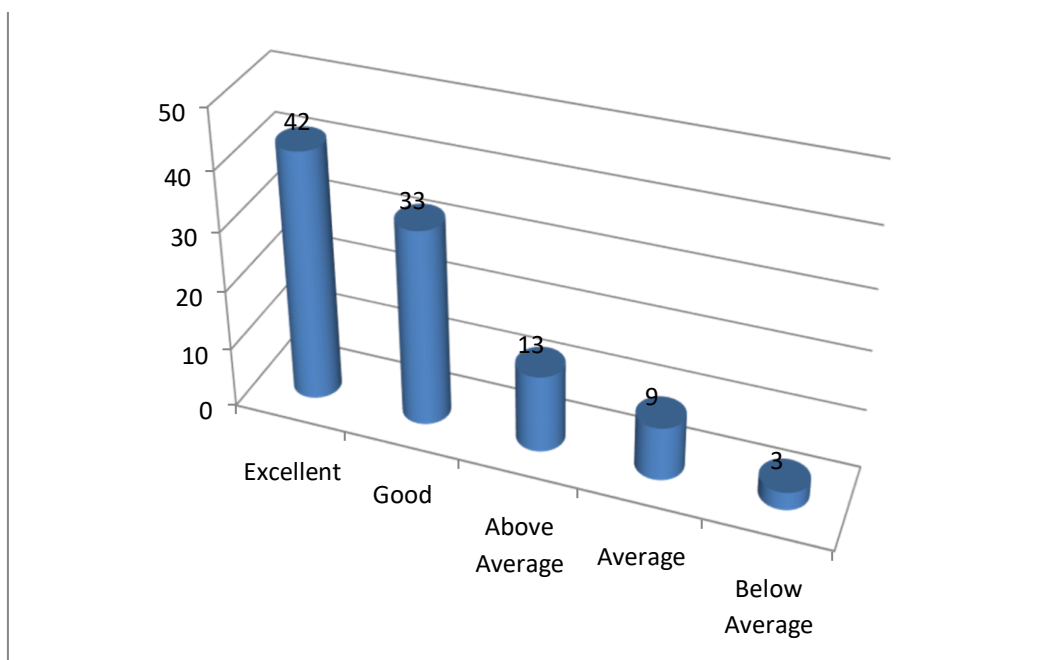
INFERENCE:

Therefore, 33% of the respondents earning ₹ 13,001-18,000 of Monthly Income

Table 4.1.7 Respondents feeling about organization

Particulars	No. of Respondents	No. of Percentage
Excellent	50	42
Good	39	33
Above Average	16	13
Average	11	9
Below Average	4	3
Total	120	100%

Chart 4.1.7 Respondents feeling about organization



INTERPRETATION:

The above table infers that, 42 percent of the respondents felt excellent about an organization and 33 percent of the respondents felt well about an organization.

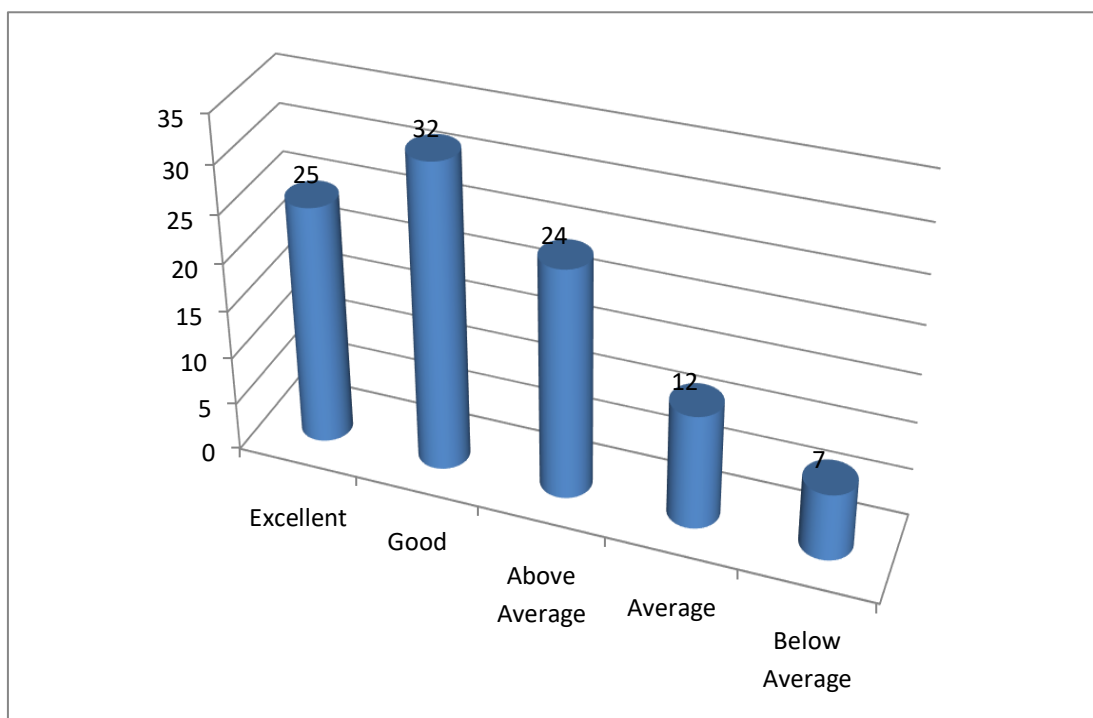
INFERENCE:

Therefore, 42% of the respondents felt excellent about an organization.

Table 4.1.8 Respondents rating of TQM System

Particulars	No. of Respondents	No. of Percentage
Excellent	30	25
Good	38	32
Above Average	29	24
Average	14	12
Below Average	9	7
Total	120	100%

Chart 4.1.8 Respondents rating of TQM System



INTERPRETATION:

The above table infers that, 32 % of the respondents rate the TQM system as good and 25 % of the respondents rate the TQM system as excellent.

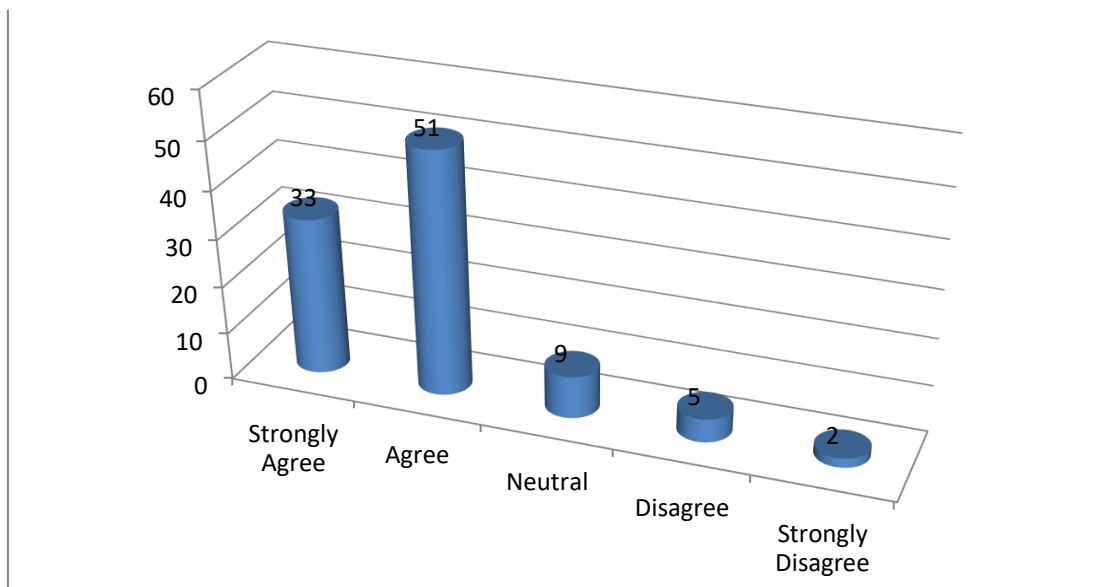
INFERENCE:

Therefore, 32% of the respondents rate the TQM system as good.

Table 4.1.9 Quality is must in a product -customer view

Particulars	No. of Respondents	No. of Percentage
Strongly Agree	40	33
Agree	61	51
Neutral	11	9
Disagree	6	5
Strongly Disagree	2	2
Total	120	100%

Chart 4.1.9 Quality is must in a product – customer view



INTERPRETATION:

The above table infers that, 51 % of the respondents agree that quality is needed in a product to give customer satisfaction and 33 % of the respondents strongly agree that quality is needed in a product to give customer satisfaction.

