T.C.
SAKARYA UNIVERSITY
INSTITUTE OF SOCIAL SCIENCE
POLİTİCAL SCİENCE AND PUBLİC ADMİNİSTRATİON

IMPLEMENTATION OF TOTAL QUALITY MANAGEMENT AND ITS EFFECT ON ACHIEVING SUSTAINABLE DEVELOPMENT IN DEVELOPING COUNTRIES-AN EMPIRICAL RESEARCH

Dalia MALİK

DOCTORAL THESIS

Thesis Advisor: Assoc. Dr. Özer KÖSEOĞLU

AUGUST - 2021

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“ This thesis was defended online on 02/08/2021 and was unanimously accepted by the jury members whose names are below ”

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DALIA MALIK

02/08/2021

ACKNOWLEDGMENTS

Thanks first to God Almighty, who has guided me to write this research and my success is nothing but God. Then, I extend my sincere thanks and great gratitude and appreciation to the honorable professor Dr. Özer KÖSEOĞLU who supervised this research, and who did not skimp on his strong instructions that had a great impact on the completion of this work.

I also offer great thanks and gratitude to the professors of the esteemed research committee, Prof, Dr. Zeynel Abıdin KILINÇ and Dr. Esra DİL, who have spared no effort in providing advice and guidance. They have all my thanks and appreciation. I can only express my sincere thanks and appreciation to the professors, members of the discussion committee, Dr. Uğur SADİOĞLU and Dr. Cenay BABAOĞLU, for accepting to discuss and judging this research.

I also extend special thanks to all teaching staff members of the Department of Political Science and Public Administration at Sakarya University. My great thanks are also to the managers and employees of the Sudanese Company for Petroleum Pipelines for their help, and to everyone who contributed or stood by my side in writing this research in its various phases. For all of them I send my thanks and appreciation

Dalia MALIK

02/08/2021

CONTENTS

ABBREVIATIONS

ISO	**:** International Standards Organization
OHSAS	**:** Occupational Safety and Health Standards
TQM	**:** Total Quality Management
SD	**:** Sustainable Development
SPPC	**:** Sudanese Petroleum Pipelines Company
PDOC	**:** Petro Dar Oil Company
PETCO	**:** Petroleum Corporation
SCOS	**:** Sudanese Company for Construction and Oil Services
WQT	**:** Welder Qualification Test
ATMOS	**:** Atmospheric, Oceanic and Hydrologic Simulation
CANECO	**:** Calculation and diagrams for Low Voltage electrical installations Organization
UT	**:** Unit Testing
WPS	**:** Workplace Solutions
SITCO	**:** Shanghai International Trading Company
SCADA	**:** Supervisory Control and Data Acquisition
MCC	**:** Monitoring and Control Centre
RTUs	**:** Remote Terminal Units (RTUs)
API-6D&API-598	**:** American Petroleum International Standards in maintaining and controlling the quality of valves
TBN	**:** Total Base Number
EGAC	**:** Egyptian National Accreditation Council
ISO / IEC 17025	**:** Laboratory accreditation certificate in the field of testing

SUDATEL **:** Sudan Telecommunication Company

SUDAKAD **:** Sudan Academy

NFPA **:** International Fire Protection Association

OSHA **:** American Occupational Safety and Health Administration

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ABSTRACT

Title of Thesis: Implementation of Total Quality Management and its Effect on Achieving Sustainable Development in developing Countries : An Empirical Research

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Accepted Date: 02/08/2021 **Number of Pages:** xiii (pre text)+ 243 (main body) + 5 (app)

This study highlights the strategic role total quality plays in achieving sustainable development in organizations. The theoretical part discussed how to integrate total quality principles and concepts as a strategy to achieve competitive advantage. In addition, various total quality models adapting to environmental, social, and economic considerations in the framework of sustainable development were discussed. Which is derived from ISO 9000, 18000.26000.14000 certifications.

In the applied part of the study about Sudanese Petroleum Pipelines Company investigated the strategic role total quality plays in achieving sustainable development through interviews and questionnaires and found that the company relies on an average level on the total quality strategy to achieve sustainable development.

The study revealed that obtaining ISO 9000 specifications enables organizations to reduce costs and waste, improve productivity through operations and product quality, gain customer satisfaction, strengthen competitiveness, increase market share, and added value, improve financial performance, and build a good reputation. Thus contribute to achieving sustainable development in economic terms. Moreover, obtaining ISO 14000 certification leads to rationalizing energy consumption and natural resources, reducing pollution, conforming to environmental laws and legislation, protecting consumers, achieving export requirements, and well prominence. Thus, achieving sustainable development in environmental terms. While ISO 26000, and OHSAS 18000 adoption leads to reduced workplace accidents, in addition to a high degree of job satisfaction, thus achieving sustainable development in the social dimension. The study concluded that the organization's use of ISO 9000, 14000, 26000 and 18000 specifications in an integrated and continuous manner contributes to achieving sustainable development.

Keywords: Total Quality, Total Quality Strategy, ISO Standards, Sustainable Development, Sudanese Petroleum Pipelines Company.

ÖZET

Başlık: Toplam Kalite Yönetiminin Uygulanması ve gelişmekte Olan Ülkelerde Sürdürülebilir Kalkınmanın Sağlanmasına Etkisi: Ampirik Bir Araştırma

Yazar: Dalia MALİK

Danışman: Doç. Dr. Özer KÖSEOĞLU

Kabul Tarihi: 02/08/2021 **Sayfa Sayısı:** xiii (ön kısım) + 243 (tez) + 5 (ek)

Bu çalışma, kuruluşlarda sürdürülebilir kalkınmanın gerçekleştirilmesinde toplam kalitenin oynadığı stratejik rolü vurgulamayı amaçlamaktadır. Teorik kısım, toplam kalite ilkeleri ve kavramlarının rekabet avantajına ulaşmak için bir strateji olarak benimseyin sunmaktadır. Ayrıca ISO 9000, 18000. 26000,14000 sertifikalarına dayanarak; sürdürülebilir kalkınma çerçevesinde çevresel, sosyal ve ekonomik hususlara uyum sağlamaya çalışan çeşitli toplam kalite modelleri tartışılmaktadır.

Çalışmanın, Sadanese Petroleum Pipelines Şirket ile ilgili çalışmanın uygulamalı bölümünde, görüşmeler ve anketler aracılığıyla toplam kalitenin sürdürülebilir kalkınmaya ulaşmada oynadığı stratejik rolü araştırdı ve şirketin sürdürülebilir kalkınmayı sağlamak için ortalama bir düzeyde toplam kalite stratejisine güvendiğini bulunmaktadır.

Çalışma, ISO 9000 şartlarının elde edilmesinin kuruluşların maliyetleri ve israfı azaltmasını sağladığını ortaya koymaktadır. Operasyonlar ve ürün kalitesi ile verimliliği artırması, müşteri memnuniyeti sağlaması, rekabet gücünü güçlendirmek, pazar payını ve katma değeri artırması, finans performansını iyileştirmek ve iyi bir itibar oluşturmak ve böylece ekonomik açıdan sürdürülebilir kalkınmaya ulaşmaya katkıda bulunmaktadır. Ayrıca, ISO 14000 sertifikasının alınması, enerji tüketiminin ve doğal kaynakların rasyonelleştirilmesine, kirliliğin azaltılmasına, çevre yasalarına ve mevzuatına uyulmasına, tüketicilerin korunmasına, ihracat gerekliliklerinin yerine getirilmesine ve iyi bir üne ulaşmaktadır. Böylelikle çevresel açıdan sürdürülebilir kalkınmanın sağlanmaktadır. ISO 26000 ve OHSAS 18000'in benimsenmesi, yüksek derecede iş tatmini yanında iş kazalarının da azalmasını sağlarken, böylece sosyal boyutta sürdürülebilir kalkınmanın sağlanmaktadır. Buna göre, kuruluşun ISO 9000.14000.26000 ve 18000 şartlarını bütünleşmiş ve sürekli bir şekilde kullanmasının sürdürülebilir kalkınmanın sağlanmasına katkı sağladığı söylenebilmektedir.

Anahtar Kelimeler: Toplam Kalite, Toplam Kalite Stratejisi, ISO Standartları, Sürdürülebilir Kalkınma, Sudan Petrol Boru Hatları Şirketi.

INTRODUCTION

This study explores how Total Quality Management (TQM) can act as a foundation and key catalyst for enhancing sustainable development within public industrial enterprises taking Sudan as a case study.

Assessing development through public enterprise performance is not a simple task. The operation process, and their goals, differ from the private ones. Private enterprises are affected mainly by market mechanisms. While political and social conditions affected public enterprises' functions.

Public enterprises play an essential role in the development process as they are established to achieve specific economic and social goals. However, reviewing the literature has shown that public enterprises do not significantly share in the development process, especially in developing countries, due to internal and external factors. According to Rondinelli's (2008: 21) study, many public enterprises suffer from inefficiency and ineffectiveness that comes with the lack of market competition and the pressure of the stakeholders to improve that we find in the private sector, which results in low-quality, ending with great dissatisfaction and frustration with no many signs of improvement.

Recently, with the challenges of globalization, the growing across-board economic interaction, and the numerous pressures and calls for protecting the environment and rationalizing resources and energies. Public enterprises become aware that their survival is increasingly linked to their ability to speed and interact with a volatile environment.

In the face of all these challenges and the changing environment, efforts are required from both governments and public enterprises to adopt administrative approaches and modern concepts that allow them to face environmental threats and maintain their competitive position and develop it.

Perhaps one of the most critical administrative approaches that can achieve this bet for these organizations is the quality of the products and services, in addition to the concept of sustainable development, which has become imposing since its emergence on all economic, social, political, and other entities. It is spread in most of the world's developed and developing countries and is adopted by official and non-official bodies.

