

CHAPTER 1

INTRODUCTION

Total Quality Management (TQM) is a management philosophy which focuses on the work process and people, with the major concern for satisfying customers and improving the organizational performance. It involves the proper coordination of work processes which allows for continuous improvement in all business units with the aim of meeting or surpassing customer's expectations. It emphasizes on totality of quality in all facets of an organization with the aim of reducing waste and rework to reduce cost and increase efficiency in performance.

TQM is applicable to any organization irrespective of size, and motives, even the public sector organization are fast adopting the ideology in order to make them effective in meeting public demands. However, the adoption of the ideology by most organization has been hampered due to their noncompliance with the procedures and principles of TQM implementation. While some organization, run TQM like a program which they expect to function and perform the magic all by itself, others have used a halfhearted approach to it, by using some bits and pieces of the principles. This has accounted for the failure of most organization in meeting up to their expected target from implementing this ideology. There is a need to continue to buttress the benefits that accrue to organizations from the implementation of TQM, especially in developing economies. Total Quality Management (TQM) is an enhancement to the traditional way of doing business. It is a proven technique to guarantee survival in world –class competition. Only by changing the action of management will the culture and actions of an entire organization be transformed. TQM is for the most part common sense. Analyzing the three words:

Total –*Made up of the whole (involves everyone and all activities)*

Quality – *Degree of excellence a product or service provides (meeting customer requirements)*

Management – *Act, art, or manner of handling, controlling, directing, etc.*

Therefore, TQM is the art of managing the whole to achieve excellence. The concept of total quality management (TQM) has been developed as a result of intense global competition. Organizations with international trade and global competition have paid

considerable attention to TQM philosophies, procedures, tools and techniques. According to Juran, international competition requires higher levels of quality achievement by organizations. Total quality management is the popular area of research in management. Total Quality Management (TQM) has been practiced in diverse manufacturing industries and now there is a growing interest in the service sector, even from non-profit organizations (Nwabueze, 1998). But the service industry differs from the manufacturing industry in a number of ways, such as service intangibility, simultaneity of production, delivery and consumption, perishability, variability of expectations of the customers and the participatory role of customers in the service delivery. Several authors have proposed models of TQM. However, most of the models are based on theories and practices that are primarily derived from the manufacturing industry.

TQM is defined as both a philosophy and a set of guiding principles that represent the foundation of a continuously improving organization. It is application of quantitative methods and human resources to improve all the process within an organization and exceed customer needs now and in future. TQM integrates fundamental management techniques, existing improvement efforts, and technical tools under a disciplined approach.

The benefits of TQM are improved quality, employee participation, teamwork, working relationships, customer satisfaction, productivity, communication, profitability, and market share. customer satisfaction plays a major role to survive in the intense competition. The present research attempts to close the research gap of relationship between TQM and Customer satisfaction. So the objective is to find out the association between the multidimensionality of TQM and Customer satisfaction in the SUDAN CIVIL AVIATION AUTHORITY, This research will provide constructive information that helps the practitioners to precisely identify areas of concerns and take corrective measures to enhance their level of customer satisfaction. Knowledge in this area will allow managers of the **SCAA** to direct their resources adequately in improving the more important contributors of Customer satisfaction.

The aviation industry is the largest industry in the service sector which caters to the needs of the different categories of people. Notably, the service quality of commercial aviation company tends to play a dominant role in high involvement industries, Indeed providing the best service quality is viewed as the pre requisite for the success of

service organizations like **SCAA**. The organizational performance of commercial aviation company is significantly and positively linked with the internal service quality.

On the other hand, researchers on the service management studied service quality by identifying the factors that influence customer's expectation and perception of service quality, and investigating their impact on customer satisfaction. Civil aviation service sector including aviation company are no different. Aviation company are struggling to improve service and proclaim that they are customer focus.

The World Civil Aviation Regulating Authorities Directory provides contact details for national civil aviation authorities, safety and regulatory bodies, national airport authorities, and Air Navigation Service Providers in Sudan.

1.1 Research problem:

In Sudan many organizations start to implement quality management system to improve their performance and the service quality.

This research trying to investigate the impact of implementation of TQM in Sudan Civil Aviation Authority on the customer satisfaction .also the employees satisfaction in this organization.

The concept of the research will be address through answering the following questions:

1. What is the extent of the job satisfaction among the employees in Sudan Civil Aviation Authority?
2. what is the extent of the customers satisfaction of Sudan Civil Aviation Authority?
3. To what extent we need for Total Quality Management Practices at SCAA in order to improve upon Organizational Performance.
4. To what extent we need to assess Quality Practices to improve upon performance to meet international standards and customer demand?
5. accordingly is it possible to implement TQM in Sudan Civil Aviation Authority and all aviation's company in Sudan ?

1.2 Research Objectives:

this research have some objectives that to:

- provide an intermediate step to understanding the complex relationship between total quality management and customer satisfaction.
- determine degree of relationship and impact of total quality management (TQM) practices in service quality in Sudan civil aviation on customer satisfaction.
- TQM philosophy of SCAA management dealing with getting continuous improvement of customer satisfaction.
- understand the need of how TQM practices successful in implementation on SCAA.
- propose guidelines for effective implementation of TQM in the SCAA.

1.3 Research Hypothesis:

- **H 1:** there is significant, positive relationship between implementing Total Quality management on SCAA and customer satisfaction.
- **H1-1:** there is significant, positive relationship between Customer focus and customer satisfaction.
- **H1-2:** there is significant, positive relationship between Process management and customer satisfaction.
- **H1-3:** there is significant, positive relationship between Employee relation and customer satisfaction.
- **H1-4:** there is significant, positive relationship between Top management (leadership) and customer satisfaction.

1.5 Research Methodology:

A simple random questionnaire survey of employees and customers of some of the Sudan civil aviation authority employee and aviation industry and also people

received services from SCAA, will be conducted where we would like to answer some of the questions concerning on the impact of implementing the TQM systems.

The questionnaire will be distributed among (80) employees and (100) customers in SCAA & aviation's company. The questionnaire is designed and concentrate on the service quality reflected mainly on employees and customers satisfaction. In the two parts of questionnaire employees satisfaction and the customers satisfaction, the respondents will be asked to rank their agreement with the statement on a five –point Like scale (1- for strongly disagree , 2- for disagree , 3- for I don't know , 4- for agree and 5- for strongly agree) .

1.6 Data Collection Process:

The questionnaire was distributed with the explanation of the survey purpose and guarantee of response confidentiality for the employees and the customer in the SCAA that conducted to drive some recommendations to help implementing TQM in the Sudan civil aviation authority to reach the optimum service quality and employees- customer satisfaction.

1.7 Organization Of The Study:

The work was organized into five chapters. Chapter one covered the Introduction to the study, the problem statement, the objectives of the study, research Hypothesis, Research Methodology , Data Collection Process , limitations of the study and organization of the study. Chapter two covered the literature review. Chapter three covered methodology which comprises the study area, Study Methods ,the population of the study, Questionnaire design, data collection procedure, Statistical Processing and Ethical consideration. Chapter four considered analysis of data , discussion , examined the summary of the findings and results. Chapter five, conclusions of the study and recommendations.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION:

This chapter reviews the concept of total quality management by assessing the various definitions and views of numerous authors. A general frame work of what quality is all about is discussed under the elements of quality. Since the research is more concerned about the effects of TQM on service quality, the literature also looks at the concept of service quality and how it is been assessed by the organization and the customers alike. The road path to TQM implementation follows the concept of service quality, where the various stages and characteristics of these stages are discussed. The concept of TQM under review looks at the contributions of its founding fathers to the tenets of TQM. The benefits of TQM and the hindrance to its implementations are reviewed. Finally the literature gives an overview of the SUDAN CIVIL AVIATION AUTHORITY and the need for implementing TQM to achieve customer satisfactions.

2.2 TOTAL QUALITY MANAGEMENT:

Total quality management (TQM) is one of the most perfect and efficient management philosophies that contains topics of quality and customer satisfaction suitably. Purpose of modern quality management is to attract total satisfaction of the customer through economizing and rationalizing the expenditure that the customer pays. Basis of this affair is systematic quality management that includes all sections of an organization. Total quality management (TQM) is a key strategy to maintain competitive advantage and is a way for managing organizations in order to improve effectiveness and general performance and obtain a superior global status (Ooi et al, 2007).