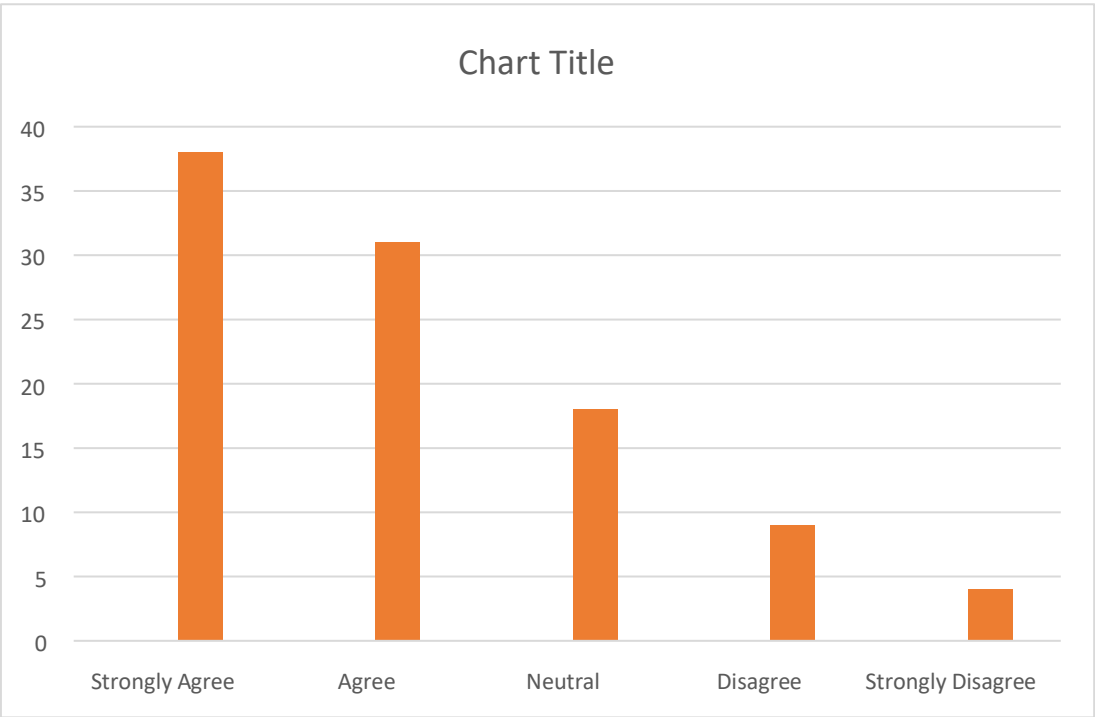
INFERENCE:

Therefore, 51% of the respondents agree that quality is needed in a product to give customer satisfaction.

Table 4.1.10 Do you agree that TQM will work in your organization

PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
Strongly Agree	45	38
Agree	37	31
Neutral	22	18
Disagree	11	9
Strongly Disagree	5	4
Total	120	100

Chart 4.1.10 Do you agree that TQM will work in your organization



INTERPRETATION:

According to the above table, 38% of respondents strongly agree, 31% agree, 18% are neutral, 9% disagree, and 4% disagree that TQM will be implemented in the organization.

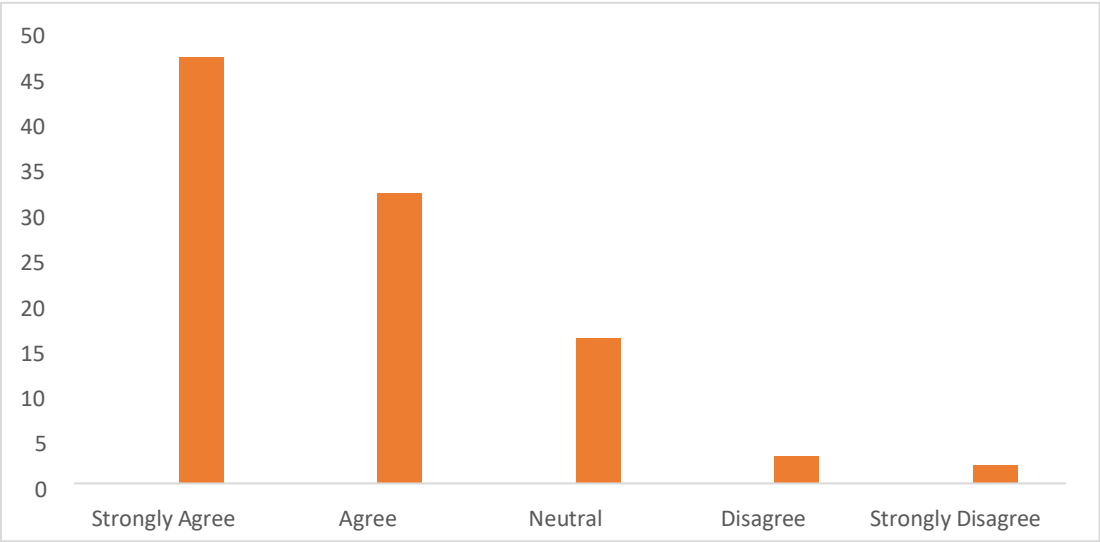
INFERENCE:

Therefore, 38% of the respondents are strongly agreeing that TQM will work in your organization.

Table 4.1.11 TQM can be used to improve the performance of the organization

PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
Strongly Agree	56	47
Agree	39	32
Neutral	19	16
Disagree	4	3
Strongly Disagree	2	2
Total	120	100

Chart 4.1.11 TQM can be used to improve the performance of the organization



INTERPRETATION:

According to the above table, 47% of respondents strongly agree, 32% agree, 16% are neutral, 3% disagree, and 2% disagree that TQM will be implemented in the organization.

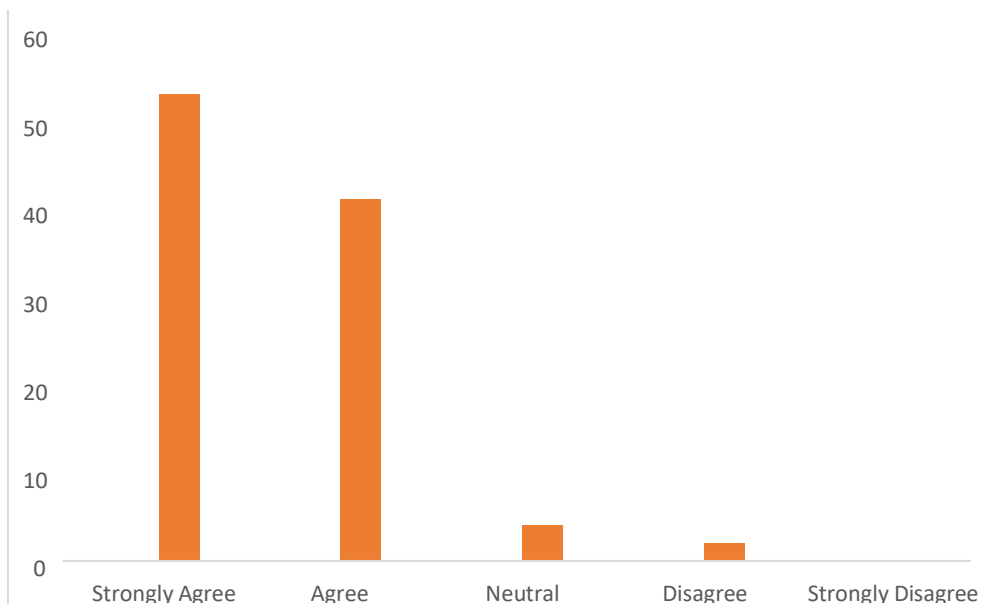
INFERENCE:

Therefore, 47% of the respondents strongly agree that TQM can be used to improve the performance of the organization.

Table 4.1.12 The organization possess a clear quality policy

PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
Strongly Agree	64	53
Agree	49	41
Neutral	5	4
Disagree	2	2
Strongly Disagree	0	0
Total	120	100

Chart 4.1.12 The organization possess a clear quality policy



INTERPRETATION:

According to the above table, 53% of respondents strongly agree, 41% agree, 4% are neutral, 2% disagree, and 0% disagree that TQM will be implemented in the organization.

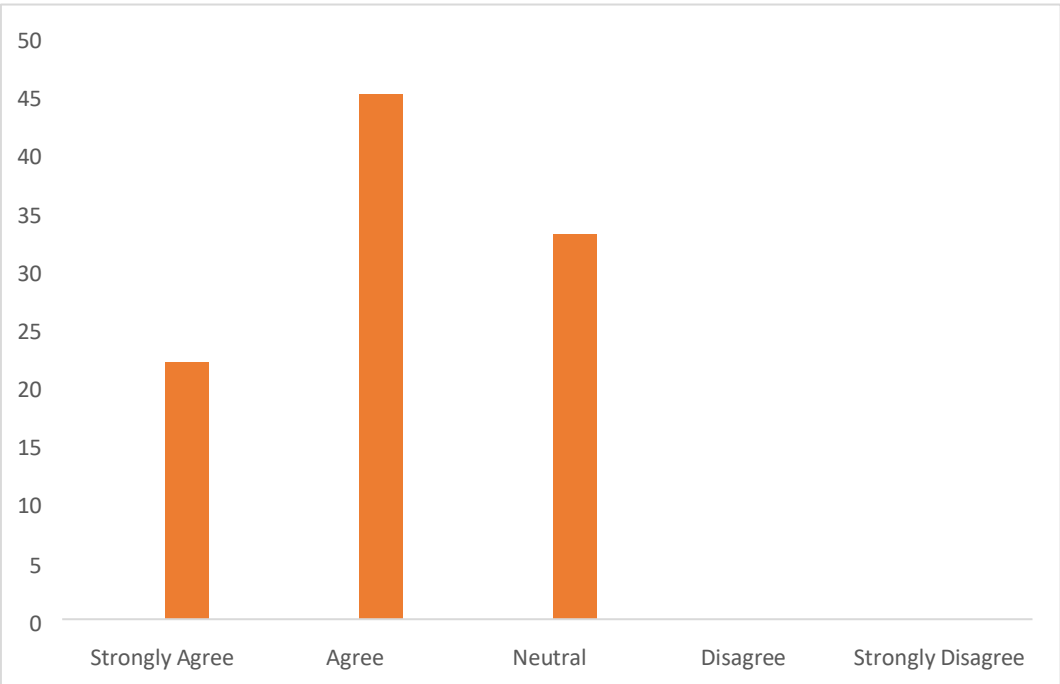
INFERENCE:

Therefore, 53% of the respondents are strongly agree that the organization possess a clear quality policy.