The researcher tried to investigate the studies that have a direct or indirect relationship with our theme of improving total quality strategy in public enterprises to support sustainable development. As our case in this study is a developing country (Sudan). We reviewed the relevant literature of the developing countries, which have similar economic and political systems with Sudan. We tried to find case studies and empirical results from public sectors of developing economies.

This study is distinguished from previous studies. It examined the relationship between the application of total quality management and the achievement of excellence in institutional performance, comes by obtaining quality certificates, and the effect of that link on achieving sustainable development in its three social, economic and environmental dimensions. In contrast most of the studies focused on total quality only and on measuring performance efficiency or organizational development. They did not address the identification of total quality management applications that affect sustainable development.

The researcher tried in this research, through addressing various tools and principles of TQM, to identify how standard specifications could be applied in implementing TQM and in achieving environmental sustainability. And how standards like ISO 9000; ISO 14001, OHSAS 18000, and ISO 26000. Besides the Deming's PDCA cycle can help the organizations gain continuous improvement, obtain their stakeholders' (not only customers) satisfaction and sustain the environmental, economic, and social development, which forms part of this research objectives.

Although the implementation of TQM principles has been widespread in the private sector, many problems appear on the surface while adopting them in the public sector. This study seeks to examine the adoption of TQM strategies in the public sector and their role in enhancing sustainable development. Public enterprises in Sudan as a case study. The aim of choosing the case study method is to develop a framework that will guide the application of TQM strategies in the sustainable development process in Sudan. The researcher will address the case study in detail in the last two chapters.

Research Significance

The importance of this research stems from the role played by total quality in contributing to building the sustainability of competitive advantage. Considering that survival and continuity are the two most important goals that the organizations seek to achieve in light of the challenges posed by the environment. The organization is required to look for ways to achieve sustainable competitive advantage through a comprehensive quality strategy.

The importance of the topic also comes with the need for public sector institutions to provide guidelines for continuous improvement, to ensure their survival and sustainability under the constraints and limits imposed by sustainable development; through one of the most modern management techniques in achieving the optimal utilization of resources sustainably, and activating the social and environmental responsibility of the institution by following total quality strategy and adopting the ISO standards of Quality Management 9001, Occupational Safety and Health Management System OHSAS 18000, Social Responsibility System ISO 26000, and Environmental Management System ISO 14000.

The significance of this research comes with the lack of previous direct studies on the research topic as some of the studies focus only on TQM (Aichawi, 2008); (Aleid, 2009); (Lakhe and Mohanty, 1994), Others on SD only (Bouzid, 2010); (Khamra, 2007); (Harries, 2000), and even the studies that contain both TQM and SD variables (Ukwuoma and Omere, 2014); (Todorut, 2012); (Elhuni and Ahmad, 2014) focus only either on the organization's sustainable development, or the environmental development and did not consider the need to adopt a comprehensive TQM framework consists of the integration of social, economic and ecological dimensions to achieve sustainable development.

Research Problem

The industrial development and economic strength of any country depend primarily on the proper application of quality management systems in all production stages of industrial products (Attar and Rahman, 2009). Unfortunately, when it comes to Sudan, the quality of the product is still a critical questionable issue for the locally produced goods. As only a few manufacturers are producing high-quality products with higher customer satisfaction. Many of them manage to get quality certificates, but a few have

attained the level of advancement which enables them to implement total quality management new methods and mechanisms efficiently.

Sudan, as a developing country, is facing many challenges, especially in the industrial sector, with the global competition. This study asserts that for Sudan's public industrial enterprises to survive and compete, an effort is needed to make continuous improvement through total quality programs. While at the same time being part of enhancing social and environmental aspects. It will investigate in this research whether this could only come with the application of TQM strategies and sustainable development principles with its integrated social, economic, and environmental dimensions.

Therefore, the main question around which the problem is discussed is as follows:

"What are the implications of applying TQM in public industrial enterprises in Sudan to the environmental, economic, and social dimensions of sustainable development?"

There are four the sub-questions based on the research problem:

a) To what extent the implementation of the TQM approach in public sector enterprises is possible?
b) What is the reality of sustainable development in public sector enterprises in Sudan?
c) What is the level of practice of both total quality and the dimension of sustainable development in the enterprises understudy?
d) What is the impact of adopting of the implementation of the TQM system with ISO standards specifications on the dimensions of sustainable economic, social, and environmental development in the enterprises understudy? (Investigating this through a case study research conducted in Sudan).

Based on the questions raised previously and to learn more about the relationship between the economic organization and sustainable development through the TQM strategy, we develop the following central hypothesis.

The main hypothesis stated that: "There is a statistically significant role of total quality management strategy in achieving the dimensions of sustainable development in the

institution under study." This hypothesis has been divided into four sub-hypotheses as follows:

1 There is a weak level of total quality management strategy in the institution under study.
2 There is a statistically significant role of total quality management strategy in achieving the economic dimension of sustainable development in the institution under study.
3 There is a statistically significant role of total quality management strategy in achieving the social dimension of sustainable development in the institution under study.
4 There is a statistically significant role of total quality management strategy in achieving the environmental dimension of sustainable development in the institution under study.

Research Aims and Objectives

This research aims to develop an adoption framework that identifies the critical factors influencing TQM adoption in Sudan, demonstrate how to achieve sustainable development based on the total quality strategy, and explain how organizations contribute to achieving sustainable development dimensions through their adoption and application of TQM.

Thus the other purposes of the study are to highlight the most important administrative concepts that have become the focus of more attractive research in the field of management (TQM), to highlight the total quality as a strategic philosophy adopted by public sector organizations to achieve sustainable development, to try to diagnose the reality of the total quality strategy application in the institutions under study and to demonstrate the methods, so that they can achieve sustainable development, and to reach some conclusions and recommendations that could contribute to the development of the total quality strategy for state enterprises, with this study, to achieve sustainable development and remove some of the ambiguity surrounding its application, and highlight its benefits when applied in the Sudanese case.

Research Methods and Limitations

For the nature of the study, the researcher used the descriptive analytical approach to describe what is in the study area related to the research problem, as one of the most relevant research approaches in the study of the phenomenon questioned.

The research adopted the case study method because it combines more than one research method, all at the same time. In the form of observation, monitoring, investigation, the questionnaire, and the interview all lead to direct access to information. That allowing the researcher to choose and examine what is directly related to the subject of study.

Numerous challenges and complex issues are facing TQM strategies' application. This study exhaustively examines the economic, political, and environmental aspects interrelated in sustainable development. Using the case study method makes the relationships between these issues, and their impact on the public organizations' progress more explicit. The case study also allows the researcher to go beyond the data, recognize new ideas, understand the concepts and link the patterns and themes. Which can significantly help in the TQM and sustainable development strategies application and theory building.

Based on the points above, the researcher chose to use the case study as a tool for the current empirical research, aiming to develop a framework that will be useful to guide the application of TQM and sustainable development processes in developing countries in general, and in Sudan in particular.

Structural Framework and Scope

The first section covers the research background, the theoretical framework, and the literature review. Besides research problem, questions, aims, and objectives, significance, approaches, and methods.

The second section focuses on sustainable development, the concept, definition, characteristics, challenges, and strategies, and highlights the organizations' status in achieving the principles of sustainable development under the various changes.

The third section explains the concept of quality, and total quality, characteristics, importance, principles, and implementation, its primary stages, and how to organize them

within the organization while highlighting the most important strategies which ensures the achievement of competitive advantage of the organization, connect total quality with ISO specifications.

The fourth section highlights the accreditation of enterprises to ISO standards as an entry point for achieving sustainable development, focusing mainly on quality management system standards ISO 9001, 2008, and 14001, 2000. ISO18000 and ISO26000.

The fifth section covers the integration of the dimensions of sustainable development in the enterprises through the management of total quality and the impact of the application of TQM on the economic, social, and environmental performance of the enterprises. We also seek to know how total quality can be applied to ensure a sustainable development strategy through case studies. Through this aim we investigate the effect of total quality management strategies on sustainable development in the area under study, through data collection tools such as the questionnaire, statistical data processing, analysis of study questions, and the test of hypotheses followed by the findings and recommendations.

CHAPTER 1: SUSTAINABLE DEVELOPMENT

Sustainable development is considered one of the most essential concepts in modern development thought. This phenomenon has been linked to the increasing awareness of environmental problems and the relationship between human and ecological development. The negative impacts of development, especially in the industrial sector, have severely affected the health and lives of humans and other living organisms due to the pollution of soil, water, and air.

Being one of the main contributors to global environmental degradation, the economic organization has not remained unaffected by these developments. It is called upon more than ever to contribute to realizing the foundations of sustainable development on the ground. This realization gives it the necessary flexibility in dealing with the new environmental demands, especially with the increase in environmental laws and regulations, the growing environmental awareness of consumers, and the emergence of interest groups that can influence the position of the economic organization[1].

From this standpoint, economic organizations are interested in integrating sustainable development into their strategic vision, policy priorities, goals, and management concerns, by adopting modern management practices and techniques that serve and achieve the dimensions of sustainable development, such as "social, environmental, and ethical responsibility, and others" and to integrate environmental and social considerations into their main functions, and into the evaluation of their overall performance.

On this basis, this chapter focuses on sustainable development, the concept, definitions, characteristics, approaches, reasons for the emergence of sustainable development in the development process as a whole, the concept of sustainable dimensions and its

[1] An economic organization is an economic entity with an organizational structure consisting of material, human and financial resources, interacting with each other, used and proceeded to produce products and services within a legal and social framework to achieve specific goals, perhaps the most prominent of which is creating added value, earning profits, responding to the requirements of its workers and society as a whole, and the achievement of growth and continuity. The economic organization is also diversified and classified depending on specific criteria to take different forms. The activity criterion divides it into industrial, service, commercial, financial institutions. The legal standard divides it into private, public, or mixed organizations, and finally, the size standard gives it as small, medium, or large organizations. For more on this topic, and more details about the different definitions of an economic organization, its objectives, functions, and forms, see: (Adoun, 1998: 10-72; Habib. 2000: 25-39).

components, the challenges, strategies, and requirements to embed the pillars (dimensions) of sustainable development in the economic organization, and the stages and tools of integrating sustainable development into the economic organization. It also highlights the organization's position in achieving sustainable development in light of different variables and its overall performance in the context of sustainable development.