Different definitions of TQM have been presented over the years. Some of these definitions are presented below. Oakland (1993) states that —TQM is an approach for improving the competitiveness, effectiveness and flexibility of a whole organization". Dale (1999) defines TQM as a management approach of an organization, centred on quality, based on the participation of all its members and aiming at long-term success

through customer satisfaction, and benefits to all members of the organization and to society. Dale (1999) states further that tools and methodologies are used in TQM in order to improve the organization continuously. Shiba et al. (1993) argue that Total Quality Management (TQM) is an evolving system of practices, tools, and training methods for managing companies to provide customer satisfaction in a rapidly changing world. A baseline technical definition of what TQM is all about has been given by the American Federal Office of Management Budget Circular,

TQM is a total organizational approach for meeting customer needs and expectations that involves all managers and employees in using quantitative methods to improve continuously the organization's processes, products and services. (Milakovich, 1990). In addition, the American Federal Office of Management defined TQM as, a total organizational approach for meeting customer needs and expectations that involves all managers and employees in using quantitative methods to improve continuously the organization's processes, products, and services. TQM is not merely a technical system. In fact, TQM is associated with the organization itself, which is also a social system (Morgan & Murgatroyd, 1997). Some people argue that organizations are not only technical systems but also human systems (Pike and Barnes 1996). In addition Oakland (1993), states that TQM is an attempt to improve the whole organization's competitiveness, effectiveness, and structure. According to Dale (1999), TQM is the mutual co-operation of everyone in an organization and associated business processes to produce products and services, which meet and, hopefully, exceed the needs and expectations of customers. TQM is both a philosophy and a set of management guiding principles for managing an organization.

Over the past, total quality management (TQM) has become most widely used management acronym and is considered as the buzz word in the management practices. It has been well accepted by managers and quality practitioners as a change management quality approach (Arumugam et al., 2009). It plays a vital role in the development of management practices (Prajogo and Sohal, 2003; Hoang et al., 2006). Many researchers asserted TQM as an approach to improve effectiveness, flexibility, and competitiveness of a business to meet customers' requirements (Oakland, 1993. (Mohanty and Behera, 1996) and above all TQM can also be seen as a source of enhancing organizational performance through continuous improvement in organization's activities (Claver-Cortes et al., 2008; Teh et al., 2009). In recent decades,

the level of awareness towards TQM has increased drastically and has gone to its peak to become a well-established field of research (Arumugam et al., 2008; Yusof and Aspinwall, 1999). In response to these challenges and to facilitate the organizations in achieving higher quality levels, many companies are implementing TQM approach and quality initiatives for achieving sustainable competitive advantage and enhanced company performance. Past studies on the relationships between TQM practices and quality performance have showed significant and positive results (Arumugam et al., 2008; Prajogo and Sohal, 2003).

This study will look at TQM practices in relation to organization performance, particularly for the aviation sector to examine whether the implementation of TQM practices results in an improvement of organization and aviation company's quality performance and achieved customer satisfaction .

2.3 The Concept Of Service Quality:

Quality is a dynamic status that has relation with production, service offering, employees, processes and environment and could be reached expectation level of customers or even higher than it (Venous and Madadi Yekta, 2006). Customers expect two desirable and sufficient levels of service quality that customer's tolerance area separates these two levels from each other (Beglu and Zomorodpush, 2010). Physical quality is products or supporting products and services. Of course physical dimensions are fewer in public and service organizations and customers evaluate physical quality in such organizations based on accessibility of services. Interactive quality refers the relationship between customer and service provider and organizational quality reflects general picture and perceptions from the organization (Shahriari, 2007).

2.4 Total Quality Management (TQM) And Service Quality

Using total quality management (TQM) for service organizations (to enhance service quality) needs special considerations, because services are typically produced and consumed at one time. Many organizations started to examine total quality management (TQM) as a fixed and permanent method to improve their services since the 1990's and this becomes more important increasingly so that each year new vocabularies are created in the field of quality and productivity. Some of these

vocabularies refer foundations of this science and some have just advertising quality for management consultant companies. On the other side, all people demand improved services and a high level of participation by comprehensiveness of concept of quality and this has become a complicated task for organizations, because the common people demand quality and service improvement and at the same time they object to increasing of prices or creating tax burden. This duality is often happened because customers need high quality services with lower price. However, organizations should establish a balance between such duality, i.e. successive conflicts and obligations of citizens.

2.5 Benefits of TQM:

The effective implementation of TQM will increase customer satisfaction with the service offerings (Omachonu and Ross, 1994). Quality enhances customer loyalty through satisfaction; this in turn can generate repeat business and lead to the attraction of new customers through positive word of mouth. The word of mouth communication will help in cost reduction. This Omachonu and Ross (1994), noted will provide competitive edge to the company.

Total quality management is a management philosophy which emphasizes the devolution of authority to the front line staff. It ensures the participation of everyone in the decision making process through activities such as quality cycles and team work. The question is, does this devolution of authority leads to employees' satisfaction or not? Motivations theories indicate that two major forms of motivation exist – the intrinsic and the extrinsic motivation. While some will argue that the best form of motivation is monetary incentive, others argue for self fulfilment and recognition.

The motive behind the intrinsic reward is to provide the employee with some autonomy which empowers him to take decisions that affects his job, thus making him responsible and accountable. This is said to increase the employee's level of job satisfaction (Dimitrades, 2000). The implementation of TQM ensures that every worker in the organization does his work with quality the first time, thus improving the efficiency of operation and avoiding some cost associated with waste. This in turn will offer more value to customers in terms of price and service quality, thus making them satisfied.

Implementation of TQM further ensures that organizations change how they perform activities so as to eliminate inefficiency, improve customer satisfaction and achieve the best practice (Porter, 1996). Porter noted that constant improvement in the effectiveness of operation is essential but not a sufficient factor for organization to be profitable. According to Sila (2007), TQM helps in improving the quality of products and also reduces the scrap, rework and the need for buffer stock by establishing a stable production process. He argued that TQM will reduce the cost of production and time of production. Continuous improvement which is a feature of TQM is said to reduce the product cycle time thus improving productivity (Huang and Lin, 2002). Many other TQM practices such as training, information system management, relationship with suppliers etc have a positive impact on operational performance.

Empowered employees have the means to measure the quality of their own work processes, to interpret the measurements, and compare these measurements to goals and take action when the process is not on target. These empowered employees also understand who their customers are; what the customers need, want, and expect; how to design new goods and services to meet these needs; how to develop the necessary work processes; how to develop and use the necessary quality measurements; and how to continuously improve these processes. Similarly Chin and Pun (2002) stated that the implementation of TQM can generate improved products and services, reduced costs, more satisfied customers and employees, and improved bottom line financial performance. Other benefits include improved company image, improved certainty in operations, improved morale, improved management, and committed customers (Davies, 2003). However, it is not easy for management to implement TQM, because TQM means a cultural overhaul (Rao, Youssef, & Stratton, 2004).

TQM deals with both individual and collective behaviors that can create customer satisfaction through continuous improvement (Claver, Gasco, Llopis, & Gonzalez, 2001). Each company should develop its own individual framework for TQM that fits its situation and available resources. TQM involves teamwork and commitment on the part of the employees and management. Well-conceived training, mentoring, and feedback systems have demonstrated that they serve important roles in mitigating employee resistance to change (Jun, Cai, & Peterson, 2004). If TQM succeeds in

improving performance, the organization's customers may gain through lowered prices or improved satisfaction; its shareholders gain through improved returns on investment, and management gains through higher compensation (Beer, 2003). A study by Prajogo and Sohal (2003) found that TQM significantly and positively contributes to innovation performance, in terms of product and process. They found that there was a positive and significant relationship between quality performance and innovation performance, particularly process innovation. Zhang (2000) identified the significant positive impact of quality management methods on the products quality and business performance. TQM can have a dynamic role in strategy formulation, in addition to the more tactical role of strategy application and deployment (Leonard & McAdam, 2003). Those organizations that applied TQM at a strategic level were found to have robust TQM programs with greater longevity as a result of using frequent regenerative approaches (Leonard, McAdam, & Reid, 2002).

2.6 TQM and Organization Performance:

Zeithaml (2000) summarized about the relation between TQM and profit. His findings showed that both positive effect in some studies and no effect in other. But unlike the variability in profitability impact of TQM, the relationship between TQM and quality/operating performance is well established and empirically confirmed (Lee et al., 1999; Roa et al., 1999). With popularity of TQM, there is a growing awareness of importance of linking business drivers with other organizational issues such as leadership, strategic quality planning, service design, people and process management (Pannirselvam & Ferguson, 2001). There is a significant practitioner interest in this area and the adoption of quality award criteria as TQM framework tends to proliferate (Black & Porter, 1996; Hua et al., 2000). These awards stress the importance of total quality, customer satisfaction and management process to the attainment of superior competitive position. Many authors have highlighted the dangers of managers' mistaking the implementation of TQM for quality accreditation. Critiques of quality awards are also well rehearsed in the literature, calling into question the ubiquity and completeness of these awards (Bounds et al., 1994). Award-based framework is meant mainly for organizations seeking to be recognized as leaders in the quality management field, and it assumes that an organization has reached a mature level of TQM implementation (Yusof & Aspinwall, 2000). According to Botorff (2006), —From the

economics of quality, we know it is much cheaper to prevent failure than to let it happen, catch it, and then try to fix it. If organizations would practice ethics as the logic based discipline and quality problem it is, they would achieve higher levels of accuracy, repeatability, and performance. This, in turn, would result in better moral and economic outcomes for all involved, including themselves.