Table 4.1.13 Does your organization conduct quality improvement program

PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
Strongly Agree	26	22
Agree	54	45
Neutral	40	33
Disagree	0	0
Strongly Disagree	0	0
Total	120	100

Chart 4.1.13 Does your organization conduct quality improvement program



INTERPRETATION:

According to the above table, 22% of respondents strongly agree, 45% agree, 33% are neutral, 0% disagree, and 0% disagree that TQM will be implemented in the organization.

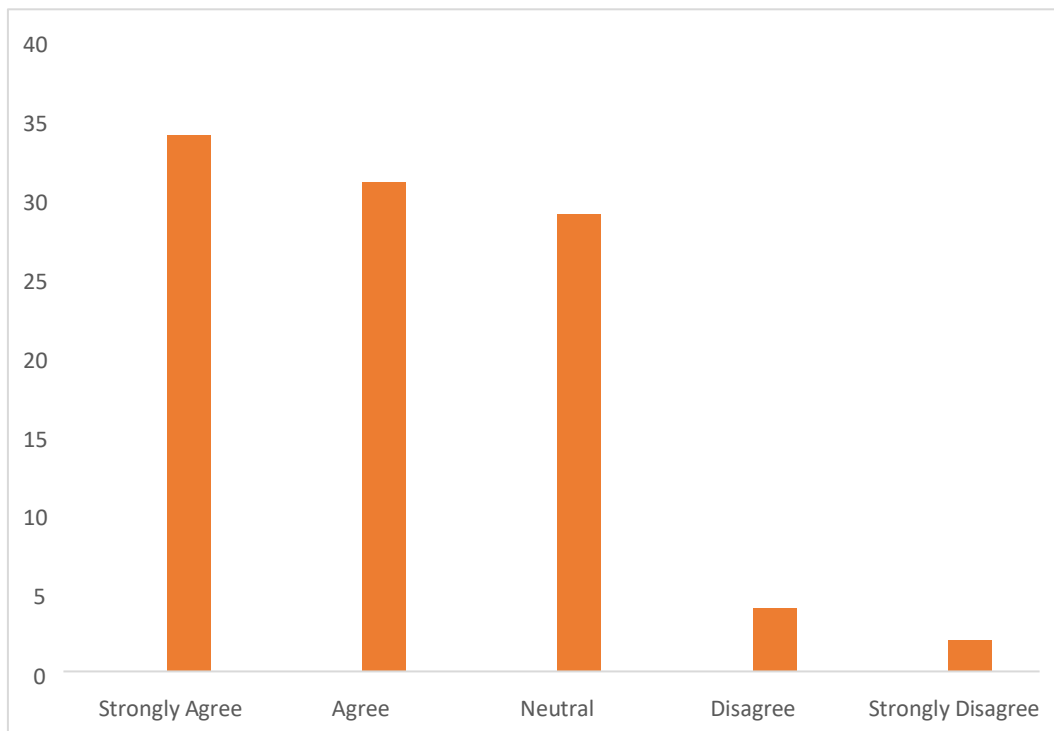
INFERENCE:

Therefore, 45% of the respondents are strongly agree that the organization conduct quality improvement program.

Table 4.1.14 Are you satisfied with the TQM in your organization

PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
Strongly Agree	41	34
Agree	37	31
Neutral	35	29
Disagree	5	4
Strongly Disagree	2	2
Total	120	100

Chart 4.1.14 Are you satisfied with the TQM in your organization



INTERPRETATION:

According to the above table, 34% of respondents strongly agree, 31% agree, 29% are neutral, 4% disagree, and 2% disagree that TQM will be implemented in the organization.

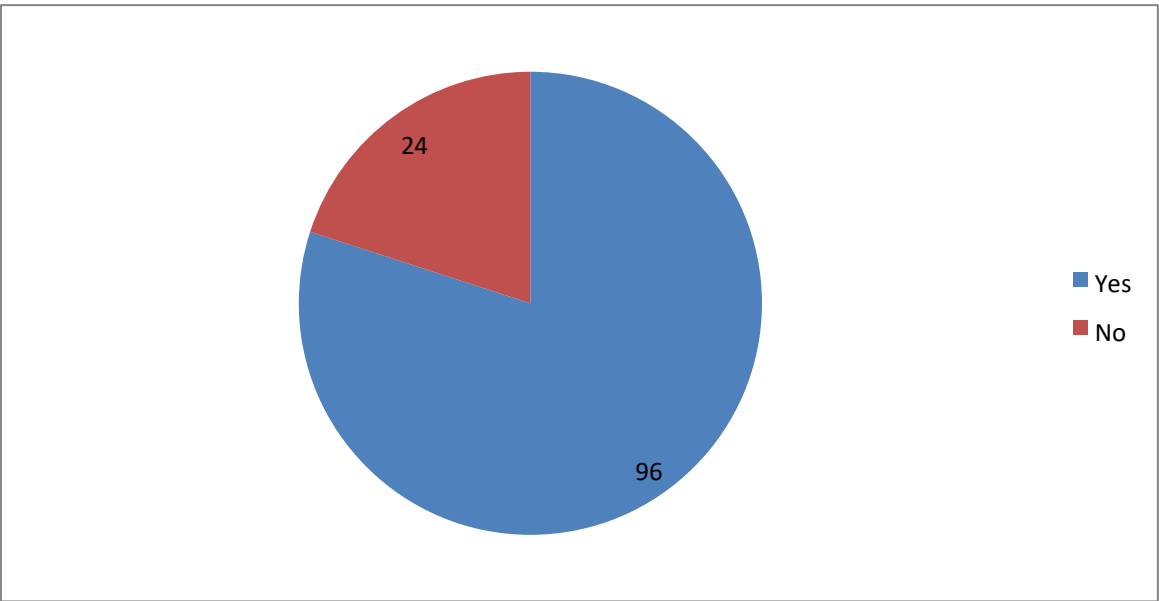
INFERENCE:

Therefore, 34% of the respondents are strongly agree that are satisfied with the TQM in your organization.

4.1.15 The organization is quality conscious toward employees

Particulars	No. of Respondents	No. of Percentage
Yes	96	80
No	24	20
Total	120	100%

Chart 4.1.15 The organization is quality conscious toward employees



INTERPRETATION:

The above table infers that, 80% of the respondents feel that the organization is quality conscious towards employees and 20 % of the respondents feel that the organization is not quality conscious towards employees.

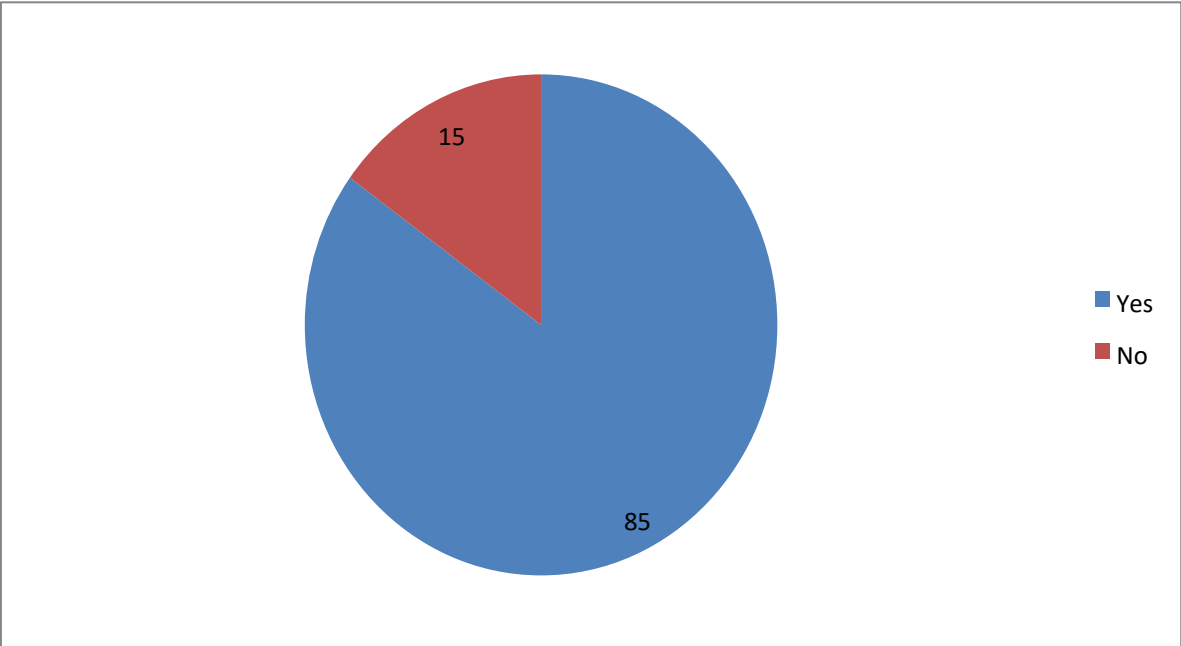
INFERENCE:

Therefore, 80% of the respondents feel that the organization is quality conscious towards employees.

Table 4.1.16 The organization have quality circle

Particulars	No. of Respondents	No. of Percentage
Yes	102	85
No	18	15
Total	120	100%

Chart 4.1.16 The organization have quality circle



INTERPRETATION:

The above table infers that, 85% of the respondents said that the organization have quality circle and 15 % of the respondents said that the organization have no quality circle.