1.1. Concept and Characteristics of Sustainable Development

Sustainable development is one of the modern concepts that have proved to be an outstanding milestone in the evolution of developmental thought and international awareness of the relationship between humans, development, and the environment. It is also a complex, long-term, comprehensive, and integrated process in socio-economic, environmental, and political dimensions.

Sustainable Development was first defined in the 1987 report of the World Commission on Environment and Development as development that meets the needs of the present without compromising the ability of future generations to meet their needs (Brundtland Report, WCED 1987: 43). This definition focused on preserving the future of next generations and integrating economic, social, and environmental conditions into one definition.

This definition includes the concept of need and the idea of limits; the need is emphasized as the special and basic needs of the poor that should be given priority, and limits denote environmental constraints and their ability to meet current and future needs (Egleston, 2012: 83).

The Third Principle of the United Nations Conference on Environment and Development, held in Rio de Janeiro in 1992, defines sustainable development as development in which the rights to development must be fulfilled, and in which the development and environmental needs of present and future generations are equally realized (Rio Declaration on Environment and Development, 1992). The Conference stated that achieving sustainable development cannot be isolated from environmental protection but must be an integral part of the development process (Muschett, 2002: 13).

Several issues fall under these two key definitions. The most important is that standards of living that exceed basic minimum needs can only be sustained when consumption

levels are taken into account everywhere. Therefore, sustainable development requires the dissemination of values that promote levels of consumption that do not exceed the environmentally possible limits (Abdelsamad and Batabis, 2005: 135). The importance of the Rio Summit is that it has laid the foundation for sustainable development by awakening the world public's interest in the interrelationship between the environmental, social, cultural, economic, and political dimensions of development (Sands, 1995: 53).

According to Ghamdi (2009:10), the concept of sustainable development has been criticized several times, with most of the criticisms related to the Brundtland report definition. The main criticism of the definitions is that they all lack a theoretical scientific cover, which means that as long as economists have not yet looked at sustainable development, the definition of this concept amounts to nothing but mere attempts.

Some believe that the concept of sustainable development is more of a philosophical dimension than an applicable concept, and for it to reach the second dimension, i.e., applicability, it must be a part of society's culture its knowledge composition (Baker, 2005: 15).

The definition also does not distinguish between development and economic growth, although the focus on the latter has led to a loss of ecological and social balance. The issue is the quality of growth and the distribution of its benefits, not just a process of economic expansion. Development must include comprehensive human and environmental development and address poverty through redistribution of wealth (Thunis, 2004: 2). Criticisms also include that the definitions refer to future generations and their needs, and achieving this goal is based on sustainability, not just at the level of one country but at the global level. However, it is difficult to reach a consensus among countries on how to achieve this because the definitions do not address the strategic framework that allows the nations of the world to achieve sustainability (Kousnetzoff, 2003: 96).

The difficulties associated with defining sustainable development may arise from the fact that it is a multidimensional concept. Thus, in determining sustainable development, it should be noted that definitions may differ according to the researchers' area of interest. These definitions could be divided into four groups as follows:

1. **Environmental definitions:** Focusing on the optimal use of agricultural land and water resources in the world, resulting in a doubling of green space on the globe (UN, 1991: 3) and using renewable resources in a way that does not lead to their demise, degradation, or a reduction in their capabilities for future generations, while maintaining a stable and non-decreasing balance of natural resources (Goodland and Ledec, 1987: 36).

2. **Human social definitions:** This means trying to stabilize population growth and stop the influx of people into cities by expanding the level of education and health services in rural areas and structuring society to meet its needs without compromising the needs of future generations (Wackerman, 2008: 20).

3. **Economic definitions:** Sustainable development focuses on the optimal management of resources to maximize economic development benefits, provided that the quality and use of resources are maintained in a manner that does not reduce real income in the future (Markandya and Pearce, 2012: 11). For developed countries, sustainable development means a deep and continuous reduction in their energy and natural resources consumption. For poor and dependent countries, sustainable development means using resources to raise the living standards and reduce poverty (Ciegis and Ciegis, 2008: 17).

4. **Technical definitions:** These definitions understand sustainable development as development that leads society into an era of clean industries and technologies that consume the least amount of energy and resources and produce the minimum level of gases and pollutants that lead to global warming and damage the ozone layer (Beder, 1994: 16). Technology that can conserve natural resources to reduce pollution, contributes to climate stability, and allows for population growth, health and education services, especially in the rural areas (Gustave, 1989: 30).

The continuity of economic growth depends primarily on maintaining a range of essential environmental services, and a healthy environment and cohesive society. Therefore, sustainable development requires a balanced combination of economic, social, and environmental goals of communities (Ajabi, 2009: 4).

On the other hand, the concept of sustainable development combines two primary dimensions, namely development as a process of change and sustainability as a temporal dimension, and the motivation for the emergence of this concept is the recognition that the growth process is not sufficient to improve the lives of individuals equitably. The physical dimension of the growth process has receded, and instead, the concern for the human element has emerged, based on the fact that human beings are both the goal of the development process and its tool (Mustafa, 2006: 359).

Sustainable development is also considered as an alternative development approach to previous approaches that wasted resources and is based on the participation of civil society and governments in finding the necessary means and mechanisms to achieve a balance between the three main worlds of economy, environment, and society, by achieving economic efficiency, equity, social equality, and environmental safety, in addition to preserving cultural characteristics and inherited human heritage (Bacrie, 2006: 13).

According to Haythi and Mohannedi (2008: 103, most authors and researchers focused on three main aspects of sustainable development; the economic, social, and environmental aspects, and neglected the political element, that manages and directs all the previous aspects within the framework of sustainability. Thus, true sustainability requires a political atmosphere characterized by participation, transparency, and freedom of expression.

From the previous analyses, it is clear that there are several characteristics for sustainable development, the most prominent of which is the multiplicity of fields since sustainable development includes at least three areas: economy, environment, and socio-culture. Although sustainable development can be defined separately for each of these domains, the importance of the concept lies mainly in the interrelationships between them.

Grosskurth and Rotmans (2005: 135) argue that these three areas of sustainable development appear to be theoretically congruent, but they are not so in practice. Sustainable development should achieve maximum growth in each of these three systems, without the development in any system negatively affecting the others. The basic principles are also different; efficiency is the main principle in sustainable economic development, justice is the focus of sustainable social development, while sustainable

environmental development emphasizes the resilience or potential capacity of the land to replenish its resources.

While Zermann (2010: 195) believes that sustainable development is based on the temporal dimension as it's a necessarily long-term development based on estimating the potential of the present and then planning for the most prolonged future period. It is based on the integration between the use of resources, investment trends, and technological selections .It makes them all work in harmony within the environmental system to maintain and achieve the desired sustainable development. For him, sustainable development builds and creates a self-sufficient, multi-productive, integrated production capacity base capable of adapting to changes. This base must have sound social organization, human resources, technical capacity, and adequate capital accumulation.

1.2. Justifications for the Need of Sustainable Development

There are several justifications behind the emergence of sustainable development, including the environmental problem and its exacerbation at the global level. The joint pressures of both the increased awareness of the coming scarcity and the exacerbation of the pollution problem in the world have contributed to the emergence preserving the environment and its sustainability as an essential topic, whether in the field of thought or politics. Therefore, sustainability was integrated into the concept of human development (Calvert and Calvert, 2001: 423).

One of the justifications also, is the increasing problems facing the development process in developing countries. During the past few decades, not all development strategies and trends have achieved the desired success, starting with industrialization strategies, the agricultural revolution, and finally, structural adjustments. Development in these countries faces multiple pressures and difficulties that have internal and external factors and influences, thus forming a direct impact on the path of economic development and obstructed it (Hamza, 1999: 9).

The most prominent obstacles are the economic obstacles represented by the low rates of accumulation, saving, productivity, limited market, financial duplication, foreign exchange restriction, and limited human resources. Social barriers are represented by the lack of organizational elements and the lack of a real drive for development.

Governmental obstacles are characterized by the political instability that most developing countries suffer, and international obstacles are represented by the restrictions imposed by developed countries in the global market (Wardum, 2003: 180).

More importantly, the economic and social structure is weak, which has prompted many developing countries to pay greater attention in their development plans to the issue of the gradual advancement of the economic and social infrastructure, and a lesser extent, to the economic and productive programs that have the most tremendous weight in economic development. This led to fundamental imbalances in the proportionality of investments' allocations (Alela, 2004: 212).

The dependence of these countries' development programs on loans and foreign aid, disproportionate to their ability to exploit or repay, has led to the emergence of the debt crisis, which is currently one of the manifestations of development failures in these countries and consumes a significant part of their already limited resources. The reality of the situation indicates that most developing countries suffer from the exacerbation of the debt problem, the expansion of social inequalities and the increase in poverty and unemployment rates despite the investments made in the past decades (Hashem, 2011: 247).

The energy crisis in the seventies led to the world paying attention to the issue of excessive exploitation of non-renewable natural resources, pollution of the environment. Sustainable development originated in industrialized countries as a response to future global threats resulting from the depletion of raw materials and environmental pollution (Hamza, 1999: 5).

Hamza (1999: 21) also argues that the globalization of the economy and the steady growth in liberal philosophy have led to the deepening of the differences within the same society and between international communities, weakening the authority of the state at the expense of the interests of the poor, and disrupting the mechanisms of controlling cross-border companies whose activities aim to achieve maximum profits, and therefore this development represents the biggest challenge to development and the strengthening of social differences, and a justification for the emergence of sustainable development.