A considerable body of empirical evidence suggests that TQM implementation improves organisational performance. Using a random sample of 950 companies in Singapore, Brah et al. (2000) determined how an organisation could benefit from TQM implementation in terms of improved financial and operating performance. Kunst and Lemmink (2000) investigated the relationship between quality implementation and organisational performance in hospitals and discovered that TQM leads to higher business performance, which indicates efficiency, cost effectiveness, and higher perceived service quality by patients. In the Netherlands, Zhang (2000) reached almost similar conclusions. He found that quality implementations have a positive impact on product quality and TQM has much better effects on the overall business performance than ISO 9000. TQM improves many aspects of performance such as customer satisfaction and business performance (Martinez-Lorente et al., 2004; Parzinger & Nath, 2000). In the UK, Soltani and Lai (2007) found that International Organization for Standardization (ISO) series and other total quality management (TQM) models were seen as helping organizations in the journey towards business excellence.

This thesis evaluates whether working with TQM in general can affect the performance of companies. Hence, earlier published results describing the connection between TQM and performance are of great importance for the study. There are many different approaches to estimating the possible benefits of TQM. Historically, one of the most common ways to quantify the benefits of TQM has been to estimate the cost of poor quality, Juran (1989). In recent years, research has shown that TQM has a significant positive impact on market value as well as accounting returns (Andersson & Fornell, 1994). Another way to calculate the benefits of TQM is to balance expenditures against expected revenue gains and reduced costs (Rust & Zahorik, 1995). Samson & Terziovski (1999) show that the relationship between TQM practice and organizational performance is significant in a cross-sectional sense, in that TQM practice intensity explains a significant proportion of variance in performance. They also show further that

the categories of leadership, management of people and customer focus are the strongest significant predictors of operational performance. Moreover, the major findings of Allen & Kilmann (2001) show that higher levels of company performance are significantly correlated with greater use of TQM practices. McAdam & Bannister (2001) discuss the need for performance measurement with the TQM framework, and the fact that both hard and soft measures, and both management and employee perceptive measures should be used to measure the outcome of TQM. Product Quality Effectiveness; The quality of a product or service is dependent on the customer expectation in contrast with other suppliers, so when judging product quality it depends who is the customer. According to Demirbag and Tatoglu (2006), and Parast (2010) when companies‘ judge product quality effectiveness internally they measure it in terms of defects rate, rework cost, scrape cost. While Prajogo (2008) have measured product quality effectiveness in terms of the level of reliability it offers and the fitness of use and conformance with expectations.

The General Accounting Office study (GAO,1991), Which has one of the first studies trying to establish a link between TQM practices and the performance of companies, evaluated Malcolm Baldrige recipients and companies that had received a site-visit (i.e. companies that in a sense were close to winning an award). The main conclusion from the GAO study was that the companies investigated improved their operating results. Moreover, better employee relations were achieved, improved operating procedures were attained, greater customer satisfaction was accomplished, and an increased market share and profitability were gained. Many other articles also discuss the results from the GAO study; Shetty (1993), Bergquist & Ramsing (1999) use similar methods to those described in the GAO study (GAO, 1991).

Further, the findings of Oakland (1999) indicate that quality award recipients and applicants are unequivocal in their comments about the benefits of TQM and self-assessment for business results, including profitability, an increased market share and more satisfied customers. Quality award recipients like Texas Instruments Defense Group also claim that quality work can yield tremendous rewards (Junkins, 1994). Moreover Letza et al. (1997) have presented a thorough discussion of different studies concerning the effect of TQM on different performance measurements.

2.7 IMPLEMENTATION OF TQM:

Different firms implement the quality concept in different ways but in general it could be classified in the following five categories to reflect the evolution of the concept of quality: No customer concern / No inspection: (Zero Level) These companies do not focus on customers and incorporate management systems to measure or control the quality characteristics of their product and services. According to Moosa (1999), in countries like Pakistan, in many firms, usually there is no accountability for poor performance and in some firms it's up to the level of torturing the customers.

Quality Control: (Level 1) These organizations consider laboratory and testing of products as a main activity of quality management and invest in and develop their products/services management systems, these firms usually have quality control labs and departments testing and measurements make them react to nonconformities. Shewhart (2000) and Dodge (1999) have identified that most companies use statistical process controls for such measurements. While according to Moosa (2000) most manufacturing firms in Pakistan use quality controls for implementing TQM in their organizations.

Quality Assurance: (Level 2) these companies understand that a product is a result of many processes and unless these are controlled effectively quality cannot be delivered therefore they try to control all these processes that effect product/service quality. According to Kaynak(2004) and Brun (2010) most companies assure quality by using quality programs like ISO 9000, ISO 9000-2000, and other quality tools like Deming prize, affinity diagrams, Pareto charts. While according to Bhatti (2003) in Pakistan the popularity of ISO 9000 is making companies upgrade their processes from quality control to quality assurance however the degree of implementation varies considerably among different industries and firms.

Continuous Quality Improvements: (Level 3) The companies which come under this category do not just confer to the quality assurance but they realize that process improvements are directly proportional to competence, commitment and team work of employees, such organizations mobilize company wide campaigns for continuously developing skills of quality management at all levels and give assignments on weekly and monthly basis in cross functional teams. Researchers like Tari (2008) and Zehir (2010) identified that companies in the manufacturing industry in Australia use different

approaches for continuous quality improvements like just in time (JIT), zero defect mentality and quality circles. While according to Khan (2000) there are very few firms operating in Pakistan which fall under the category of continuous quality improvements.

Quality Award Models: (Level 4) these companies are global champions and dominate markets with their products/services. They set bench marks to others and for these companies quality means complete satisfaction of their customers and publics.

2.8 RELATIONSHIP BETWEEN TQM PRACTICES AND QUALITY PERFORMANCE:

A considerable body of empirical evidence suggests that TQM implementation improves quality performance of the company. It has been measured in various ways and found that the quality management model and specific practices, which best predict performance varies across the world (Adam et al., 1997; Prajogo and Sohal, 2004; Arumugam et al., 2008). The research framework for quality management proposed by Flynn et al. (1994) suggested that the inputs of this framework are the quality management (QM) practices while quality performance represents outcomes. Further, product design process, process flow management, and top-management support have significant correlation with quality performance (Flynn et al., 1995). Parzinger and Nath (2000) examined the link between TQM and software quality and found that TQM implementation improves the software quality and performance, and thus, increases customer satisfaction. Hasan and Kerr (2003) studied the relationship between TQM practices and organization performance in service organizations and discovered that TQM practices like top-management commitment; employee involvement; training; supplier quality; quality costs; service design; quality techniques, benchmarking; and customer satisfaction leads to higher productivity and quality performance. Prajogo and Brown (2004) conducted an empirical study within Australian organizations to investigate the relationship between TQM practices and quality performance, and the results indicated a strong and positive linkage. A study on ISO9000 certified organizations of Taiwan performed by Jeng (1998) examined linkage between six Quality Management practices and quality performance. He found customer focus as the most powerful discriminated practice of quality performance while remaining five practices showed low discriminating powers. Brah and Tee (2002) examined the relationship between TQM constructs and organization performance by measuring quality performance of Singapore companies. They found that implementation of TQM leads to quality performance and have positive correlation. A study utilizing Structural Equation Modelling (SEM) approach by Sanchez-Rodriguez et al., (2006) provided the insights into the current information technology (IT) and TQM theory and practice on operational and quality performance. They found TQM initiatives generate significant positive gains in

operational and quality performance. In line to this, Prajogo and Sohal (2004) also employed SEM approach to examine the multidimensionality of TQM in association with organization performance. Using empirical data collected from 194 Australian firms the finding support the proposition in pairing the mechanistic elements of TQM with quality performance and the organic elements with innovation performance. A recent empirical study conducted by Arumugam et al. (2008) explored the relationship between TQM practices and quality performance on ISO 9001:2000 certified manufacturing organizations in Malaysia. Analyzing empirical data drawn from 122 Malaysian organizations through correlation and multiple regression analyses, the finding revealed that TQM practices were found to be partially correlated with quality performance. They further found that customer focus and continuous improvement were perceived as dominant TQM practices in quality performance.

2.9 MAJOR PRINCIPLES OF TQM:

Before an organization can rip the benefit from TQM implementation, some principle would have to be enshrined into the organization's culture. This section of the literature reviews these principles in relation to TQM implementation. The principles are discussed below:

2.9.1 TOP MANAGEMENT COMMITMENT AND LEADERSHIP:

TQM requires effective change in organizational culture and this can only be made possible with the deep involvement/commitment of management to the organization's strategy of continuous improvement, open communication and cooperation throughout the organization. TQM implementation improves the organizational performance by influencing other TQM dimensions (Kaynak, 2003). According to Oakland (1993), 'to be successful in promoting business efficiency and effectiveness, TQM must start at the top with the chief executive'. Cooper and Ellram (1993), identified leadership as being critical in effecting organizational change most especially in the areas of building effecting relationship with suppliers and others involved in the process of value delivery. The commitment of leadership to the TQM

strategy as shown in their daily disposition to work will go a long way in motivating employees to deliver quality services that exceeds the expectation of customers.