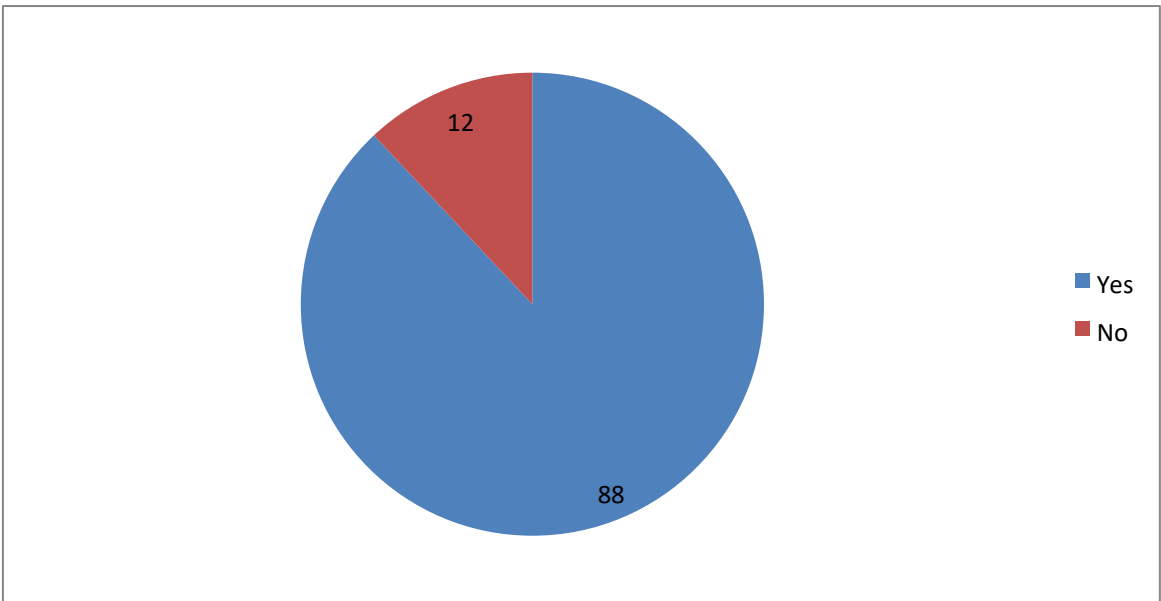
INFERENCE:

Therefore, 85% of the respondents said that the organization have quality circle.

4.1.17 The organization has any IOS certification

Particulars	No. of Respondents	No. of Percentage
Yes	106	88
No	14	12
Total	120	100%

Chart 4.1.17 The organization has any IOS certification



INTERPRETATION:

The above table infers that, 88% of the respondents said that the organization have ISO certification and 12 % of the respondents said that the organization have no ISO certification.

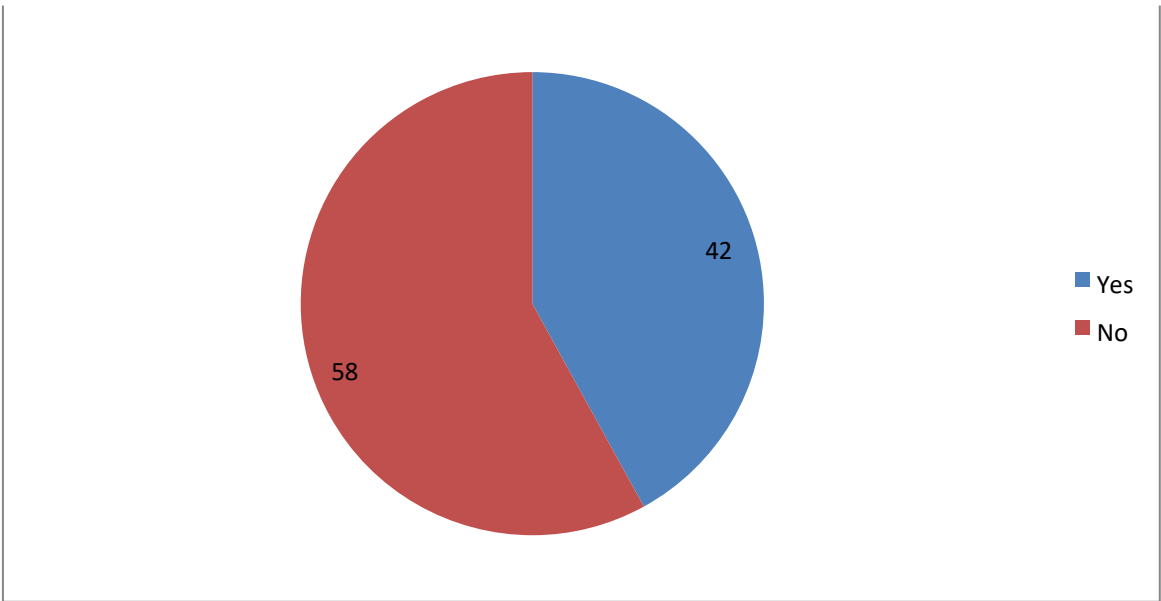
INFERENCE:

Therefore, 88% of the respondents said that the organization have ISO certification.

Table 4.1.18 Think about other organization bench marking policy

Particulars	No. of Respondents	No. of Percentage
Yes	50	42
No	70	58
Total	120	100%

Chart 4.1.18 Think about other organization bench marking policy



INTERPRETATION:

The above table infers that, 42% of the respondents said that other company is bench marking policy and 58 % of the respondents said that other company is not bench marking Policy.

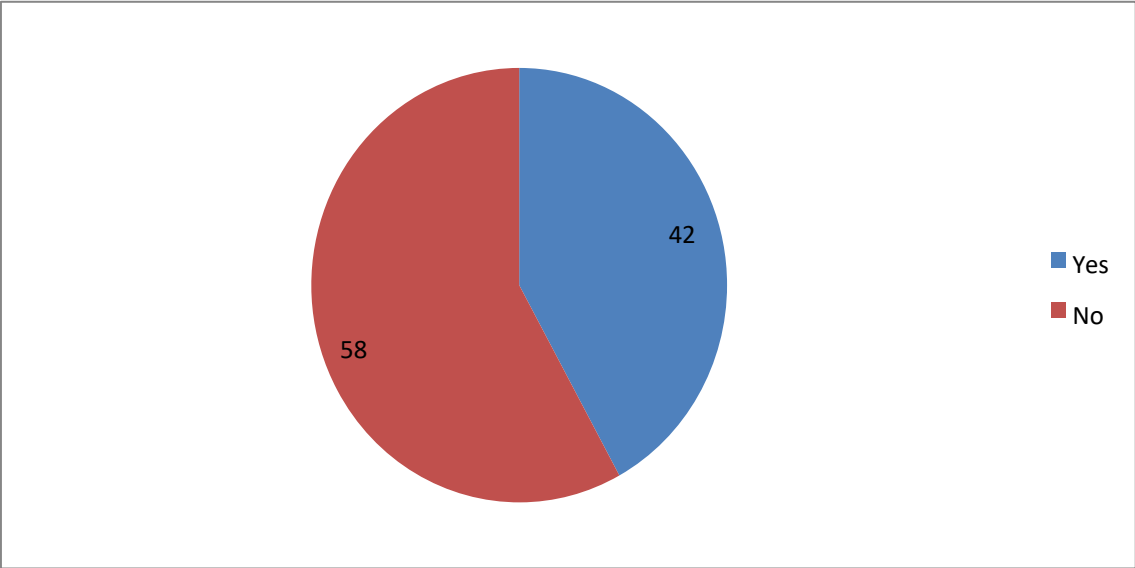
INFERENCE:

Therefore, 42% of the respondents said that other company is bench marking policy

4.1.19 Ranking 5s

Particulars	No. of Respondents	No. of Percentage
Sort	43	36
Set in order	25	21
Shine	22	18
Standardize	16	13
Sustain	14	12
Total	120	100%

Chart 4.1.19 Ranking 5s



INTERPRETATION:

The above table infers that, 36% of the respondents said that company provides 1st rank to sort and 58 % of the respondents said that company provides 2nd rank to Set in order.

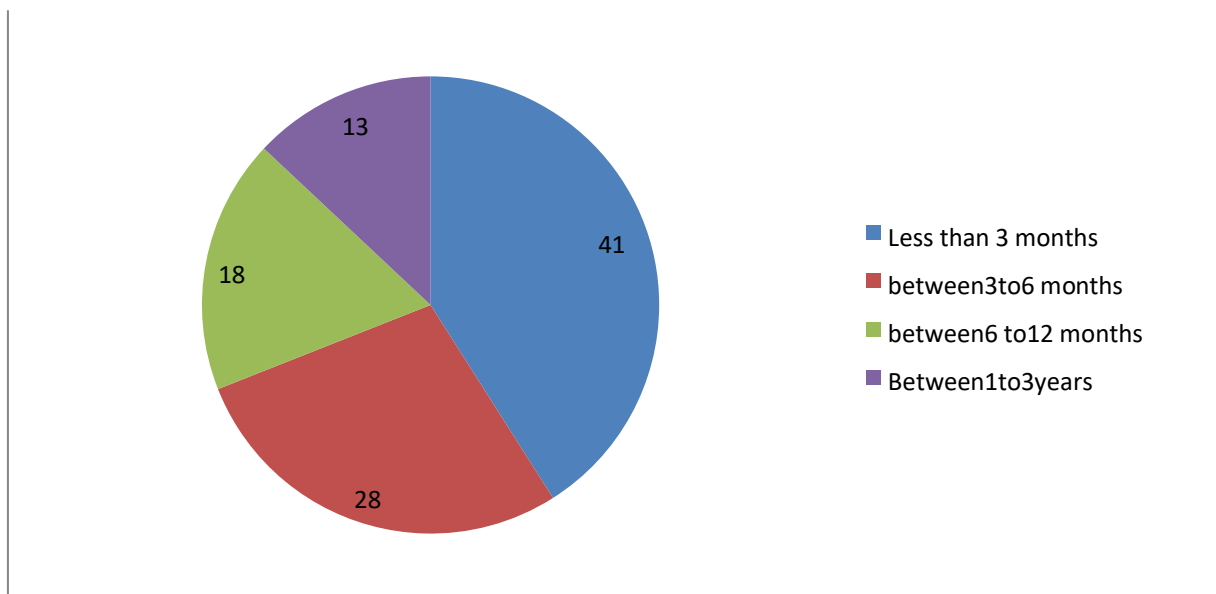
INFERENCE:

Therefore, 36% of the respondents said that company provides 1st rank to sort.