1.3. Principles, Objectives and Requirements of Sustainable Development

The central pillar of sustainable development is the relationship between growths on the one hand and the environment on the other hand, which led to the use of the system approach in preparing and implementing sustainable development plans (Ghoneim and Zant, 2010: 30). Sustainable development aims, through this method, to ensure that the balance of sub-systems is achieved in varying degrees and sizes and to preserving the lives of communities in all economic, environmental, and social aspects without any adverse effects between them (Halawa and Saleh, 2010: 132).

Sustainable Development is a charter that recognizes the participation of all stakeholders in collective decision-making through dialogue, especially in the area of sustainable development planning, policymaking, and implementation. Sustainable development begins at the local spatial level. Its achievement requires an appropriate form of decentralization that will enable official and non-official groups or citizens, in general, to participate in the preparation, implementation, and follow-up of its plans, which helps in achieving efficiency, effectiveness, and acceptance (Baranek et al., 2005: 24).

The theory of sustainable development is based on a set of principles. If it is available, the goal of the approach is achieved. According to Haythi (2002: 129) and Battat (2007: 91), there are economic principles for sustainable development, including basic needs, controlling the size of the population and guiding technology. While Tammi (2006: 2), Abdel Khaleq (1998: 3), and Corm (1999: 11) believe that sustainable development has social principles that include justice, equity, and empowerment, as for the environmental level, Abdel Khaleq (1998: 241) and Ghanayem (2001: 10) argue that the most crucial principle is the preservation of natural resources.

To establish sustainable development, it is necessary to achieve a set of broad goals for all areas. According to Omoogun (2016: 26), sustainable development objectives include conducting a better quality of life for citizens, respect and maintain the natural environment, increasing national income, improve the standard of living, and raising awareness about future environmental problems. While Duran and his colleagues (2015: 316) add some other objectives like rational exploitation of resources and make a continuous and appropriate change in the needs and priorities of society and emphasizes linking modern technology to society's goals.

As for Muschett (2002: 26), the overall goals of sustainable development could be set into four groups; environmental goals (ecosystem unit, ecosystem resilience, and biodiversity), economic goals (growth, equality, and efficiency), social goals (empowerment and participation, mobility and social cohesion, cultural identity and Institutional development) and technological goals (reduce the use of environmentally harmful technologies and promote and develop clean and environmentally friendly technologies).

Thus, we can say that sustainable development generally aims to improve the standard of living on the one hand, while protecting the environment and ensuring the rights of future generations, on the other hand. Thus achieving growth and stability on the economic side, justice, and health and education from the social side, in addition to the rational use of available resources, with the help of cleaner technology in the environmental aspect.

1.4. Basic Dimensions and Indicators of Sustainable Development

Based on the preceding, sustainable development is based on three main dimensions: the economic dimension, which reflects the quantitative expansion, and the social dimension, which reflects the qualitative accumulation and finally, the environmental dimension that embodies the environment and natural resources and how to preserve them (Nasir, 2011: 53). Focusing on dealing with these dimensions will make tangible progress in achieving sustainable development. It is an interconnected system in an interactive framework that carries within it a set of issues that express indicators through which the level of sustainable development can be measured (Perroud, 2006: 7). Therefore, in this section, we will shed light on the dimensions and indicators for measuring sustainable development.

Ghoneim and Zant (2010: 39) define sustainable development as development with three interdependent and complementary dimensions within an interactive framework characterized by the exactness, organization, and rationalization of resources. While Wardum (2003: 189) believes that the most critical characteristic of sustainable development is the complete organic link between the economy and the environment. The United Nations also emphasized that the concept of sustainable development is often used as an indicator of the importance of adopting environmental management methods, but the concept is not limited to that only. It also contains a focus on an economic and

administrative strategy that includes environmental, social and institutional axes, based on human development (UNDP, 1990: 8).

1. **The Economic Dimension:** Economic sustainability means achieving continuity by generating a high income that can be reinvested to allow the replacement, renew and maintenance of resources, as well as the continuous production of goods and services and maintain a certain level of balance that includes sustainable economic growth, capital efficiency and economic justice and providing and satisfying of basic needs (Ghoneim and Zant, 2010: 39).

The economic dimension includes the current, and future repercussions of economic activity on the environment. Economic progress is often evaluated in terms of social welfare, and many economic policies usually seek to boost income, search for more efficient production, consume goods and services, price stability, and achieve a certain level of employment (Dalisa, 2007: 13).

According to the UN (2013: 1), the economic dimension can be summarized as follows: the share of individual consumption of natural resources and stopping the waste of natural resources by changing consumption patterns and the responsibility of the developed countries for pollution and its treatment (Khan, 1995:13). In addition to reducing income inequality, thus ensuring equal distribution of resources and reducing military expenditure. So, in sustainable development, issues related to development are extended to cover fiscal, human, social, and environmental aspects (OECD, 2012: 190).

2. **The social dimension:** The social dimension of sustainable development focuses on the fact that human being is the essence and ultimate goal of development, the idea of sustainable development highlights in rejection of poverty, unemployment, and discrimination that limit the rights of women and the large gap between rich and poor. The social dimension is shown here as a basis for sustainability through social justice. The main principles of social dimension are; stabilization of demographic growth (population control), social mobility, providing social services such as health and education, ensure democracy through public participation in decision making , cultural diversity, and social justice (Zermann, 2010: 198).

Talking about the social dimension does not mean that it is separate from other dimensions of sustainable development. Many social elements of sustainable development can meet in the light of social and economic considerations and the relationships between economic and social dimensions. Moreover, environmental concerns are present in discussions of health and safety issues, interactions issues with the places of population gathering, or in examining the impact of development on the patterns of life (World Bank, 1997: 8).

This process contributes to presenting four comprehensive social concepts and their necessary links to the environment. These concepts are public awareness, equality, participation, and social cohesion (Nierenberg, 2002: 2). The social dimension can be expanded to include the environmental, international, and intergenerational dimensions (Murphy, 2012: 1). Despite the importance of the social dimension in sustainable development, it has not received the same attention as other dimensions. Instead, these dimensions are chosen for political reasons. Not for scientific ones (Convery, 1995: 5).

Attention to the social dimensions of sustainable development contributes to strengthening social cohesion, which reduces crime and social conflicts, enhances confidence among individuals and creates an opportunity to improve social interaction through social networks, collective participation in community stability, and safety and security.Thus the policy objectives related to social cohesion emerge by creating opportunities that promote harmonious coexistence or combat the potential for civil strife (Dempsey and Bramley, 2011: 292).

3. **Environmental Dimension**: The environmental dimension of sustainable development means achieving economic well-being for the present and future generations while preserving the environment, protecting it from pollution, and providing a constantly improved standard of living over time (Zhonghua and Song, 2011: 470).

This dimension includes the preservation and optimum use of natural resources on a sustainable basis. It predicts what could happen to the ecosystems as a result of development for precaution and prevention by taking into account the environmental limits so that each ecosystem system has certain limitations that cannot be exceeded by consumption and depletion. In the case of exceeding these limits, it leads to deterioration

of the ecosystem. On this basis, limits should be placed on consumption, population growth, pollution, poor production patterns, water depletion, and soil erosion (Reis, 1993: 14).

Environmental sustainability focuses on the stability of natural resources, the avoidance of the irrational exploitation of non-renewable resources, the conservation of biological diversity, the use of clean technology, and the ability to adapt and achieve environmental balance (Reiner, 1993: 14).

These three systems are linked to each other, as economic growth rates could have positive or negative effects on social and environmental aspects. Social justice is considered as one of the sustainable development indicators, which include decision making, opportunities provision, and resources allocation. At the same time, environmental protection needs social actions like raising social responsibility (Wardum, 2003: 189).

Despite the spread of the concept of sustainable development, the central dilemma remains the urgent need to define indicators through which progress towards sustainable development can be measured. These indicators contribute to assessing the countries ’progress in achieving sustainable development to allow future decisions on appropriate economic, social and environmental policies.

Sustainable development measurement indicators differ from the traditional development indicators, as the latter measures the change in a specific part of the development process' aspects because these changes are independent. In contrast, the indicators of sustainable development focus on the interrelationship of economic, social, and environmental aspects (Abbas, 2015: 12).

According to Mounir (2008: 7), indicators must be clear and achievable, measurable, and predictable, have limit values available, changeable and controllable, and the methods used should be clearly defined, accurately used, socially and scientifically acceptable and easily reproducible with sensitivity to time.

Decision-makers need information and data on the studied reality to move forward in achieving sustainable development goals. This information includes strengths, weaknesses, and interactions between sustainable development indicators so that

evaluators can know the impact of the policies followed on the sustainable development indicators. Sustainable development requires not only an increase in per capita income but a change in decision-making patterns through the merging of economic, social, environmental and institutional dimensions (Shelly, 2014: 73).

In this regard, the United Nations Commission on Sustainable Development, set in 1996 some indicators to measure sustainable development called pressure, status, and response indicators. The commission distinguishes between pressure indicators such as humanitarian activities, pollution and carbon emissions, assessment indicators such as air, water, and soil quality, and response indicators like development aid (Rifai, 2006: 25-26).

The list of sustainable development indicators approved by the United Nations Commission on Sustainable Development also reflects the extent of government success in achieving sustainable development (UN, 2001: 300-303). These indicators can be interpreted as follows:

1. **Economic indicators**: Increasing per capita income was the primary goal of development; however, this matter is no longer acceptable, as the overall numbers conceal disparities between groups. Also, there are other important goals in terms of achieving sustainable development, such as health and educational services and the participation of women in economic activities. However, the results are not always positive. For example, improvements in agricultural production may lead to damage and depletion of resources (ESCWA, 2001: 6-10).

The most important economic indicators are per capita gross domestic product, exports of goods and services to imports, change in per capita energy consumption, current account balance as a percentage of GDP, debt to GDP, and the group of development aid provided (Boulhol et al., 2008: 2).