Andrle (1994), noted that 'the implementation of TQM requires a clear long term leadership commitment'. To him, long term relationship with satisfied customers is an asset to the organization, thus, management must be committed to it. Andrle also stressed the importance of management in providing a 'customer focused support system' such as measurements, rewards and recognition for satisfying customers with the aim of building a positive relationship with customers.

Dale (1999) stated that it is the responsibility of the senior management team to create the organizational environment, atmosphere, values and behavior in which TQM can achieve its potential. In addition, Oakland (1993) stresses the importance of top management commitment for success in promoting business efficiency and effectiveness, moreover Oakland (1993) states that TQM must be truly organization-wide, and it must start at the top with the Chief Executive.

2.9.2 CUSTOMER FOCUS:

Focusing on customers is stressed by most authors of TQM literature to be an important part of TQM.

TQM is an ideology which is focused on the satisfaction of customer's need. Thus, most organizations try as much as possible to meet or exceed customer's expectation in their daily activity and also their long term plan (Andrle, 1994). TQM require organizations to develop a customer focused operational processes and at the same time committing the resources that position customers and meeting their expectation as an asset to the financial wellbeing of the organization. Filippini and Forza (1998) explained that it is necessary for organization to maintain a close link with their customers in order to know their requirements and to measure how it has been successful in meeting up to customers' requirements. According to Muffatto and Panizzolo (1995), a high level of customer satisfaction is obtained solely by providing services or products whose features will satisfy customer's requirements or needs. The customer's needs and expectation serve to drive development of new service offering. This is due to the fact that customers determine the quality level of service

delivered (Jablonski, 1992) Oakland (1993), noted that organizations are made up of a series of internal suppliers and customers. To him, this forms the quality chain of the company and it implies that every employee is a potential customer and supplier in the course of production. The process of production is structured in a way where each process have needs and expectation which must be fulfilled by others in the network of production. The effective fulfilment of these needs leads to the production of quality goods and services.

Shiba et al. (1993) define a customer as the person or group who receives the work that one carries out, and asserts that a business function without a customer should not be performed. Evans & Lindsay (1996) stress the importance of customer focus, and imply that any business has four goals: to satisfy its customers, to achieve higher customer satisfaction than its competitors, to retain customers in the long run and to gain market shares.

2.9.3 EMPLOYEE ENGAGEMENT & TOTAL INVOLVEMENT:

In the traditional sense, employee involvement was conceived to mean a ‘feeling of psychological ownership among organizational members’ (Harvey and Brown, 1996). Unlike what obtains in the TQM ideology, the traditional employee involvement is narrow-minded; it is job-centered rather than process-centered. The TQM approach involves ‘achieving broad employee interest, participation and contribution in the process of quality management’ (Dale and Cooper, 1993). The concept assumes a organization wide quality culture, which gives autonomy or a level of freedom to employees in taking decisions that affect their job. Thus, employees are encouraged to perform function such as information processing, problem solving and decision making (Dimitriades, 2000). This is supported by Omachonu and Ross (1994), who noted that intrinsic motivation is at the heart of TQM, where empowerment and involvement in decision making is viewed as essential for sustained result. The main aim for the total involvement of employee is to boost internal and external customer’s satisfaction by developing a flexible environment which allows for innovation.

In order to ensure that the quality strategy is successful; everybody has to be committed to customer satisfaction and to continuous quality improvement, (Bergman & KJefsjo, 1994). Moreover, Shiba et al. (1993) argue that everyone in the company

should be mobilized in order to improve the way in which they perform their jobs and satisfy customers.

Engagement is rooted in the psychology of human need. Engagement begins with involvement. Employee Engagement is the origin of competitiveness. “Employee engagement simply means that workers have a strong emotional bond to their organization. Then they actively involve themselves in the decision making process and feel more committed to their work, feeling that their jobs are important.” (Evans, 2011) Employee engagement is similar to Deming’s concept of “pride and joy” in the workplace. Employee engagement refers to any activity by which employees participate in work-related decisions and improvement activities. “Employee engagement offers advantages that increase employee morale and commitment to the organization and foster creativity and innovation, the source of competitive advantage. Furthermore, employee engagement improves organizational performance.” (Harter, et al., 2002).

2.9.4 CONTINUOUS IMPROVEMENT:

Continuous improvement means ‘a commitment to constant examination of the technical and administrative process in search of better methods’ (Fuentes-Fuentes et al, 2004). Turney and Anderson (1989) defined continuous improvement as the relentless pursuit of improvement in the delivery of value to customers. This was supported by Dean and Bowen (1994), who argued that customer satisfaction can be attained only through the relentless improvement of processes that create product or service.

Total quality management involves the design into the process of production, a system of continuous improvement. This contains regular cycles of planning, execution and evaluation (Muffatto and Panizzolo, 1995). According to Oakland (1993), ‘the focus on continuous improvement will lead to the formation of formidable team whose membership is determined by their work on the detailed knowledge of the process, and their ability to take improvement action’. TQM is concerned with the continuous improvement in all the process of production, from the levels of planning and decision making to the execution of work by the front line

staff. The principle behind the idea of continuous improvement is basically the idea that mistakes can be avoided and defects can be prevented. According to Stahl (1995), “continuous improvement refers to the constant refinement and improvement of products, services and organizational system to yield improved value to customers”. He further explained that the continuous look for ways in improving quality of product or service in the absence of customers’ complain may prevent a future problem. The continuous improvement process aims to identify and eliminate the cause of a mistake in order to prevent its reoccurrence. Fuentes-Fuentes et al, (2004) explained that organizations operating in a dynamic environment are liable to carry up continuous improvement in its operation; they explained that the face of competition changes faster in this environment as a result of the changes in customers’ needs, competitors’ activities and service/product innovation.

2.10 LIMITATIONS TO THE IMPLEMENTATION OF TQM

Oakland, (1995) identified factors that hinder the implementation of TQM. These include the thought that its implementation can be time consuming, bureaucratic, formalistic, rigid and impersonal. Ugboro and Obeng, (2000) in their research they found out that the halfhearted implementation of TQM is a major reason for its failure in most organizations. According to them, organizations are only willing to implement just those aspects of TQM which is supported by existing organizational culture. Their findings revealed that employees did not feel as part of the decision making process and their ability to make contributions to quality improvement were restricted due to the limited authority granted them to carry out their activities. Smith, (2004) explained that quality management programs have failed because they were ‘programs of the month’. According to him, implementing quality throughout an organization is not the result of a formalized Programme but requires a cultural change in the way activities is conducted. Andrlé, (1994) on his own assessment, claims that the adoption of incompatible quality approach by organizations results in the failure of TQM implementation, he further stressed that the delegation of quality leadership by managers might lead to the development of TQM bureaucracies that are ineffective like other functional departments.

According to Wilkinson et al (1998) the lack of commitment from any particular group within the organization can be a serious barrier in management of quality. Most especially the non-commitment by management to quality management is a major hindrance to the successful implementation of TQM. Asher (1996) observes that there is a need for management to drive the ideology of TQM process in order to encourage employees to follow and also to prove to them about management's commitment to quality.

Porter (1996) noted that TQM is essential for an organization's productivity and effectiveness but will not necessarily give an organization competitive advantage over her competitors. TQM does not address strategic business issues like differentiation and positioning strategies. McCabe and Wilkinson (1998) noted that the failure of TQM can be attributed to the inappropriate implementation method adopted by the firms employed and not because of the principles of TQM itself. They believed TQM could be successful if it is adequately planned for and implemented according to plan. Another reason for the failure of TQM is the emphasis given to individual rewards for TQM effort. This negates the recommendation made by Deming (1986), who argued that rewards needs to be tied to team work or department rather than individual. The failure of organizations to implement the rewards to group might lead to internal competition amongst employee and this will have a negative impact on team performance which TQM promotes.

High cost of providing quality service is a major hindrance to the implementation of TQM, in organizations.

2.11 CUSTOMER SATISFACTION

The focus on customer has become a part of quality movement. According to Haar et al (2008) successful implementation of TQM include customer retention and increase in market share. While according to Liusar et al (2009) customer focus leads to customer loyalty which can be achieved by providing customers with reliable, durable product/service. So customer focus in firms incorporates customer satisfaction, confidence, loyalty and reduction in complaints.