Table 4.1.20 Organization took for full implementation of TQM

Particulars	No. of Respondents	No. of Percentage
Less than 3 months	49	41
between3to6 months	33	28
between6 to12 months	22	18
Between1to3years	16	13
Total	120	100%

Chart 4.1.20 Organization took for full implementation of TQM



INTERPRETATION:

The above table infers that, 41% of the respondents said that the organization took less than 3 months for full implementation of TQM and 28% of the respondents said that the organization took between 3to6 months for full implementation of TQM.

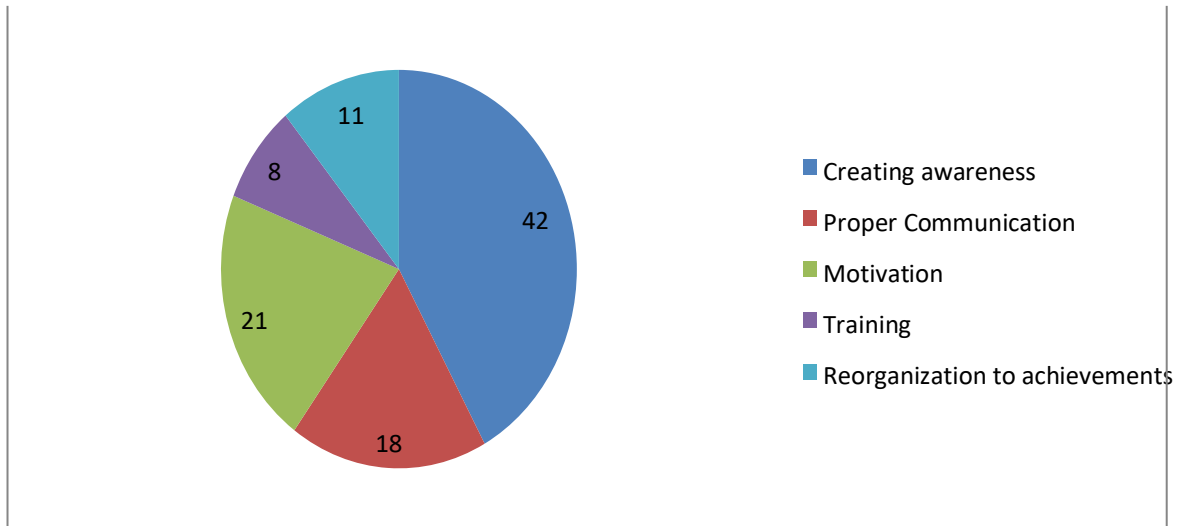
INFERENCE:

Therefore, 41% most of the respondents said that the organization took less than 3 months for full implementation of TQM.

Table 4.1.21 Strategies used for successful implementation of TQM

Particulars	No. of Respondents	No. of Percentage
Creating awareness	51	42
Proper Communication	21	18
Motivation	25	21
Training	10	8
Reorganization to achievements	13	11
Total	120	100%

Table 4.1.21 Strategies used for successful implementation of TQM



INTERPRETATION:

The above table infers that, 42% of the respondents said that they used Creating awareness Strategies for Successful Implementation of TQM and 21% the respondents said that they used Motivation Strategies for Successful Implementation of TQM.

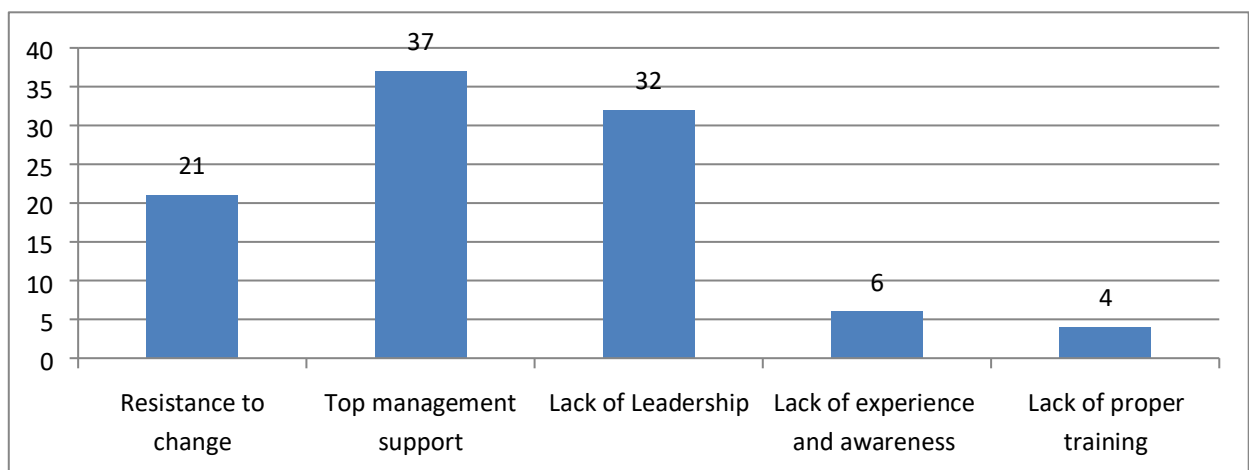
INFERENCE:

Therefore, 42% of the respondents said that they used Creating awareness Strategies for Successful Implementation of TQM.

Table 4.1.22 The problems encountered while implementing TPM

Particulars	No. of Respondents	No. of Percentage
Resistance to change	25	21
Top management support	44	37
Lack of Leadership	39	32
Lack of experience and awareness	7	6
Lack of proper training	5	4
Total	120	100%

Chart 4.1.22 The problems encountered while implementing TPM



INTERPRETATION:

The above table infers that, 37% of the respondents said that the top management support problems encountered while Implementing TPM and 32% of the respondents said that the Lack of Leadership problems encountered while Implementing TPM.

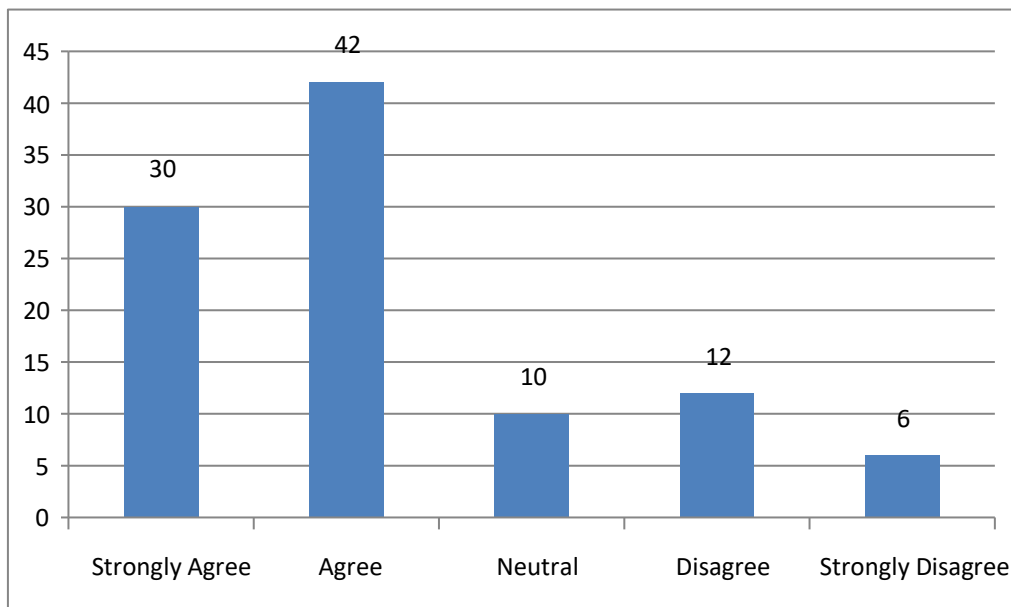
INFERENCE:

Therefore, 37% of the respondents said that the top management support problems encountered while Implementing TPM.

Table 4.1.23 Training given to work in WCM system

Particulars	No. of Respondents	No. of Percentage
Strongly Agree	36	30
Agree	51	42
Neutral	12	10
Disagree	14	12
Strongly Disagree	7	6
Total	120	100%

Chart 4.1.23 Training given to work in WCM system



INTERPRETATION:

The above table infers that, 42 % of the respondents agree that training is given to them to work in WCM system and 30 % of the respondents strongly agree that training is given to them to work in WCM system.