Economic indicators reflect the country's ability to build a strong base for achieving sustainable development. The per capita GDP index is one of the most important indicators, as it reflects the country's economic growth rates. Dritsakis and his colleagues (2006: 2) argue that despite the need for developing countries, including Sudan, to increase the volume of investments to increase production capacities for projects, and the development of productive techniques, in line with technological progress. However,

these countries work to form capital as a percentage of the size of the gross domestic product, at a low rate compared to the developed and industrialized countries. Therefore, it requires increasing investment specializations in various economic sectors to allow local products to compete in global markets.

2. **Social indicators:** Social indicators include social justice, which is considered one of the fundamental values on which sustainable development is based. Social justice consists of a degree of fairness and inclusiveness in the distribution of resources, available opportunities, and decision-making, such as the provision of similar employment opportunities and social services, including education, health, and justice, within the local community or at the international level. Some indicators are related to social justice, including poverty reduction, crime rate, unemployment rate, education, awareness and training rates, health rate, and population growth rate (UN, 2007: 50-62).

Human Development Index (HDI) is one of the most important social indicators of sustainable development. It reflects the most critical dimensions of human development. The United Nations Development Program has prepared indicators for measuring human development. It has an annual report that sets the world's countries based on specific indicators. This indicator is composed of three partial indicators: income distribution, public health index, and education. (UN, 2001: 6-8).

According to Abdel Rahim (2007: 9), the most prominent criticism on this scale is its extreme simplicity, with which it lacks to reach a more comprehensive understanding of the levels of human well-being and their changes. This indicator omits some issues that express the different aspects of human well-being, as well as the negatives that surround its three sub-indicators. For example, the life expectancy at birth indicator may not necessarily express the degree of the physical and mental health of individuals, as for the rate of illiteracy of adults, it does not reflect the level of education and the extent of its contribution to knowledge acquisition and development of community capabilities. Concerning the per capita share of the GDP, it is questionable when taking fairness in its distribution.

3. **Environmental indicators:** Environmental indicators are an integral part of sustainable development indicators, and they are vital in achieving the goals of

sustainable development by monitoring the status quo and the changes that occur to the environment and natural resources, whether positive or negative (Raddad, 2009: 77).

It is noticed that there is a strong correlation between environmental indicators and other sustainable development indicators. Whereas other factors such as population growth, health, and others have a direct or indirect impact on the environment; For example, the population growth index is one of the indicators that pressure the environment. Environmental indicators include per-capita agricultural land, change in forest and land areas, desertification, energy use, renewable water, and recycling (Dong and Hauschild, 2007: 701).

4. **Institutional indicators:** Institutional capacity is one of the important tools for managing progress towards sustainable development, and it can be evaluated using a limited number of indicators, namely the number of engineers and scientists in the field of scientific research, the number of televisions, radios, personal computers, newspapers, phone lines and internet subscriptions per 1000 of the population, spending on scientific research and development as percentages of GDP and the core environment for communication, science, and technology (ESCWA, 2001: 6).

5. **Political indicators:** These are indicators related to measuring good governance, which include: the degree of transparency, participation, accountability, the rule of law, stability, combating corruption, freedom of information, decentralization, and the independence of the judiciary and the care of human rights (Shoutry, 2008: 8).

These indicators were used to indicate the status of most of the environmental, economic, and social issues addressed by sustainable development, which were included in the forty chapters of the Agenda 21[2] document adopted in 1992, and represent the action plan of

[2] Agenda 21 expresses a comprehensive program of action adopted by 182 countries. It included 40 chapters, which can be divided into four general sections, namely social and economic issues, management and conservation of natural resources, and the role of major groups in society in implementing sustainable development agenda, and application methods. These four areas included the environmental challenges as well as the governance challenges highlighted in the Brundtland report. It also includes incentives and measures to boost the economies of developing countries, eliminating poverty, reducing the use of natural

governments and civil organizations towards sustainable development in the world (Economic Commission of Africa, 2001: 19-23).

While Brodhag (2004: 3) believes that the idea of sustainability depends on two indicators, the first is environmental, which is the ecological footprint, and the second is social, and it is called the social development index. The ecological footprint allows measuring the area used for development, and the social development index includes poverty, unemployment, quality of life, education, and population growth. The economies that are characterized by sustainability are those that strive to meet and respect both conditions.

Consequently, it becomes clear that social development is closely related to economic growth and development. Achieving sustainable development passes through addressing social issues, the most important of which are the employment and unemployment. The latter two could be considered the missing link in the growth and poverty equation and its interlinkages with security and social stability (Hormuz, 2007: 3).

Therefore, improving economic growth rates includes, among other things, poverty reduction. Only through stimulating employment growth and reduced unemployment will any growth in the economy reduce poverty effectively (Henni, 2004: 9).

Although the presence of such digital indicators in a permanent and renewed manner is supposed to give a clear picture of the state of sustainable development in the country and thus provides the accurate information necessary for decision-makers to reach the most accurate decision that is in the public interest. However, Abdel Rahim (2007) argues that, in general, every indicator, even if it is quantitative, is an attempt to translate or model a specific vision. Therefore, it is challenging to be completely objective.

Therefore, there have been many criticisms about these indicators. The most important of which is not calculating the cost of the environmental impacts of countries outside their borders. This has put many countries known to have polluted and environmentally harmful effects on natural resources outside their borders, such as Canada, the United

resources, and controlling the rates of population increase that threaten the development of resources and the environment together (Yasmina, 2006: 117; Flipo, 2007: 52-53).

States, and most Western countries on the top of the list of countries with high sustainability (Rashi, 2011: 41).

As this research topic revolves around developing countries, it is recommended to investigate sustainable development challenges in these countries, to have a clear picture of the context in which sustainable development efforts work.

1.5. Sustainable Development Challenges in Developing Countries

Societies of developing countries face current and future sustainable development challenges due to the problems and dilemmas facing these countries, based on their capabilities and resources, especially in light of the growing gap between the economies of developing and developed countries. To face these challenges and achieve sustainable development, it is necessary to know the obstacles that hinder sustainable development in these countries (Abbas, 2015: 108).

At the top of the list of challenges comes perhaps the issue of financing, as the availability of adequate financial resources is a prerequisite for achieving sustainable development. However, sustainable development financing in many developing countries remains limited for several reasons, the most important of which is debt. Although many financial institutions have been active over the past years, the overall coordination and management of the relevant programs remain limited (Zaid, 2013).

According to Aziz (2000: 61), many developing countries witnessed, in the last two decades, financial crises, which led to the weakness and decline of their capabilities and financial resources, deficits in their budgets, increase in debt, and stagnation in economic growth. For Samuelson and Nordhause (2010: 11), this is due to the slowdown in economic growth rates, which is mainly related to a set of factors, foremost of which is the lack of economic resources (in size and type) that are qualified to increase production, meaning that lower production rates lead to a decrease in national income to the extent that prevents saving for the future. This decrease leads to a decrease in domestic investment rates, which constitutes the main problem for economic growth.

The challenges facing the developing countries is mainly due to the imbalance in their economic structure, where the one-sided economy prevails, which means the domination of a specific extractive sector (such as oil) over the economy. This sector is usually linked

to the external market, such as large companies and foreign financial institutions (production and pricing), thus being controlled by these institutions. In addition, such an economy prevents balanced economic development, which affects sustainable development (Nurkse, 1990: 11).

Governments have used several financial methods and mechanisms like sustainable development funds, loans, domestic finance, private sector participation, and others, and bilateral aid provided by international and regional financial institutions to contribute to the funding of sustainable development activities and programs. However, it began to decline during the last few years. In addition, the poor coordination between institutions and financing programs has affected the quality of the products and the loans to support sustainable development, and the absence of supervision and control of development funds (Mahmoud, 2001: 21-25).

Added to the above; the trend towards freedom of global trade, as there is a big difference between a country's contribution to international trade according to its conditions, the level of its economy, and its political and security requirements, which is necessary for the economy, and the application of the principle of freedom of foreign trade through affiliation with the World Trade Organization. Usually, countries that benefit from joining this organization varies according to the degree of their economic and technological progress, so that the greater this potential, the greater the gains, and vice versa. Therefore, developing countries, in most cases, do not benefit from the advantages of joining this organization (Naush, 2002: 141).

The real challenge decision-makers face in developing countries is setting and adopting central decision-making policies of a sectoral nature in various economic fields. When applying policies, governments of these countries adopt legislative mechanisms instead of economic means and voluntary incentives. At the global level, developing countries suffer from the inadequate performance of their administrative systems to cope with the changes imposed by globalization, the global economic system, and the IT revolution (Mahmoud, 2001: 21-25).

This is exemplified by the imbalance in the structure of the public sector that leads the branches of the developing economy, which is due to a set of reasons, most notably, bureaucratic behaviour, the subordination of most institutions of this sector to the

influence of political considerations in appointing administrative leaders, and the weakness of transparency and accountability processes (Sayegh, 1990: 142).

Among the factors that hinder the practical application of sustainable development as well, are the lack of environmental monitoring equipment (Hamid, 2005: 24), the lack of study and analysis of potential risks to health or the environment, as well as the absence of accountability methods based on environmental considerations in calculating the cost and negative impacts of development (Mazreig and Nafla, 2011: 6).

Scientific research and technical development are also essential issues in developing countries as they are the effective means of finding appropriate solutions to issues related to sustainable development. It should be noted that the scientific production in these countries is still very modest, especially in terms of technological development. Although there are many scientists and researchers in these countries, inadequate funding stands in the way of their constructive contribution to their societies (Abid, 2006).

In addition to this, the political instability, as most developing countries witnessed many conflicts, disputes, wars, and revolutions that impeded their development, destabilized their stabilities, and drained their resources and energies (Beblawi, 2006: 230). These conflicts have had a severe impact on the environment, resulting in the destruction of infrastructure, natural resources, human capacities, and the illegal depletion of water resources. All of this has led to the suspension and significant disruption of all activities related to sustainable development (Haythi et al., 2009: 5).

According to Hafez (2012), the establishment of sustainable development requires political reform, as it is difficult to achieve development under a dictatorial regime, where public participation is not recognized, as ensuring the sustainability of resources is a joint responsibility between governments and various community parts, including the private sector and the civil society organizations.