2.12 TQM AND CUSTOMER SATISFACTION:

Customer satisfaction can be defined in various ways. According to Kotler et al. (1996), satisfaction is —the level of a person’s felt state resulting from comparing a product’s perceived performance (or outcome) in relation to the person’s expectations. In brief, satisfaction level simply is a function of the difference between perceived performance and expectation (Stahl, 1999). Unlike the quality of goods, which may be tangible and measured objectively by using indicators such as performance, features, reliability etc, service quality, however, is not tangible and is thus defined in terms of ‘attitude’, ‘interaction’, and ‘perception’. Thus, service quality is judged by what a customer perceives rather than what a provider offers. To yield highly satisfied and loyal customers, organizations throughout the world are striving to produce products and services of superior quality. For decades, Customer satisfaction is considered to be the key success factors for every profit-oriented organization as it affects companies’ market share and customer retention. In addition, satisfied customers tend to be less influenced by competitors, less price sensitive, and stay loyal longer (Dimitriades, 2006). Oakland (1986) defined quality of a banking service as the degree to which it meets the requirements of the customer. So the total quality Programme has to be started by obtaining the customers’ perception of the service delivered and their expectation of the service to be provided by the company. It can also be learned from the internal feedback relationship created between the internal customer and supplier. These are the quality chains (Oakland, 1993). These will provide substantial contributions to enhance the process. No matter how efficient the administrative system of a company, it can produce zero defects only if the customers (internal and external) provide sufficient and accurate details to enable the quality process to meet their needs and expectations. According to the study of Yang (2006), TQM along with human resource management significantly affected quality performance, especially with regard to customer and employee satisfaction. According to Vora (2002), customer and employee satisfaction and streamlined processes together produce improved operational and financial results which will eventually lead to business excellence.

Agus (2004) in his study in Malaysia service sector finds that there is a strong and positive association between TQM and customer satisfaction. Saravanan and Rao

(2006) found the statistically significant correlation between the implementation of TQM practices and customer satisfaction and business. Service quality promotes customer satisfaction, stimulates intention to return, and encourages recommendations (Nadiri and Hussain, 2005). Customer satisfaction increases profitability, market share, and return on investment (Stevens et al., 1995; Legoharel, 1998). Tanninen et al. (2010) on his empirical study prove that the TQM approach affected the customer satisfaction results positively, so the business units that had started to apply TQM earlier had more satisfied customers than their less experienced counterparts.

2.13 CHALLENGES OF IMPLEMENTING TQM

Of primary interest among researchers has been addressing the question —What makes TQM work? Since most would agree that the philosophy and principles of TQM are sound, instances of failed TQM initiatives have led researchers to direct their attention to problems associated with its implementation. Consequently, several major research themes concerned with the successful implementation of TQM have emerged. There have been many studies that have focused on the obstacles to TQM (Ngai & Cheng, 1997). Several researchers have focused more directly on the obstacles that hinder the ability of organizations to make a successful transformation to TQM or quality management. Glover (1993) argues that TQM failures follow one of three patterns: conceptual weakness, design flaws, or ineffective implementation. Recognizing that TQM requires a true organizational transformation, Glover explains conceptual weakness as failures occurring because organizations make only —superficial attempts at change.

Design flaws occur when TQM systems are not designed to fit the cultural circumstances of the organization. The most common reason for failure include ineffective implementation which results when TQM becomes so much extra work instead of a new way of doing things Glover (1993). Glover also argues that without a change in management evaluation and reward policy, TQM cannot be taken seriously. He advocates —managers will need to know that their evaluations, and subsequent pay increases and bonuses, are dependent on having high levels of quality, satisfied staff and consumers, and successful TQM implementation in their respective areas of

responsibility In a study of companies that won the Australia Quality Award, Abraham, et al (1999) found the key factor in achieving a successful change to a quality culture was management support. They state—managers must be clearly perceived to support the change through communication, resource allocation, and recognition/reward

CHAPTER THREE

MATERIALS AND METHODS

3.1 Introduction:

This chapter will present the research framework and hypotheses that will test, the Section in methodology highlights the sampling procedures , the measurements of variables, the development of research instrument , the administration of data collection , and the statistical techniques that used to test the hypotheses are discussed.

3.2 Subjects:

An exploratory research at SUDAN CIVIL AVIATION AUTHORITY with one qualitative method used are focus group of Customers and employee interviewed by a questionnaire.

A convenience sample of customers (N=100) and employee (N=80) working SUDAN CIVIL AVIATION AUTHORITY in September 2017 was used for the study. The research protocol and questionnaires were approved by the civil aviation administration Prior to data collection. Approval of the project also was obtained from the director and assistant director of the authority.

3.3 Study Methods:

In This research we decided to follow the theoretical background of methodology and the quantitative design using a hypothesis testing approach, the data is then analyzed using statistical techniques, Also it is suitable for the study purpose and objectives and depending on literature review, this was judged to be the best way to boot realizable data and to be able to investigate the impact of implementing total quality management in employees and customers satisfaction in the Sudan Civil Aviation Authority .

3.4 Population and Sampling:

The population in the collection of units within which the survey will be conducted while sampling is the process of selecting units e.g employees , managers , customers , organizations ... etc from a population of interest.

The research is conducted in the Sudan Civil Aviation Authority. The researcher restricted the sample in the sectors of organization that related to the functional areas, and that depend on the number of the employees and the number of customers who has direct interactions with those employees in Sudan Civil Aviation Authority

3.5 Questionnaire design:

Two questionnaires were developed to identify the impact of total quality management in civil aviation related to customer satisfaction.

A 4-part questionnaire was developed to identify the relationship between the civil aviation authority and their customer; Part one was designed to measure customer focuses and included 4 questions, part two was designed to measure employee relationship and included 6 questions, part three was designed to measure procedures management and included 5 questions and the last part was designed to measure leadership commitment and included 5 questions. A 5-point Likert-type rating scale, ranging from one (1) “strongly disagree” to five (5) “strongly agree”, was used.

The second questionnaire was designed to identify the relationship between the civil aviation authority and their employee; included 19 questions. These questions were designed to measure employee satisfaction and which extent their performance can affect the customer satisfaction. also A 5-point Likert-type rating scale, ranging from one (1) “strongly disagree” to five (5) “strongly agree”, was used .

3.6 Study procedures:

The procedure conducting this study, according to the Preparation of the study measurements of the final image that was identified the study sample after that Distributed the study tool on the study sample, and retrieval, where distributed (100) questionnaires for the customers and (80) questionnaires for the employee, were have been received (100) and (80) from both of them, which formed the study sample.

And then were Entered the data into the computer and processed statistically using the

Statistical Package for Social Sciences (SPSS) and finally Extracting, analyzing and discussing the results.

3.7 Statistical Processing:

Data are encoded and processed statistically using the Statistical Package for Social Sciences (SPSS).

Which Statistically processors used Descriptive statistics including frequencies, medians, Person correlation coefficient and standard deviations were calculated for all variables as appropriate. Non-parametric Chi-square parametric test was used to examine the hypotheses of this study.

3.8 Ethical consideration:

Participant's opinions were treated honestly, fairly and respectfully. Professional and scientific responsibilities were adhering to sticking to highest scientific and professional standard and accept response. Information provided by participants were kept confidential and used only for this study.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSIONS OF RESULTS

4.1 Introduction:

In this section, data analysis for the study and test of its hypotheses will be done. To do that, firstly we consider the instruments of applied study, which contain the description of the population of the study and its sample, method of collection data, reliability and validity of the tool, and the statistical treatments for the methodology of the study will be shown here.

4.2 Population and Sampling of the Study:

The original population for this study is all the employees and the customers in the targeted Sudan Civil Aviation Authority. The researcher used the simple random sampling to select the people whom their satisfaction measured. The following table shows the number of distributed questionnaire, the number of received questionnaire with full-required information and the responses percentage.

No.	Name	Distributes questionnaire	Received questionnaire	% of received
1	Employees satisfaction	80	80	100%
2	Customers satisfaction	100	100	100%

Table no.(4-1): Study sample size

4.3 Reliability and Validity of the Questionnaire:

4.3.1 Apparent Reliability and Validity:

In order to check the apparent validity for the study questionnaire and validation of its Statements according to the formulation and explanation, the researcher showed the questionnaire to the quality management system ISO auditors who are specialists in the study field. Some of the auditors make some suggestions; others agreed that the questionnaire is suitable. In any way, the researcher studied all suggestions, and some corrections on his questionnaire have been done. The following table is showing the auditors and their jobs and places of work.

Table (4-2): The questionnaire's referees and their jobs and places of work

No	Name	Job	Title
1	Dr.Muhammed Hassan Ismaiel	professor	Sudan University of Science and Technology
2	Dr.Ahamed Mousa	professor	Open University of Sudan

4.3.2 Statistical Reliability and Validity:

It is meant by the reliability of any test, to obtain the same results if the same measurement is used more than one time under the same conditions. In addition, the reliability means when a certain test was applied on a number of individuals and the marks of every one were counted; then the same test applied another time on the same group and the same marks were obtained; then we can describe this test as reliable. In addition, reliability is defined as the degree of the accuracy of the data that the test measures. Here are some of the most used methods for calculating the reliability:

1. Split-half by using Spearman-Brown equation.
2. Alpha- Cronbach coefficient.
3. Test and Re-test method
4. Equivalent images method.
5. Guttman equation.