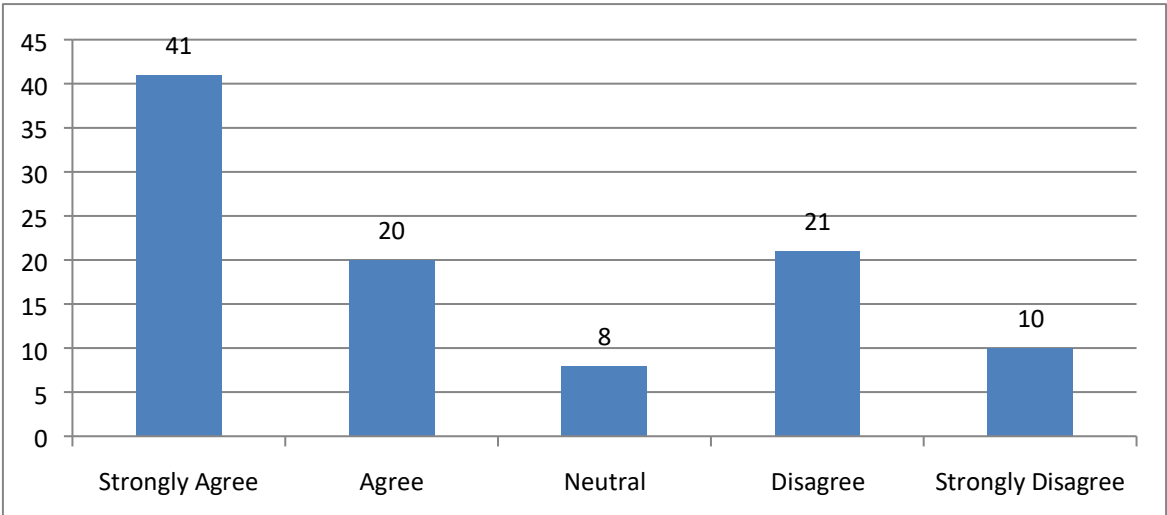
INFERENCE:

Therefore, 42% of the respondents agree that training is given to them to work in WCM system.

Table 4.1.24 More time is taken in lean tools

Particulars	No. of Respondents	No. of Percentage
Strongly Agree	49	41
Agree	24	20
Neutral	10	8
Disagree	25	21
Strongly Disagree	12	10
Total	120	100%

Chart 4.1.24 More time is taken in lean tools



INTERPRETATION:

The above table infers that, 41 % of the respondents strongly agree that more amount of time is taken in implementing and working on lean tools and 21 % of the respondents disagree that more amount of time is taken in implementing and working on lean tools.

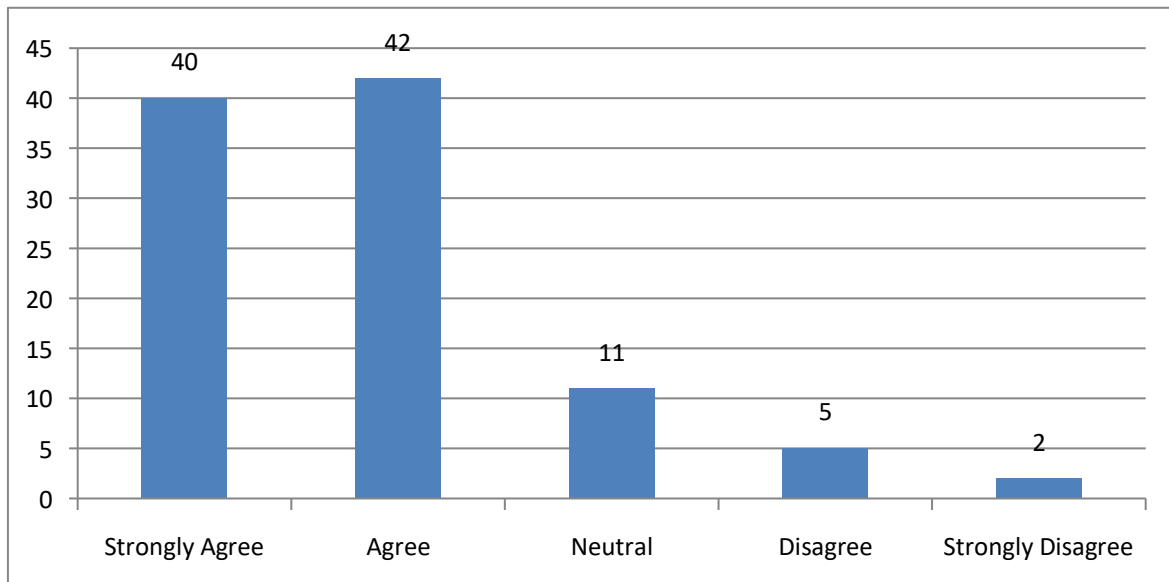
INFERENCE:

Therefore, 41% of the respondents strongly agree that more amount of time is taken in implementing and working on lean tools.

Table 4.1.25 Lean tools are necessary for an organization

Particulars	No. of Respondents	No. of Percentage
Strongly Agree	48	40
Agree	51	42
Neutral	13	11
Disagree	6	5
Strongly Disagree	2	2
Total	120	100%

Chart 4.1.25 Lean tools are necessary for an organization



INTERPRETATION:

The above table infers that, 42% of the respondents agree that lean tools are necessary for an organization and 40 % of the respondents strongly agree that lean tools are necessary for an organization.

INFERENCE:

Therefore, 42%of the respondents agree that lean tools are necessary for an organization.

4.2 CHI- SQUARE TEST I – (ψ^2)

Chi-square is the sum of the squared difference observed (o) and the expected (e) data or the deviation (d), divided by the expected data in all possible categories.

Null hypothesis (Ho):

There is no relationship between Experience and Lean tools are necessary for an organization.

Alternate hypothesis (H1):

There is a relationship between Experience and Lean tools are necessary for an organization.

	Value	df	Asymp. Sig. (2sided)
Pearson Chi-Square	188.519 ^a	16	.000
Likelihood Ratio	192.834	16	.000
Linear-by-Linear Association	90.429	1	.000
N of Valid Cases	120		

a. 17 cells (68.0%) have expected count less than 5. The minimum expected count is .05.

Degree of Freedom= $(r-1) * (c-1)$

$$= 4*4 = 16$$

Calculated value = 188.519

Tabulated value = 26.296

$Z = Z_{\text{Cal}} > Z_{\text{tab}}$

$$Z = 188.519 > 26.296$$

Hence, the Alternate hypothesis [H1] is accepted

INTERPRETATION:

Since the calculated value is greater than the tabulated value, we accept the alternate hypothesis and hence there is a relationship between Experience and Lean tools are necessary for an organization.

4.3 ONE-WAY ANOVA CLASSIFICATION

Null hypothesis (Ho):

There is no significance difference between Quality is Must in a Product-Customer view and The Organization have Quality Circle

Alternate hypothesis (H1):

There is a significance difference between Quality is Must in a Product-Customer view and The Organization have Quality Circle.

Test of Homogeneity of Variances

Quality is Must in a Product- Customer view

Levene Statistic	df1	df2	Sig.
8.526	1	118	.004

ANOVA

Quality is Must in a Product- Customer view

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	57.459	1	57.459	196.340	.000
Within Groups	34.533	118	.293		
Total	91.992	119			

Calculated value = 196.340

Tabulated value = 3.94

$F = F_{\text{Cal}} > F_{\text{tab}} \quad F = 196.340 > 3.94$

Hence, the Alternate hypothesis [H1] is accepted.

INTERPRETATION:

The calculated value of F is greater than the tabulated value. Hence, we reject the null hypothesis and conclude that there is a significance difference between Quality is Must in a Product- Customer view and The Organization have Quality Circle.

4.4 ANALYSIS USING KARL PEARSON'S CORRELATION

Correlation analysis is the statistical tool used to measure the degree to which two variables are linearly related to each other. Correlation measures the degree of association between two variables.

Null hypothesis (H0):

There is positive relationship between Respondents rating of TQM System and Think about other Organization Bench marking policy.

Alternate hypothesis (H1):

There is negative relationship between Respondents rating of TQM System and Think about other Organization Bench marking policy.

Correlations

		Respondents rating of TQM System	Think about other Organization Bench marking policy
Pearson Correlation		1	.742**
Respondents rating of TQM System	Sig. (2-tailed)		.000
	N	120	120
			1
Think about other Organization Bench marking policy	Pearson Correlation	.742**	
	Sig. (2-tailed)	.000	
	N	120	120

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

$r = .742$

INTERPRETATION:

Since r is positive, there is positive relationship between Respondents rating of TQM System and Think about other Organization Bench marking policy.

CHAPTER – 5

FINDING, SUGGESTIONS AND CONCLUSION

5.1 Findings:

- 48% of the respondent belongs to the age group of 26-35 years.
- 52% of the respondents are male.
- 41% of the respondents are married.
- 44% of the respondents are having UG qualification.
- 32% of the respondents are having 1-5 years of experience.
- 33% of the respondents earning ₹13, 001-18,000 of Monthly Income.
- 42% of the respondents felt excellent about an organization.
- 32% of the respondents rate the TQM system as good.
- 51% of the respondents agree that quality is needed in a product to give customer satisfaction.
- 53% of the respondents strongly agree with the organization possess a clear quality policy.
- 80% of the respondents feel that the organization is quality conscious towards employees.
- 85% of the respondents said that the organization have quality circle.
- 88% of the respondents said that the organization have ISO certification.
- 42% of the respondents said that other company is bench marking policy.
- 36% of the respondents said that company provides 1st rank to sort.
- 41% most of the respondents said that the organization took less than 3 months for full implementation of TQM.
- 42% of the respondents said that they used Creating awareness Strategies for Successful Implementation of TQM.