Confronting the challenges mentioned above and achieving sustainable development requires states and governments to make political and institutional changes that are carefully designed to meet the needs that have been identified, and this is achieved through developing a sustainable development strategy based on the strategic planning of a participatory and renewed nature aimed at achieving economic, social and

environmental goals, in a balanced and integrated manner at all levels within an advanced framework of justice between present and future generations (UNEP, 2008: 2).

To prepare a sustainable development strategy, there must be a political will at a high level, adopting a realistic methodology to prepare the strategy according to the available means, setting clear priorities and goals that can be accomplished, integrating the elements of the strategy into all sectoral programs, determining the responsibility of each institution and developing a system for tracking and evaluation with specifying the mechanisms and means for periodic strategic analysis (UNEP, 2008: 7-8).

Preparing a sustainable development strategy includes an analysis of the current situation and a continuous review. It is a cyclical process in which the concerned parties interact in planning, participation, and implementation as there is no single approach or formulation for preparing the strategy. Therefore, countries should determine the methodology that best suits them based on their political, economic, cultural, and environmental conditions (Clayton, 2002: 30-31).

According to MSSD (2005: 12), sustainable development strategy setting begins with the development of the methodology for preparing strategic frameworks and determining the responsibilities of the indicator. Then making an analysis and evaluation of current sustainable conditions to develop sustainable development objectives and, after that, reviewing the sectoral strategies and policy reform requirements and evaluate the institutional and financial performance, ending with the preparation of the financial and operational plan, the consultation of different agencies. Then implementation, follow-up, and evaluation.

As we are studying sustainable development in this research on the level of economic organizations, taking one of the Sudanese petroleum companies as a case study. We will highlight the interrelationship between sustainable development and the economic organization and the role sustainable development may play in its development. Besides how to structure and integrate sustainable development in the organization and the overall performance of the organization in the context of sustainable development, in the next section.

1.6. The Role of Sustainable Development in the Organizations' Development

According to Shelly (2014: 75), many believe that sustainable development in the context of economic difficulties is not an option for organizations but rather an imposed option. While Sharif and Abdul Rahman (2008: 149) explain that sustainable development is a winning bet for organizations, as the integration of sustainable development into the organization's activities allows it to engage and pursue the process of continuous improvement, get positive effects, meet and respond to all customer requirements without compromising productivity improvement with attention to the social dimension, valuation of all the resources of the organization, sound production through environmental efficiency, cost control, strengthening and consolidation of social support.

On the other hand, the unjust exploitation of natural resources by economic organizations, and the absence and non-compliance with environmental preservation standards are what led to the exacerbation of pollution and its consequences on society in general (Boukhrouba and Mousa, 2019: 13). Consequently, economic organizations find themselves faced with the problem of how to continue practicing their productive activity, which leads to the contribution to the scarcity of resources and damage to the environment, while at the same time taking responsibility for the results of these activities (Carpon and Lanoizele, 2007: 5).

What distinguishes economic institutions about the environment and the damages it inflicts on them due to practicing their productive activities also applies to the social situation, especially about their relations with their workers. The technological development to which all environmental problems are attributed is also the cause of the problems related to occupational health and safety and the provision of appropriate work conditions (Abdulrahman, 2011: 45).

To correct this situation, economic organizations have to change their view of the world by minimizing attention only to considerations that focus on short-term profits and losses and pay attention to long-term returns through trends that are more ethical, environmentally friendly, and more socially just practices. The predominance of these organizations is that the application of social and environmental policies reduces the levels of economic growth and hence their profits, However, the emergence of the concept of sustainable development allowed achieving a compromise between these two beliefs

by applying opinions and ideas based on taking into account the economic, environmental and social dimensions, through the economic organizations' adoption of sustainable development (Ferone et al., 2004: 44).

In this regard, the 21st Agenda emanating from the United Nations Conference on Environment and Development, which was held in Rio de Janeiro in 1992, has described organizations as playing a vital role in the social and economic development of countries, because these organizations, regardless of shape, size, nature or location, bears responsibility for the environmental impact that it exercises (Ferone et al., 2004: 45).

This has led to a change in the trends of economic organizations that have become characterized by societal behavior, as they have become one of the most prominent actors in society. They realized that their mission has not become to distribute profits to shareholders only, but also to assume their social responsibility in the production and distribution of their wealth to the various parties of interest (Carpon and Lanoizele, 2007: 407).

The development in the external environment gave birth to other parties, which exert pressure on the economic organization and affect its activities. It produced new social, political, and environmental roles and obligations that were previously neglected, such as social responsibility, which is the organization's commitment to contribute to economic development while preserving the environment and working with the community as a whole, and society in general, to achieve a quality of life for all parties (Guyonnaud and Willard, 2004: 4-5).

The concepts of social responsibility and sustainable development are two closely related concepts. The first means integrating social and environmental concerns into commercial activities. The second means reconciling the economic, social, and environmental aspects. Likewise, the fields of social responsibility application, such as respecting the environment, combating pollution, rational exploitation of resources, improving working conditions, contributing to local development, training, adherence to international standards such as ISO and other. These fields are presented in one way or another in the concepts related to sustainable development (Delchet, 2007: 34).

Social responsibility is considered a form of contribution to sustainable development, as many of the requirements of sustainable development find their applications in social responsibility, while the difference between them lies in the fact that the concept of sustainable development is concerned with several parties such as the state, the business sector, civil society, citizens, and consumers. In contrast, discussion of the topic of social responsibility takes place at the level of the business organizations sector. In short, we say that social responsibility contributes to achieving sustainable development and is one of its most important tools (Wahiba, 2014: 95).

Consequently, the role of the managers is to observe the three dimensions of sustainable development in managing their organizations and ensuring the achievement of a balance that is made up of the stakeholders (shareholders, workers, suppliers, customers, the natural environment, the local community, and society in general). The achievement of sustainable development is linked to the compatibility of the interested parties' private interests with the institution's general objective (Supizet, 2002: 75).

Managing the relationship with stakeholders is based on the principle of continuous improvement, which the organization can apply by meeting all the customers' desires, paying attention to the continuous training of workers, following up the data that allows measuring the impact of the organization’s activities on society, comparing its data with the competing organizations, and reviewing and auditing the expected improvements (MEDEF, 2003: 10).

A study conducted by the French company SOFRES in 2001, limits what public opinion expects from the socially responsible organization. The results showed the French interest in the social responsibility of French organizations. The individuals of the sample who were surveyed believe that the responsible institution has duties towards its customers and employees and respects business ethics, and is concerned with the public interest (MEDEF, 2006: 41).

Some organizations see that showing interest in sustainable development is by integrating the environmental dimension in management. In this regard, they focused on the need to pay attention to the environment, as some organizations, like 3 SUISSES, pledged to reduce carbon dioxide emissions (Geneviève et al., 2004: 4). While others propose initiatives to preserve biodiversity, such as YVES ROCHER. In this field, organizations

seek to implement environmental management systems and obtain certificates of compliance with these systems with the European Standard for Environmental Management, based on the principle that environmental performance is part of the organization's overall performance (Ferone et al., 2004: 48).

Other organizations believe that integrating sustainable development will be through research policies and more environmentally friendly products, such as Air Company, which proposes a new method for diagnosing environmental pollution by relying on natural plants (International Trade Commission, 2003: 50).

An increasing number of organizations are involved in efforts directed towards education and institutional support for orphans, disabled, homeless, and other destitute groups. For example, Barclays Bank provided 35.8 million Kenyan shillings in 2000 and 2001 to various sustainable activities across Kenya, and among the examples also us ACCOR Group which installed solar water heaters in its hotels, to resist the greenhouse (MEDEF, 2006: 41).

In its relations with stakeholders, Canadian HAYDRO QUEBEC Company has settled the status of more than 41,161 low-income clients in the event of inability to pay an amount of $ 213.60 million. In addition to paying 1% to the local groups on which the investment project of the Foundation will be established and about 18.3 million Canadian dollars in subsidies to the Foundation's workers and retirees. In human resources management, the employee's satisfaction index measured in 2010 was about 8.4 out of 10, and work accidents were reduced to an average of 2.4 accidents per 200.000 workers. The environmental field is concerned with reducing the percentage of carbon dioxide emissions, which reached in 2010 about 100,000 tons, compared to 500.000 tons in 2006 (Hydro- Québec, 2010: 3-6).

The American Company DHL also works in the social field by transferring 7,000 tons of humanitarian aid free of charge to regions afflicted by natural disasters and by conflict across the world, and establishing partnerships with pressure groups, like Learning for All Association. In the environmental field, the company seeks to improve the fuel efficiency index, which leads to reducing the emissions of carbon dioxide, besides contributing to waste management in the affected areas, as the company took upon itself

the expenses of 100 volunteers for 83 days who recycled 7,000 tons of waste (Rashi, 2011).

According to Tardieu and his colleagues (2005: 36), there are many determinants for structuring the function of sustainability in terms of employment, the distribution of tasks, and the status of the organizational structure. These factors revolve around the key elements for enhancing sustainable development of the organization's activities, structure, and maturity of interested groups in the organization and media's growing role. Besides the increase in the number of legislative regulations on environment and social issues, systems and complexity, and history and culture of the organization.

Mostly, the function of sustainability is integrated within the existing functional departments through two cases; with one of the leading departments of the organization, in this case, it does not appear as a section in the organizational structure. Or as an independent unit like other departments or functions of the organizations (Tardieu et al., 2005: 38).

The World Business Council for Sustainable Development describes sustainable business and economic leadership as a catalyst for change towards sustainable development and its achievement, through enhancing economic efficiency and effectiveness, and adopting and strengthening the role of social and environmental responsibility and interest in innovation (Mawhinney, 2002: 4).