On the other hand, validity also is a measure used to identify the validity degree among the respondents according to their answers on certain criterion. The validity is counted by a number of methods, among them is the validity using the square root of the (reliability coefficient). The value of the reliability and the validity lies in the range between (0-1). The validity of the questionnaire is that the tool should measure the exact aim, which it has been designed for.

The researcher calculated the validity statistically using the following equation:

$$\text{Validity} = \sqrt{\text{Reliability}}$$

the results have been showed in the following table:

Reliability and validity

Alpha Cronbach's coefficient	Validity
0.945	0.972

We note from the results of above table that all reliability and validity coefficients for pre-test sample for overall questionnaire, are greater than (50%), and some of them are nearest to one. This indicates to the high validity and reliability of the answers, so, the study questionnaire is valid and reliable, and that will give correct and acceptable statistical analysis.

4.4 Statistical Instruments:

In order to satisfy the study objectives and to test its hypotheses, we use the following statistical instruments:

1. Frequency distribution.
2. Person correlation coefficient.
3. Spearman-Brown equation for calculating Reliability coefficient.
4. Median.
5. Non-parametric Chi-square test.

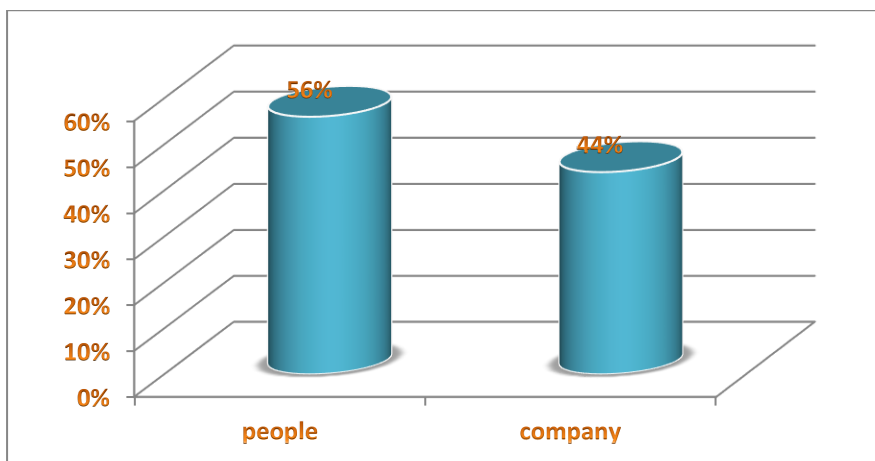
In order to obtain accurate results, Statistical Package for Social Sciences (SPSS) was used.

Table (4-3)

Customers

	Frequen cy	Percent
people	56	56%
compan y	44	44%
Total	100	100%

Fig (4-1):



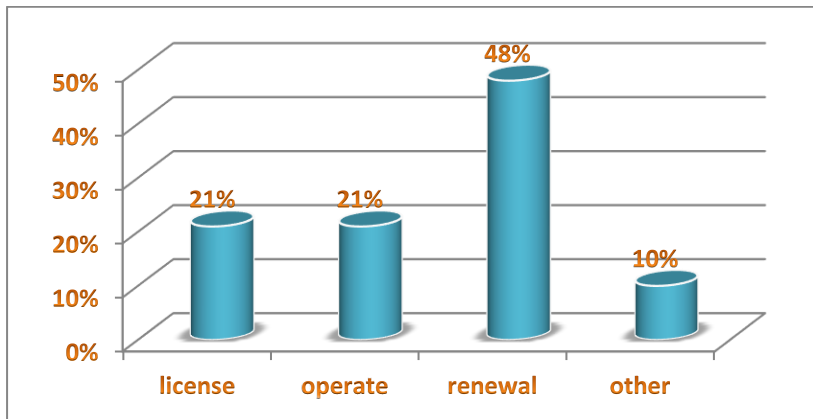
The table (4-3) and fig (4-1) showing that, the majority of individual study is (people) with percentage 56%

Table (4-4)

Type of service

	Frequen cy	Percent
licens e	21	21%
opera te	21	21%
rene wal	48	48%
other	10	10%
Total	100	100%

Fig (4-2):



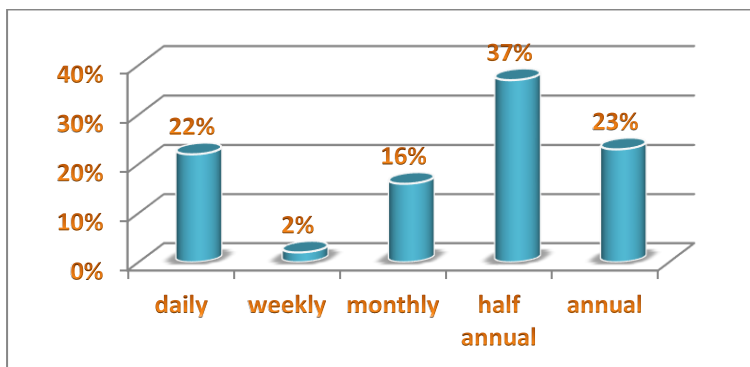
The table (4-4) and fig (4-2) showing that, the majority of individual study is get (renewal) service with percentage 48%

Table (4-5)

Frequency of providing services

	Frequency	Percentage
daily	22	22%
weekly	2	2%
monthly	16	16%
half annual	37	37%
annual	23	23%
Total	100	100%

Fig (4-3):



The table (4-5) and fig (4-2) showing that, the majority of individual study (providing services) is (half annual) with percentage 37%.

4.5 TEST STATISTICAL OF HYPOTHESIS 1 (Customer Satisfaction):

4.5.1 First Hypotheses:

Table (4-6)

Showing the descriptive answers of sample study

s. disagree	Disagree	don't know	Agree	s. agree	Phrases
12	29	15	36	8	The SCAA meets the needs of customers
18	31	11	24	14	SCAA offers all the convenience to me as a customer to carry out the duties of the direction of my clients
27	30	17	13	13	SCAA has a clear mechanism to receive complaints and proposals FROM customers.
20	29	20	23	3	As a customer I have a high level of satisfaction toward SCAA.

Table (4-7)

Chi-square test

Meaning of mode	mode	p-value	Chi-square	Phrases
agree	4	0.000	28.500	The SCAA meets the needs of customers
Disagree	2	0.011	13.122	SCAA offers all the convenience to me as a customer to carry out the duties of the direction of my clients
Disagree	2	0.012	12.800	SCAA has a clear mechanism to receive complaints and proposals FROM customers.
Disagree	2	0.000	20.200	As a customer I have a high level of satisfaction toward SCAA.
Disagree	2	0.000	48.156	Hypotheses

- The value of chi-square for all phrases in the first hypothesis (48.156), with (p-value =0.000< 0.05) and depending on the table (4-6), this indicates that there is significant differences at the level (5%) between answers of study individuals benefit disagree.

4.5.2 Second Hypotheses:

Table (4-8)

Showing the descriptive answers of sample study

s. disagree	Disagree	don't know	Agree	s. agree	Phrases
18	19	14	33	16	The SCAA employee are friendly and helpful.
17	27	22	21	13	The communication process between SCAA employees and me as a customer is carried out effectively.
16	26	22	27	9	The SCAA employees have the ability to listen, understand and answer all my questions.
19	43	8	26	4	The SCAA employees perform the procedures in a timely manner.
20	27	21	27	7	The SCAA employees are experienced enough to provide service and benefit.

14	29	23	27	7	The SCAA Employees meet all due obligations as a customer.
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Table (4-9)
Chi-square test

Meaning of mode	mode	p-value	Chi-square	Phrases
Agree	4	.023	11.300	The SCAA employee are friendly and helpful.
Disagree	2	.231	5.600	The communication process between SCAA employees and me as a customer is carried out effectively.
Agree	4	.025	11.300	The SCAA employees have the ability to listen, understand and answer all my questions.
Disagree	2	.000	48.300	The SCAA employees perform the procedures in a timely manner.
Agree	4	.003	16.200	The SCAA employees are experienced enough to provide service and benefit.
Disagree	2	.002	17.200	The SCAA Employees meet all due obligations as a customer.
Disagree	2	0.000	74.950	Hypotheses

- The value of chi-square for all phrases in the second hypothesis (74.95), with (p-value =0.000< 0.05) and depending on the table (4-9), this indicates that there is significant differences at the level (5%) between answers of study individuals benefit disagree.

4.5.3 Third Hypotheses:

Table (4-10)

Showing the descriptive answers of sample study

s. disagree	Disagree	don't know	Agree	s. agree	Phrases
30	30	12	16	12	The SCAA notify me as a customer of any defect that occurs before sufficient time.
27	32	16	22	3	The SCAA gives The validity of the operation in case of malfunction is delayed.
21	35	30	19	5	The SCAA deals with complaints issued by me as a customer seriously.
20	34	24	18	4	The SCAA Effectively address the problems resulting from such complaints.
22	28	18	24	8	The SCAA Provide information that is useful and helpful to customers to help them do the right thing.