- 37% of the respondents said that the top management support problems encountered while Implementing TPM.
- 42% of the respondents agree that training is given to them to work in WCM system.
- 41% of the respondents strongly agree that more amount of time is taken in implementing and working on lean tools.
- 42% of the respondents agree that lean tools are necessary for an organization.

5.2 SUGGESTIONS

- The company should educate the worker about the various world class manufacturing system and the importance of lean tools.
- More attention should be given to the workers for training in latest lean tools.
- The company should take necessary step to implement proper waste effluent treatment plant.
- The management should buy advanced machines for production, so that quality products can be manufactured.
- The company should promote their product by giving advertisement in leading printing and electronic media.
- The company should use waste paper and bagasse for making paper then only cutting of trees for making paper can be avoided.
- The company should not cut the trees from forest (deforestation) to avoid environmental degradation.
- The company should take necessary steps to reduce the amount of air pollutant that they are emitting.
- The company should take necessary step to implement proper waste effluent treatment plant.

- The management has to take necessary step to measure the employee's suggestion in company's decision-making process.
- The company should take respective measures to provide adequate information to the employees regarding works.

5.3 CONCLUSION

The study was not deviated from the previous study carried by some researcher. The research has illustrated the total quality management system of Autokshi Engineers Pvt Ltd. The better commitment of the employees will help to improve the performance of the organization. Thus, the commitment of the employees is important for the institute to earn good image among the public. Here, the researcher had analyzed the world class manufacturing (WCM) system and various lean tools and gave some of the suggestions to improve the involvement of employees to work in lean tools. Hope the company would be benefited by the findings and suggestions given by the researcher to improve the employee commitment.

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ANNEXURE I - QUESTIONNAIRE

1) Name : _____(Optional)

2) Age: A) Below 25 B) 25-35 C) 36-45 D) Above 45

3) Sex: A) Male B) Female

4) Marital status: A) Married B) Unmarried

5) Educational Qualification:

A) SSLC /Diploma/ ITI B) Hr. Sec C) U. G. Degree D) P.G. Degree E) Others

6) Experience:

A) Below 1 Years B) 1-5 Years C) 6-10 Years D) 11-15 Years E) Above 15years

7) Monthly Income:

A) Below ₹8000 B) ₹8001-13,000 C) ₹13,001-18,000 D) ₹18,001-₹30000 E) Above ₹ 30000

8) How do you feel about your Organisation?

A) Excellent B) Good C) Above Average D) Average E) Below Average

9) How do you rate the TQM system in the organisation

A) Excellent B) Good C) Above Average D) Average E) Below Average

10) Quality is needed in a product to give customer satisfaction.

A) Strongly Agree B) Agree C) Neutral D) Disagree E) Strongly Disagree

QUALITY IMPROVEMENT	Strongly Agree	Agree	Neutral	Disagree	Highly Disagree
11)Do you agree that TQM will work in your organization					
12)TQM can be used to improve the performance of the organization					
13)The organisation possesses a clear quality policy					
14)Does your organisation conduct quality improvement program					
15) Are you satisfied with the TQM in your organisation					

16) Do you think the organization is quality conscious toward employees?

A) Yes B) No

17) Does the organization have quality circle?

A) Yes B) No

18) Does the organization have any ISO certification?

- A) Yes B) No

19) Do you think other organization bench marking Autokshi Engineers Pvt Ltd. Policy?

- A) Yes B) No

20) Rank(1to5) the 5s Japanese philosophy?

- A) Sort B) Set in order C) Shine D) Standardize E) Sustain

21) How much time your organisation took for full implementation of TQM?

- A) Less than 3 months B) between 3 to 6 months C) between 6 to12 months
D) Between 1 to 3 years

21) What strategies have been used for successful implementation of TQM?

- A) Creating awareness B) Proper Communication C) Motivation D)
Training C) Reorganization to achievements

22) What are the problems encountered while implementing TPM?

- A) Resistance to change B) Top management support C) Lack of
Leadership D) Lack of experience and awareness E) Lack of proper training

23) More amount of time is taken in implementing and working on lean tools?

- A) Strongly Agree B) Agree C) Neutral D) Disagree E) Strongly
Disagree

24) Lean tools are necessary for an organisation to improve productivity.

- A) Strongly Agree B) Agree C) Neutral D) Disagree
E) Strongly Disagree

ANNEXURE II – RESEARCH ARTICLE

A STUDY ON TOTAL QUALITY MANAGEMENT IN AUTO COMPONENTS INDUSTRY

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ABSTRACT

The main objective of the project is to study the level of total quality management principles implemented in the organisation and to give suggestions to improve their employee commitment towards the lean tools through the implementation of the world class manufacturing system. This study also shows the importance of world class manufacturing system to maintain and improve the quality of work life of employees.

KEY WORDS: Quality of work life, employees.

I. INTRODUCTION

The history of Total Quality Management can be traced back to early 1920s, when statistical theory was first applied to product quality control. This concept was further developed in Japan in the 40s led by Americans, such as Deming, Juran and Feigenbaum. The focus widened from quality of products to quality of all issues within an organisation. Total Quality Management is a management approach that aims for long-term success by focusing on customer satisfaction. TQM is based on the participation of all members of an organization in improving processes, products, services and the culture in which they work.

II. INDUSTRY PROFILE

The Indian auto-components industry has experienced healthy growth over the last few years. Some of the factors attributable to this include: a buoyant end-user market, improved consumer sentiment and return of adequate liquidity in the financial system. The auto-components industry accounts for almost seven per cent of India's Gross Domestic Product (GDP) and employs as many as 19 million people, both directly and indirectly. A stable government framework, increased purchasing power, large domestic market, and an ever-increasing development in infrastructure have made India a favourable destination for investment.

III. REVIEW OF LITERATURE

1. **Faisal Talib, Zillur Rahman and M.N. Qureshi (2002)**, Over the last two decades, service organisations have embraced total quality management as an effective management tool to improve their service quality. They have begun to show a keen interest in TQM by working on quality and related areas. TQM has become a major area of attention to practitioners, managers and researchers due to its strong impact on business performance, customer satisfaction and profitability. In the light of this, an attempt has been made to study and understand the theory and concept of TQM, its benefits as well as various facets of

service components and its classification. This study also explores the literature on the implementation of TQM in selected service industries. The finding of this study provides a rich contribution towards TQM theory, its role in service sector, as well as presents the different components of services. This paper can help business managers and quality practitioners in better understanding TQM, service systems concept as well as TQM implementation in service sector. The scope for future study is presented at the end.

2. **Sila and Ebrahimpour (2002)**, they have analysed and compared empirically validated TQM factors and their impact on various performance measures across countries. The findings showed that top management commitment and leadership, customer focus, information and analysis, training, supplier management, strategic planning, employee involvement, human resource management, process management, teamwork, product and service design, process control, benchmarking, continuous improvement, employee empowerment, quality assurance, social responsibility, and employee satisfaction were the most commonly extracted factors across these studies. They covered most of the empirical studies; focusing QM research up to the year 2002.
3. **Corbett et al., (2005)**, Firms with effective TQM implementation can accomplish the internal benefits such as improving quality, enhancing productivity enhancement, or realizing better operating income. Secondly, from the financial performance perspective, careful design and implementation of consistent and documented quality management systems can contribute significantly to superior financial performance.
4. **Linderman et al., (2004)**, The knowledge management (KM) viewpoint, the implementation of TQM can also increase and enhance organizational knowledge, which in turn helps more understanding of how quality management practices can affect firm performance.
5. **Hsu and Shen (2005)**, they compared with TQM and KM, there are many similarities between these two management philosophies. If properly planned, they can complement one another effectively.
6. **Kaynak (2003)**, there are plentiful studies investigated the relationship between TQM and firm performance. indicated that quality improvement had positive effects on improving a firm's financial and market performance. However, as the effects of TQM have different impacts on internal quality and external quality, TQM implementation that directly and positively improves firm's operating performance by increasing quality performance, has indirect effects on increasing customer satisfaction. It is further noted that quality management can improve operating efficiency by reducing defect rate, scrap rate, and the occurrence of rework. The improvement of operating efficiency will improve customers' satisfaction and eventually the company's financial performance. In addition, the improvement of customers' satisfaction and loyalty may sustain or enlarge market share, which can be eventually transformed into better firm's financial performance. Thus, the authors propose that operating performance resulting from TQM implementation will increase customers' satisfaction and improve financial performance, respectively.

IV. OBJECTIVE OF THE STUDY

1. To find the degree of TQM implemented in the organization.
2. To study the level of commitment of employees toward their Lean tools.
3. To know the steps taken by the management to make employees to work in world class manufacturing system.
4. To find out the factor influencing the commitment of employees in WCM system.
5. To find out the impact of the training in TQM implementation.
6. To study the extent to which quality is needed in any system.

V. RESEARCH METHODOLOGY

RESEARCH DESIGN

Research design constitutes the blue print for the collection measurement and analysis of data. Thus research design is a conceptual framework within the research is conducted. The researcher has used convenient sampling method to collect the data from the respondent.

SAMPLING SIZE

Samples were collected from employees and workers of the organization. The total sample size of both is 120.

DATA COLLECTION

Primary data: The primary data are those which are new, written for the first time and original. This project relied on the responses from employees belonging to the real estate industry as primary data.

Secondary data: The secondary data are those which had already been collected by other people and which have already been passed through the processes. The data is taken from the past study or analysis. In this study, secondary data were obtained from various sources like organization records, websites, magazines, books etc.