Based on this description, to embody the dimensions of sustainable development in the economic organization, the latter adopts basic practices that are at the core of its activity (such as economic rationalization of resources and energies and then reduce waste and costs etc.) and others voluntary and optional in its work with all the parties that have a relationship with it (such as adopting the concept of social, environmental and ethical responsibility) (Laville, 2009: 23-31).

These practices became mandatory overtime, imposed by new developments and new requirements for the external environment. In addition, the innovation processes incubated by economic organizations within the framework of the research and development department have facilitated many things that contribute to achieving sustainable development, including access to clean technologies that help rationalize the

consumption of resources and energy and create environmentally friendly products (Laville, 2009: 23-31).

The organization's role in achieving sustainable economic performance is shown by creating sustainable economic added value for all relevant parties, coinciding with the economic rationalization of the used energies and resources, through the outstanding performance of its human resources to achieve economic effectiveness and efficiency. Consequently, this will be attributed to the economic organization's contribution to achieving sustainable economic development at the macro level by maximizing the national gross income and ensuring its permanence, bringing about economic integration at the national level, contributing to foreign trade, and reducing imports, rationalizing production and rationalizing the exploitation of national resources (Gelinier et al., 2005: 67).

The organization's primary purpose by converting available inputs into outputs (goods and services) is to achieve profit. The existence of any organization cannot continue unless it can achieve a minimum level of profit, which enables it to raise its capital, expand its activity and withstand competitive economic organizations. Consequently, it works to create added value for all parties that cooperate to make the input transfer process successful. Each party will have a share in the added value equivalent to the degree of its contribution. These include external parties such as the government, customers, and suppliers, and internal parties like managers, employees, and shareholders, capital (Hillali, 2009: 70-71).

Based on the preceding, the organization can achieve sustainable economic development by creating sustainable value for shareholders through reducing costs, making rational and low-risk investment decisions, achieving sustainable customer satisfaction by providing quality products and services, and adopting the concept and principles of total quality management as a tool to achieve excellence (Gelinier, 2005: 60).

Achieving sustainable economic value requires a balance of the following four elements: quality, productivity, technology, and cost because the balance of these elements confirms that the expectations and needs of the stakeholders in the organization have been taken into account, and this integrated approach is called "total quality management" (Hit and Taweel, 1999: 11), which is one of the main issues of this study and its hypotheses.

To embody the structuring requirements that we presented previously, to achieve sustainable development for the economic organization, the last resort to building certain stages and adopting modern management tools and techniques derived from its adoption and continuous use of most of the existing and new standards and specifications, whether local or international. The most important of them are those issued by the ISO organization. In addition, its main traditional functions, especially those that directly affect the environment and society, such as the production and marketing functions, must be developed to keep pace with the changes taking place in its external environment, which takes an interest in social and environmental considerations as a source of advantage and competitiveness (Rashi, 2011: 99).

Therefore, in the following sections, we will highlight the stages and tools of integrating sustainable development in the economic organization and the overall performance in its context. The attempt to achieve sustainable development for economic organizations can pass through the following:

1. **Integrating sustainable development into the strategy**: This stage requires the organization to consider sustainable development and integrate its issues in its vision and strategic directions. An economic institution that wants to maintain its competitiveness in the current era must gradually and continuously integrate issues related to sustainable development, especially environmental considerations, in its strategies and long-term plans. This would improve the environmental performance of the institution and collect great benefits (Tahoun, 2006: 286).

This is what was shown by one of the studies conducted in France in 2003 on 6 European countries. Its results were reflected in the positive repercussions of the organization's integration of sustainable development in its strategy, which includes, according to the study; the ability to attract a qualified workforce and motivate them, and improve the relationship with public authorities, shareholders, stakeholders and NGOs (MEDEF, 2006: 33).

Other researchers like Chantal (2006: 33-39), Abbas (2015: 137), and Rashi (2011: 100) argued that there are many approaches to integrate sustainable development in the organization, as follows:

2. **Organizational approach:** This aims to develop integrated management through the organizations obtaining and adopting international and local standards for the dimensions of development such as environmental management system ISO 14001.
3. **Productivity approach**: This aims to renew the continuity of production through adopting the concept of cleaner production, coming from the contribution of technological innovations.
4. **Financial approach**: Through which the necessary funds are provided to achieve the previous approaches. In this context, it should be borne in mind that most of the donors and lenders financial organizations in the framework of sustainable development tend to take into consideration environmental and social concerns as a fundamental criterion for dealing with the economic organization through lending them and encourage them by giving them financial incentives.
5. **Using mechanisms for sustainable development's embodiment**: commitment to social, moral, and environmental responsibility.
6. **Indicator's approach**: The overall sustainable performance standards of the organization within the framework of sustainable development.
7. **Transparency approach**: The disclosure of the accurate picture of the organization's internal and external performance (reflected in establishing the concept of corporate governance).

Hansen and Schaltegger (2016: 10) believes that some companies, through their commercial operations, aim to maximize income and adhere to international and local laws and legislations of their sustainability and continuity by dealing with sustainability issues in a somewhat limited manner because the main objective of this strategy is not to gain a competitive advantage from implementing sustainability issues, but rather the need to adhere to laws and legislation, so it is also called a compliance strategy.

While Ong (2016: 23) argues that there are also companies working to integrate their commercial business with social, environmental, and economic goals, to contribute to achieving sustainable development, and not only maximizing the company's income, so it takes into account the external factors related to risks, costs, and social and environmental matters directed towards the outstanding performance of sustainability.

According to Ong (2016: 24), the application of such a strategy leads to reducing operating costs, improving financial performance, enhancing the reputation of companies and their brands, increasing opportunities to obtain capital, and preserving the employees of the company.

Some international bodies, organizations, and associations have shortened the way for the organizations and contributed to laying down the most essential tools to achieve sustainable development if the organization sought to obtain and adopt them (Sharif and Abdul Rahman, 2008: 153). Which are classified into three types, international standards and specifications, international initiatives issued by international associations and organizations, and local standards applied at the state level (Brodhag, 2003: 22). We will briefly review them as follows:

1. **International initiatives**: which can be limited to three basic initiatives.

A. **The Global Reporting Initiative:** which was established in 1997 by an organization called the Consortium of Environmentally Responsible Economies, with the United Nations Environment Program, and its mission is to raise the reporting methods for sustainable development to a level equivalent to that of the financial report so that these reports have the characteristics of comparability, accuracy, reliability, and the ability to verify the provided information (Carpon and Quairel, 2003: 3). The institutions must submit a consolidated report on sustainable development, through which environmental, social, and economic issues are addressed (Dontenwill, 2004: 6). The global reporting initiative is based on three pillars; the economic pillar, which includes research, development, productivity, and investment in the human element, the environmental pillar, which includes the impact of the organization activities on the water, air, land, biodiversity, and health, and the social pillar, which ensures the disclosure of information about health, safety, and observance of human rights in the workplace (Piechaud, 2009: 3).

B. **Cooperation and Economic Development Organization's Initiative:** It sets out a group of basic principles for sustainable development. These principles are directed explicitly to multinational corporations and apply to economic

organizations. This organization proposed the main principles that guide organizations to local sustainable development, which include operation and relationship with social partners, human rights, the environment, giving and delivering information and not misinformation, fighting corruption in all its forms, consumers' interests, modern and clean technology and taxes (Sharif and Abdul Rahman, 2008: 153).

C. **The Global Compact Initiative:** Its cornerstone is the three-dimensional pillar of sustainable development. It is based on the idea of trying to support the global economy and the equitable distribution of wealth to all the people of the globe in the context of globalization. This initiative was sponsored by former United Nations Secretary-General Kofi Annan with representatives of civil societies and members of the United Nations and is based on ten key principles. Economic organization is invited to accept and respect them by signing a charter that affirms its commitment to achieving sustainable development under its principles (Sharif and Abdul Rahman, 2008: 153). The ten principles are related to human rights, the environment, work, and fighting corruption (Abbadi, 2007: 22).

It should be noted that there are no specific criteria for identifying the commitment of organizations to implement the ten principles of the Global Charter. Organizations may claim to abide by them without any criteria or evidence to prove this or ensure that this commitment is realized. Some believe that these principles relate to human rights, labor rights, and Corruption and therefore cannot be adhered to voluntarily, but there must be some legal obligation (UN, 2008: 26).

2. **International and Local Standards and Specifications:** In recent years, there has been an increase in the number of standard specifications through which the economic organization contributes to paying attention to the dimensions of sustainable development. Some of the standards were issued by the International Organization for Standardization (ISO), and some were issued by other international and local bodies.

Among them is a series of specifications for the management of food safety systems ISO 22000, which includes a set of elements that work to ensure the food safety in all stages

that it goes through until its consumption (Muhammed, 2009: 453). There are also specifications for managing the information aspect like ISO 27000, dedicated to protecting the information system in the organization. In addition, there is the international standard for social accountability SA8000, which was launched in October 1997, by the American Social Accountability International organization specializing in the analysis of management, social and environmental practices of organizations, then adopted and developed by the British Institute for Standardization in 2000 (Costa, 2008: 62).

Regarding sustainable development, there is not yet a unified international standard that includes how sustainable development is managed and embodied in the economic organization. Accordingly, there are no standard specifications through which specific certificates in this area could be obtained. So, what exists in terms of standards and specifications in the international arena serves and embodies the dimensions of sustainable development each separately, like ISO 9000 quality management specifications for the economic side, ISO 14001 for the environmental side, and OHSAS 18000 and ISO 26000 for the social side of sustainable development (Jonquieres, 2001: 160).

These specifications will be discussed in in-depth detail in the third chapter, as they represent one of the most essential pillars of this research.

Based on the foregoing, the leading economic institutions at present are considered the basic nucleus of the technological development process through the innovation process that emerges from the research and development function of these companies. The companies that we mentioned previously have tried to integrate the foundations of sustainable development into their strategies. These companies spend a lot on the research and development function, as it is a strategic investment in the short and long term, so they build a technological base that achieves technological and organizational innovation, related to the introduction of new methods and applications that improve the overall performance of the institution, such as the introduction of the concept of total quality management (Abboud, 2003: 352).