Table (4-11)

Chi-square test

Meaning of mode	mode	p-value	Chi-square	Phrases
S.disagree	1	.002	17.200	The SCAA notify me as a customer of any defect that occurs before sufficient time.
Disagree	2	.000	25.100	The SCAA gives The validity of the operation in case of malfunction is delayed.
Disagree	2	.000	22.600	The SCAA deals with complaints issued by me as a customer seriously.
Disagree	2	.000	23.600	The SCAA Effectively address the problems resulting from such complaints.
Disagree	2	.021	11.600	The SCAA Provide information that is useful and helpful to customers to help them do the right thing.
Disagree	2	0.000	86.060	Hypotheses

- The value of chi-square for all phrases in the third hypothesis (86.06), with (p-value =0.000< 0.05) and depending on the table (4-11), this indicates that, there is significant differences at the level (5%) between answers of study individuals benefit disagree.

4.5.4 Fourth Hypotheses:

Table (4-12)

Showing the descriptive answers of sample study

s. disagree	Disagree	don't know	Agree	s. agree	Phrases
20	27	19	25	7	SCAA Leadership is constantly improving to increase customer satisfaction.
19	28	22	22	9	SCAA Leadership is Evolution of the efficiency of its operations that help in providing service to customers.
23	39	15	20	3	At the general level I am a satisfied customer for the services provided by the SCAA.
3	9	6	29	53	When Implementing quality in the SCAA, it increases customer satisfaction effectively

Table (4-13)

Chi-square test

Meaning of mode	mode	p-value	Chi-square	Phrases
Disagree	2	0.008	13.800	SCAA Leadership is constantly improving to increase customer satisfaction.
Disagree	2	0.046	9.700	SCAA Leadership is Evolution of the efficiency of its operations that help in providing service to customers.
Disagree	2	0.000	34.200	At the general level I am a satisfied customer for the services provided by the SCAA.
s. agree	5	0.000	88.800	When Implementing quality in the SCAA, it increases customer satisfaction effectively
Disagree	2	0.003	16.028	Hypotheses

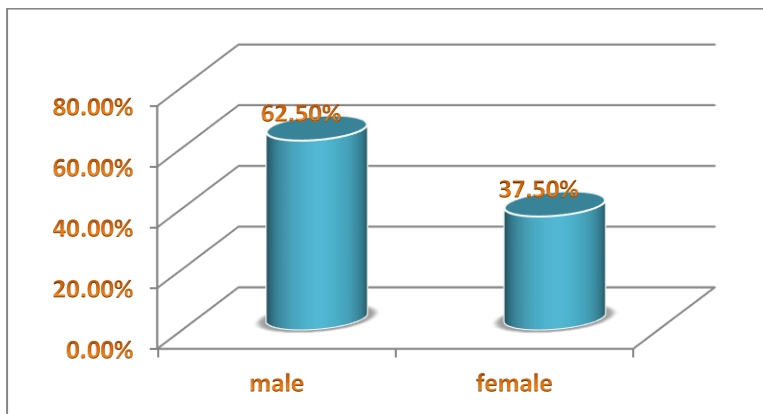
- The value of chi-square for all phrases in the first hypothesis (16.028), with (p-value =0.003< 0.05) and depending on the table (4-13), this indicates that there is significant differences at the level (5%) between answers of study individuals benefit disagree

Table (4-14)

Gender

	Frequency	Percent
male	50	62.5%
female	30	37.5%
Total	80	100%

Fig (4-4)



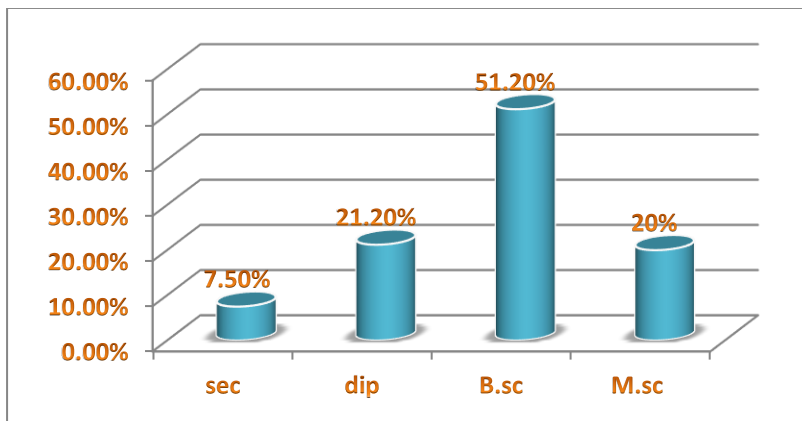
The table (4-12) and fig (4-4) showing that, the majority of individual study is (male) with percentage 62.5% .

Table (4-15)

Level of education

	Frequency	Percent
sec	6	7.5%
dip	17	21.2%
B.sc	41	51.2%
M.sc	16	20%
Total	80	100%

Fig (4-5)



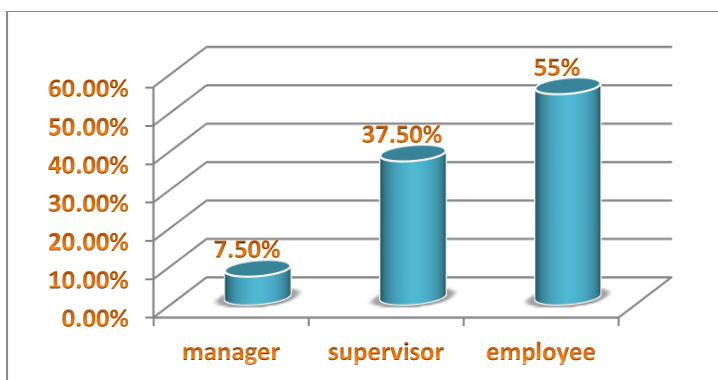
The table (4-15) and fig (4-5) showing that, the majority of individual study is getting (B.sc) with percentage 51.20%

Table (4-16)

Job title

	Frequency	Percent
manager	6	7.5%
supervisor	30	37.5%
employee	44	55%
Total	80	100%

Fig (4-6)



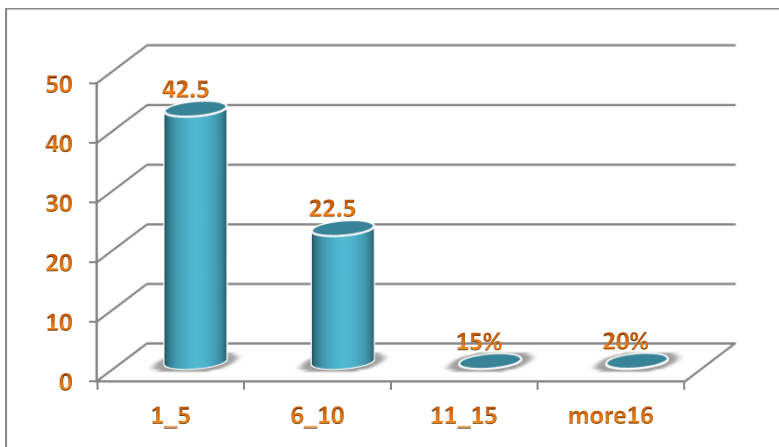
The table (4-16) and fig (4-6) showing that, the majority of individual study is (employee) with percentage 55%.

Table (4-17)

Experience

	Frequency	Percent
1_5	34	42.5
6_10	18	22.5
11_15	12	15%
more16	16	20%
Total	80	100%

Fig (4-7):



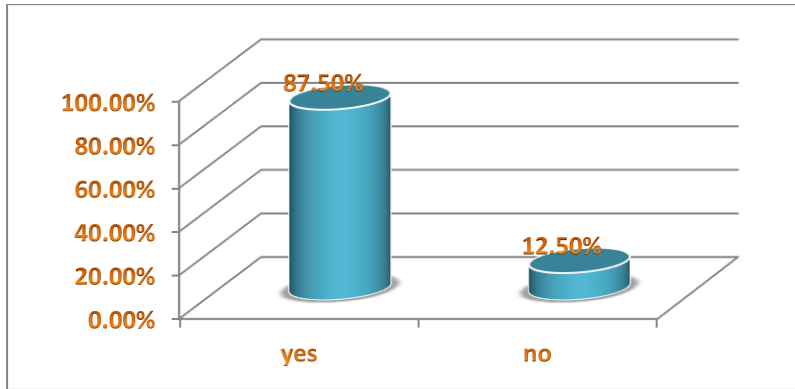
The table (4-17) and fig (4-7) showing that, the majority of individual study experience from (1-5) year with percentage 42.5%

Table (4-18)

Total quality

	Frequency	Percent
yes	70	87.5%
no	10	12.5%
Total	80	100%

Fig (4-8):