AREA OF RESEARCH

- **SAMPLE SIZE:** 120 Employees
- **LOCATION:** Chennai
- **PERIOD OF STUDY:** 3 Months

HYPOTHESIS

1. Null hypothesis H0: There is no significant difference between gender and the compensation provided by the company. **Alternate hypothesis H1:** There is significant difference between gender and the compensation provided by the company

2. Null hypothesis H0: There is no relationship between the superiors and the subordinates. **Alternate hypothesis H1:** There is a relationship between the superiors and the subordinates.

STATISTICAL TOOLS FOR ANALYSIS

The statistical tools used for analysis are:

- Simple percentage analysis method
- Chi square
- Correlation

LIMITATION OF THE STUDY

- Due to lack of time the sample size is restricted.
- Entire analysis of the study, its findings and conclusion are based on the data collected from 120 samples which may differ for other employees.
- The study is applicable only to the industry, and not to any other similar organization.
- Some of the employees are not giving their opinion, since the study deals with the policy of organization. Therefore, it is difficult to extract accurate information from the employees.
- Employees are biased towards the researcher in telling the truth, because they thought that researcher may be the spy of the management.

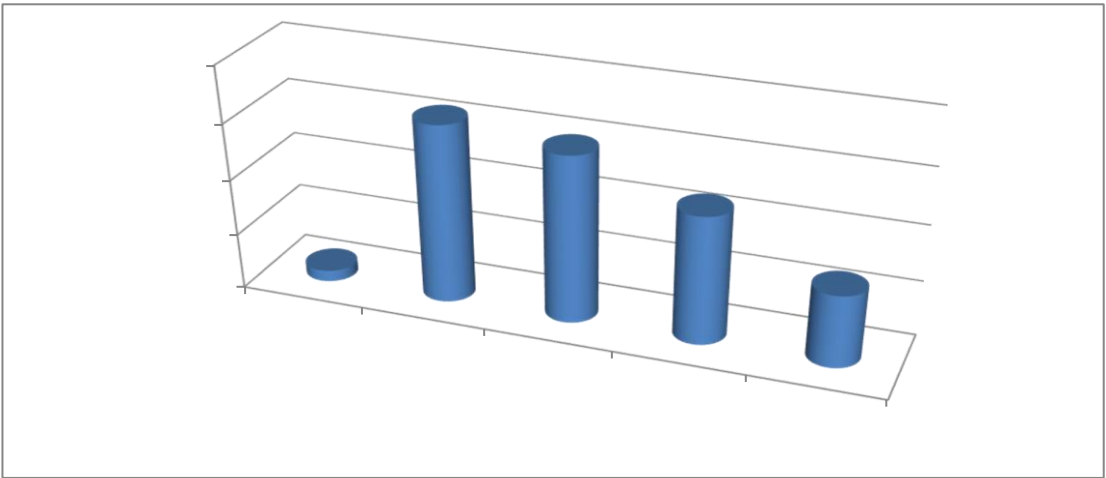
VI DATA ANALYSIS AND INTERPRETATION

TABLE 4.1 EXPERIENCE

Particulars	No. of Respondents	No. of Percentage
Below 1 Years	03	2
1-5 Years	38	32
6-10 Years	36	30
11-15 Years	27	23
Above 15years	16	13
Total	120	100%

Source: Primary Data

CHART 4.1 EXPERIENCE



INTERPRETATION

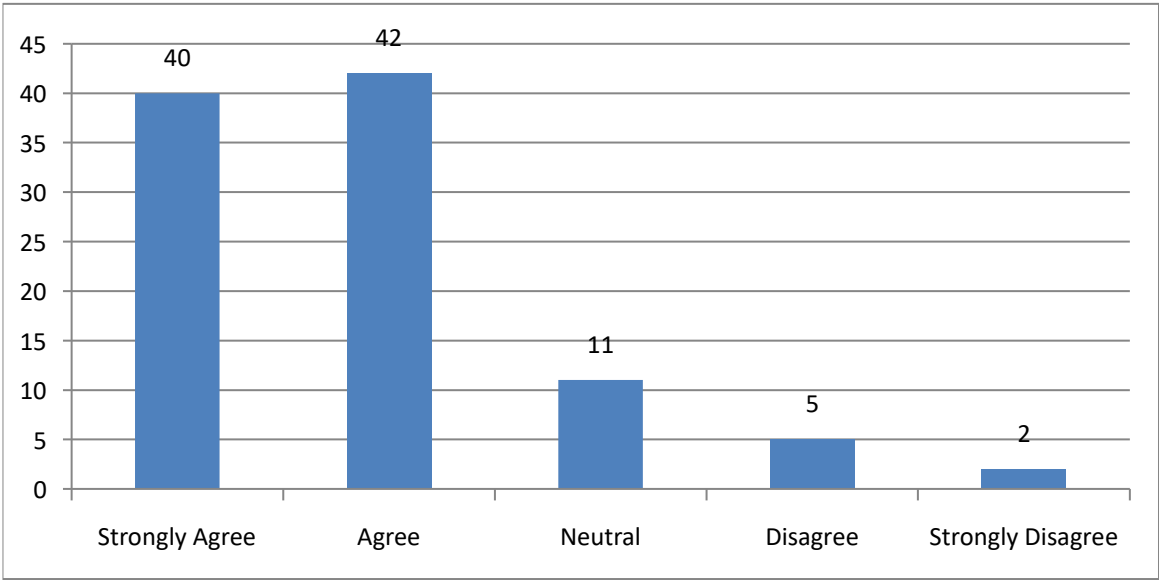
The above table infers that, 32 percent of the respondents are having 1-5 years of experience and 30 percent of the respondents are having 6-10 years of experience.

TABLE 4.2 LEAN TOOLS ARE NECESSARY FOR AN ORGANIZATION

Particulars	No. of Respondents	No. of Percentage
Strongly Agree	48	40
Agree	51	42
Neutral	13	11
Disagree	6	5
Strongly Disagree	2	2
Total	120	100%

Source: Primary Data

CHART 4.2 LEAN TOOLS ARE NECESSARY FOR AN ORGANIZATION



INTERPRETATION

The above table infers that, 42% of the respondents agree that lean tools are necessary for an organization and 40 % of the respondents strongly agree that lean tools are necessary for an organization.

CHI-SQUARE TEST

Hypothesis

Null hypothesis (Ho): There is no relationship between Experience and Lean tools are necessary for an organization.

Alternate hypothesis (H1): There is a relationship between Experience and Lean tools are necessary for an organization.

	Value	df	Asymp. Sig. (2sided)
Pearson Chi-Square	188.519 ^a	16	.000
Likelihood Ratio	192.834	16	.000
Linear-by-Linear Association	90.429	1	.000
N of Valid Cases	120		

INFERENCE

Since the calculated value is greater than the tabulated value, we accept the alternate hypothesis and hence there is a relationship between Experience and Lean tools are necessary for an organization.

CORRELATION

Hypothesis Null hypothesis (H0): There is positive relationship between Respondents rating of TQM System and Think about other Organization Bench marking policy.

Alternate hypothesis (H1): There is negative relationship between Respondents rating of TQM System and Think about other Organization Bench marking policy.

	Respondents rating of TQM System	Think about other Organization Bench marking policy
Pearson Correlation	1	.742**
Respondents rating of TQM System		
Sig. (2-tailed)		.000
N	120	120 1
Think about other Organization Bench marking policy		
Pearson Correlation	.742**	
Sig. (2-tailed)	.000	
N	120	120

INFERENCE

Since r is positive, there is positive relationship between Respondents rating of TQM System and Think about other Organization Bench marking policy.

VII FINDINGS OF THE STUDY

- 48% of the respondent belongs to the age group of 26-35 years.
- 52% of the respondents are male.
- 41% of the respondents are married.
- 44% of the respondents are having UG qualification.
- 32% of the respondents are having 1-5 years of experience.
- 33% of the respondents earning 13, 001-18,000 of Monthly Income.
- 42% of the respondents felt excellent about an organization.
- 32% of the respondents rate the TQM system as good.
- 51% of the respondents agree that quality is needed in a product to give customer satisfaction.
- 53% of the respondents strongly agree with the organization possess a clear quality policy.
- 80% of the respondents feel that the organization is quality conscious towards employees.
- 85% of the respondents said that the organization have quality circle.
- 88% of the respondents said that the organization have ISO certification.
- 42% of the respondents said that other company is bench marking policy.
- 36% of the respondents said that company provides 1st rank to sort.
- 41% most of the respondents said that the organization took less than 3 months for full implementation of TQM.
- 42% of the respondents said that they used Creating awareness Strategies for Successful Implementation of TQM.
- 37% of the respondents said that the top management support problems encountered while Implementing TPM.
- 42% of the respondents agree that training is given to them to work in WCM system.
- 41% of the respondents strongly agree that more amount of time is taken in implementing and working on lean tools.
- 42% of the respondents agree that lean tools are necessary for an organization.

CHI SQUARE TEST

There is a relationship between Experience and Lean tools are necessary for an organization.

CORRELATION

There is positive relationship between Respondents rating of TQM System and Think about other Organization Bench marking policy.

VIII CONCLUSION

The study was not deviated from the previous study carried by some researcher. The research has illustrated the total quality management system of the industry. The better commitment of the employees will help to improve the performance of the organization. Thus, the commitment of the employees is important for the institute to earn good image among the public. Here, the researcher had analysed the world class manufacturing system and various lean tools and gave some of the suggestions to improve

the involvement of employees to work in lean tools. Hope the company would be benefited by the findings and suggestions given by the researcher to improve the employee commitment.

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