The table (4-18) and fig (4-8) showing that, the majority of individual study is say (yes) with percentage 87.5%

4.6 STATISTICAL TEST OF HYPOTHESIS 2 (Employee Satisfaction):

Table (4-19)

Showing the descriptive answers of sample study

s. disagree	Disagree	don't know	Agree	s. agree	Phrases
3	2	15	40	20	SCAA gives grate attention to industry partner's
0	4	4	57	15	SCAA follows in its procedures the universal laws according to ICAO .
8	6	4	29	33	Weak employee motivation is one of the key factors affecting performance

3	5	7	47	20	SCAA needs to change in the core part of customer needs
11	8	17	32	12	SCAA encourages their staff to continuously seek improvement opportunities
9	12	14	36	9	SCAA Provide adequate training for staff to enable them to deal effectively with Customers.
4	7	7	37	25	There are some obstacles and problems facing the implementation of plans and policies
15	11	19	26	9	Top management in SCAA appreciates my efforts to develop various plans to meet customer needs
13	13	22	23	9	Top management focuses on employee satisfaction
13	10	20	30	7	For me as employee I am satisfied with the work system
13	14	20	24	9	The working environment is positive and promising
18	7	23	25	7	SCAA Provide

					adequate and sufficient resource to help perform the work efficiently
18	18	17	22	5	SCAA has a clear mechanism for receiving complaints and proposals from customers .
19	3	20	31	7	SCAA Provides periodic feedback to staff and performance assessment
16	8	19	30	7	Top management has a good working relationship with staff.
13	7	23	30	7	Top management involves employees in all activities of the SCAA.
5	8	11	33	23	For me as employee I am satisfied with my performance and the value I offer to SCAA.
17	22	22	10	9	There is an upgrade and stimulation system in SCAA.
14	17	15	22	12	There is a clear job description for all employees in SCAA.

Table (4-20)

Chi-square test

Meaning of mode	mode	p-value	Chi-square	Phrases
Agree	4	0.000	59.875	SCAA gives grate attention to industry partner's
s. Agree	5	0.000	95.300	SCAA follows in its procedures the universal laws according to ICAO .
Agree	4	0.000	47.875	Weak employee motivation is one of the key factors affecting performance
Agree	4	0.000	76.750	SCAA needs to change in the core part of customer needs
s. Agree	5	0.000	22.625	SCAA encourages their staff to continuously seek improvement opportunities
Agree	4	0.000	32.375	SCAA Provide adequate training for staff to enable them to deal effectively with Customers.
Agree	4	0.000	51.750	There are some obstacles and problems facing the implementation of plans and policies
Agree	4	0.021	11.500	Top management in SCAA appreciates my efforts to develop various plans to meet customer needs
Agree	4	0.05	9.500	Top management focuses on employee satisfaction
Agree	4	0.000	21.125	For me as employee I am satisfied with the work system

Agree	4	0.064	8.875	The working environment is positive and promising
Agree	4	0.001	18.500	SCAA Provide adequate and sufficient resource to help perform the work efficiently
Agree	4	0.035	10.375	SCAA has a clear mechanism for receiving complaints and proposals from customers .
Agree	4	0.000	31.250	SCAA Provides periodic feedback to staff and performance assessment
Agree	4	0.000	21.875	Top management has a good working relationship with staff.
Agree	4	0.000	26.000	Top management involves employees in all activities of the SCAA.
Agree	4	0.000	34.250	For me as employee I am satisfied with my performance and the value I offer to SCAA.
Disagree	2	0.043	9.875	There is an upgrade and stimulation system in SCAA.
Agree	4	0.459	3.625	There is a clear job description for all employees in SCAA.
Agree	4	0.000	3.426	Hypotheses

- The value of chi-square for all phrases in the hypothesis (3.420), with (p-value =0.000< 0.05) and depending on the table (4-20), this indicates that there is significant differences at the level (5%) between answers of study individuals benefit agree.

4.6 Results:

- There is a high level of Employees satisfaction.

There is no statistically difference between implementing Total Quality Management and Employees satisfaction.

- There is no high level of Customers satisfaction.

There are statistically difference between implementing Total Quality Management and Customers satisfaction.

CHAPTER 5

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5-1 Discussion:

5-1-1 Employees Satisfaction Results:

The impact of implementing TQM in customer satisfaction case study SUDAN CIVIL AVIATION is very clear . According to the main hypotheses of this research. there is significant, positive relationship between implementing Total Quality management on SCAA and customer satisfaction.

we find that the employees are highly satisfied with the job as the calculated value of the chi-square is (3.426) which support the respondents' answers who agree with that implementing TQM leads to employee satisfaction .This is because, employees are highly satisfied with the job itself and this is because as the top management said , the school management keens to choose the employees who love their work and also does many interviews and tests before choosing and recruiting them . Moreover, they are well trained to develop their knowledge and skills so as to improve their performance which leads to the increase of the satisfaction of the job itself. Although employees said that there is no continuous follow up for the training outcomes.

Employees also see that their work environment allow them to work with high efficiency and optimum quality since, the Organization applying the law and regulation guidelines and providing suitable training, also all the information will communicated in easy way. finally, Organization are motivate the employees who have did an excellent job.

Moreover, employees are satisfied with materials of work in the organization, regarding to sanitation, ventilation, order, work instruments and tools is adequate, the

physical evidence as the researcher noticed the organization buildings are nice and well equipped with adequate tools and instruments.

Also , Employees are also satisfied about the extent of individual needs and wants ,because my job allows me to achieve my objectives (dreams through my competent job performance), through a good financial compensation like year incentive and reward for achieving the noted plan.

On the other hand, Employees are satisfied about the company policies and system about employees promotion,

5-1-2 Customers satisfaction results:

According to the main research hypotheses:-

The impact of implementing TQM in customer satisfaction case study SUDAN CIVIL AVIATION.

We find that the parents are satisfied as the calculated value of chi-square is (79.80) and this is because customers are satisfied with the services supply which is achieving the customer needs, also, they showing satisfaction upon the service quality which is present in excellent way

There is a satisfaction level from customer regarding to the impact of implementation of TQM on service ,showing that The organization service are not reflecting a positive quality reputation and the organization is usually addresses the complaints on their service quality and has not complaint system, to fix the problem and maintain the good quality standards.

Moreover, there is no high level of customer satisfaction with the communication between them and the organization because also there is no effective communication regarding to the customer feedback from the market.

In general customers are less satisfied than the employees so we can say that TQM has more positive impact on employees satisfaction than on customers satisfaction .

5-2 Conclusion:

In all fields especially Aviation , quality is an important matter and quality management method like TQM is an effective philosophy for improving performance and has a direct influence on the customer satisfaction . According to this study in which the researcher aimed to measure the impact of implementing TQM in customer satisfaction, implementing TQM in these organization leads to employees satisfaction and customer satisfaction as well and this leads to the recommendation for generalizing implementation of this method in all the aviation companies in Sudan.

Also, practicing the TQM has direct impact on the quality of service by appraisal the processes ,which may decrease the defect in these service and minimizing the failure whether is internal or external.

5-3 Recommendations:

In the summary of this study, and as a result of the interview with some managers ,employees and customers ,we recommend the following:

Obviously before beginning the process the organization management should explain the concepts of quality management and the quality management system to all employees and outlines the expected advantages of TQM implementation. It should organize awareness sessions covering TQM requirements, with the aim of the taking ownership of assessing the validity of these philosophy.

Use the TQM philosophy to monitoring and measuring equipment and the daily output to increase the accuracy of process and other quality assessment tools and adopt new methods for assessing evaluation and measuring quality standard in the organization.

Explain to the workforce that the system has a lot of benefit related to the people who maintained the system.

Enhance and upgrade the material's work for employees so as to raise quality of service and limited the processes time and motivate them because without motivated people , the system will eventually fail because people are the active force behind any system.

Also, the importance of following up training outcomes and identifying strengths and weaknesses and use a training program to fill all the gabs when implementing the system and find the best way for employee promotion against the performance appraisal Moreover, do this usually.

Develop a new system for complaints and received customer proposal.

The customer suggestion should be consider and the feedback should reflected on the good or services.

The customer should involve in the strategic plan of the organization by means of sharing the ideas which has definite impact on customer satisfaction. Top management in organization should support TQM practicing and cares for its continuous improvement because it is the stepping stone towards quality excellence.

ISO certificate should be target it, as a process of continues improvement , taking the organization for the high level of quality standard.

The organization which implemented the TQM should think about the stage after this and to implement the excellence .

From all the results we came to, we can say that we should generalize the experience of the aviation implementing TQM to all the aviation companies in Sudan provinces as it leads to employees satisfaction and customer satisfaction.

5-4 Suggestions:

The researcher suggests conducting more researchers and future studies in this field such as :-

- A research to investigate the impact of implementing TQM in customer satisfaction in the secondary level .
- A research to examine TQM adoption reduces waste and defects which would be reflected in the cost of the service presented in organization.

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