According to Rashi (2011:98), such policies contribute to achieving a competitive advantage, rationalizing resources, reducing costs, activating the production process,

achieving social welfare, discovering and developing alternative energy for polluting energy, producing clean, environmentally friendly products. Accordingly, innovation significantly contributes to developing and improving the economic, social, and environmental aspects of sustainable development in the economic organization.

1.7. The Organization's Overall Performance in the Context of Sustainable Development

In light of sustainable development requirements, the evaluation of the overall performance of the economic organization has gone beyond the economic and financial performance to indicate the amount of the contribution made by the organization in the field of concern for social and environmental performance (Hamdi, 2003: 3).

According to Idris and Nisour (2005:14), performance is defined as "A reflection of the organization's power and ability to use its materials and human resources to achieve long-term goals, through the interaction of internal factors and external influences ". Performance is reflected in the levels of efficiency and effectiveness achieved by the organization. The organization that has reached its goals with costs that is more than its counterparts cannot be judged to be with high performance, nor is the organization that has been able to employ all its resources without achieving the desired goals or even being closer to achieve them in good proportions (Barillot, 2001: 136).

Several classifications also characterize performance, (see Yahyaoui, 2008: 1-11; Mazhouda, 2001: 89), The most prominent is the inclusiveness criterion that classifies performance into the partial performance that is at the level of the organization's subsystems, and the overall performance that expresses how the organization achieves its overall goals.

Accordingly, the overall (comprehensive) performance resulting from the organization's relationship with sustainable development is that carries within it the sum of the economic, social, and environmental sub-performances of the organization (Ayeb, 2009: 3) and takes into account and integrates the three dimensions of performance represented in the economic dimension by which the organization satisfies the desires of shareholders, and gains their confidence, and the social dimension which is a translation of what the organization provides to the society in which it is active and finally the environmental

dimension that is, a translation of what the organization provides to protect the environment, and maintain and rationalize the exploitation of natural resources (Olivier, 2007: 15).

To know and evaluate the organization's overall performance within the context of sustainable development, there must be some indicators. These indicators consist of the sum of the above-mentioned sub-performance evaluation indicators that express the most important dimensions of sustainable development, which are represented in the following:

1. **Economic performance indicators**: It includes financial performance (profitability, growth, activity, loans, market share, customer satisfaction), as well as value-added, which is an indicator that shows the extent of the organization's contribution to achieving national income that expresses the sum of the added values, and thus whenever the organization achieves higher added value, it signifies good economic performance, compared with competitors or with its previous performance (Reynaud, 2003: 10).

2. **Social performance indicators**: The measurement of social performance is a criterion for judging the extent to which the organization fulfils its social obligations and responsibilities and evaluating the social benefits of its economic activity. Thus, social performance indicators are summarized in; the social performance indicators related to employees (training, concern for occupational health and safety), social performance indicators for community service (donations, contributions to education, awareness, and training programs), and social performance indicators for the development of production (costs of controlling production quality, costs of research and development, Post-sales follow-up guarantees costs and staff training and development) (Ani, 2005: 9).

3. **Environmental performance indicators**: Among the most important indicators for measuring environmental performance are; the costs and number of training days for employees in the area of respect for the environment (Ayeb, 2009:7).The rate of emissions produced by the organization, which have an impact on the ozone layer, soil, and water, the rate of consumption of energy, water and raw materials, the costs of participation in projects aimed at protecting the

environment and the maintenance of its natural resources, the rates of recycling and the use of clean technology (Gelinier, 2005: 97).

According to Ani (2005: 9), there should be a balance between what an organization provides as a social performance for all related parties on the one hand and its adverse effects on the surrounding environment and the society as a whole on the other hand. Within this context, the main problem hindering the balancing process is how to subject the costs of these social damages to quantification, some of the damages borne by society, such as noise or environmental pollution, may be reflected in one way or another on the increase in treatment costs for diseases related to this pollution, which health units or community members bear, but it remains difficult to directly and accurately measure the size of these effects (Rashi, 2011: 120).

In addition to the above, Ghalibl (2009: 49) argues that it is possible to address indicators to measure the overall performance of the economic institution within the framework of sustainable development based on its relationship with stakeholders. Where management of business organizations must set one or more performance measures for each group of stakeholders and achieve a minimum level of coordination and harmony between those goals to supports the overall performance of the business organization in the context of sustainable development.

As a sum up for this chapter, we can say that those who follow the history of development at the global and regional levels will find that there has been a continuous and precise development in this concept. This development was a true reflection of the international experiences that have accumulated over time in this field, and realistic response to the nature of the problems presented by societies, the most prominent of which are environmental pollution and the exacerbation of poverty.

All this led to the emergence of sustainable development as an alternative development approach that includes all aspects (economic and social aspects) and added to them the neglected environmental considerations. This new model is considered one of the most prominent addition to the development literature in recent decades because the prevailing development models are keen on economic growth only and achieving wealth and prosperity at the expense of other systems, especially the ecosystem. In contrast,

sustainable development reconciles the environmental component on the one hand, and the social and economic component on the other hand.

So, it can be said that sustainable development is the economic activity that leads to the significant improvement in social welfare, simultaneous and parallel with the concern for the rational exploitation of available natural resources with the least possible damage to the environment. Hence, there are major aspects on which sustainable development depends, achieving a fair distribution of the benefits of growth, achieving the social welfare of humanity, and preserving the environment and natural resources.

Environmental pollution has become one of the most critical problems of the century, integrated into the challenges of sustainable development. Considering that economic organizations are one of the main parties causing the problem of environmental pollution. They had to deal with it through compatibility with the necessary local and international legislation and try to critically evaluate the damages, compensate the affected parties, reduce the negative effects resulting from its activities, and determining their optimal levels that should not be exceeded. At the same time, trying to include these negative effects within the costs of the activity to reduce environmental problems and move towards achieving sustainable development.

The integration of sustainable development in the economic organization requires keenness to achieve sustainable economic performance, and improve its environmental and social performance, through the activation of its social, environmental, and ethical responsibilities. In addition, cleaner production, environmental research and development, and human resource management in an environmental context all play an essential role in achieving sustainable development.

Achieving sustainable development in the economic organization also depends on specific tools, which is represented in the organization's commitment to those initiatives set by international organizations (such as the Organization for Economic Cooperation and Development, the United Nations Organization ... etc.) that seek to achieve sustainable development and try to adhere to the application of international standards and specifications in all fields, and in particular the International Organization for Standardization (ISO). Their primary tasks are to advance standards and specifications that facilitate international trade and exchange, spread knowledge, and participate in

technological developments, good management practices, and protect users and consumers and facilitate many aspects of their lives.

The ISO organization, in addition to its previous tasks, participates and contributes to achieving sustainable development indirectly because it guarantees the critical basic features such as quality, environment, and occupational safety, by issuing standard specifications concerned with embodying these dimensions, the most important of which are quality management specifications ISO 9000, environmental management ISO 14000, and the social aspect management specification represented in the Occupational Health and Safety Administration Standard OHSAS 18000, and the social responsibility standard ISO 26000. These specifications represent one of the important pillars of this research and will be discussed in detail in the third chapter.

CHAPTER 2: A FRAMEWORK FOR TOTAL QUALITY MANAGEMENT

TQM is one of the relatively modern administrative philosophies that emerged in the 1980s and proved effective in improving productivity, enhancing competitiveness, and continuously improving quality. The studies of management and marketing experts indicate that the interest in production and quality to meet the customer's need in the local and international markets is one of the crucial approaches to meet the changes and ensure continuity and competition.

This chapter aims to identify TQM, its impact on improving the performance of organizations, and identify the positive reflections of performance as a result of the application of TQM principles like continuous improvement, management's reliance on information when making decisions, making efforts to meet customer's needs.

It is not easy to define a comprehensive, agreed-upon concept of total quality management, as many definitions have been presented to it, each of which reflects the vision of its owner. Nevertheless, the Federal Quality Institute in the United States defined quality management indicating that it is the correct performance of the work from the first time with reliance on the beneficiary's evaluation to see the extent of performance improvement (Federal Quality Institute, 1990: 7).

Ukwuoma and Omere (2014) believe that TQM is an organizational management system that builds to obtain continuous improvement in the organization's processes. While Imran, et al (2017) views it as a comprehensive approach linked with the organization's mission and vision to make a significant and continuous improvement in terms of productivity, performance, and competitiveness.

We can define TQM more precisely through some definitions set by the most famous scholars and experts of the model. Crosby defines TQM as a systematic, structured way to ensure that the previously planned activities run without errors and optimize the use of good behaviors (1989: 19).

Deming believes that total quality can be achieved through improving processes by increasing production outputs, reducing errors, duplication in work, and waste of time and resources. From this point of view, Deming confirms that quality is a continuous

reduction of losses and an improvement in quality in all activities (1993: 27). The benefit of the TQM system depends on senior management. Quality includes all parts of the organization but cannot go beyond the ambitions and intentions of the men who occupy the summit (Dobbins and Crawford, 1997).

Juran defines it as a management system that has developed tools that can be applied effectively to the organization to bring about changes in employees' attitudes and increase their affiliation with the organization (1989: 28). Joseph Juran emphasized taking TQM as an administrative process that is carried out by the organization in a cooperative way to accomplish the work by taking advantage of the particular abilities of both the management and the workers to improve the quality and increase the productivity continuously through the work teams and to be guided by the accurate information to get rid of all waste work in the organization (Nasr, 2008). These ideas play a vital role in developing quality improvement approaches to meet consumer needs as the basis of TQM philosophy (Hafiz, 2012).

Joseph Jabloneski takes TQM as a collaborative form of doing business depends on the joint capabilities of both management and employees to improve quality and increase productivity continuously through the work teams. Jablonsky (1996: 45) and Krüger (2001: 154) refer to Ishikawa's view of TQM as an administrative process identified according to customer orientation, based on the contribution of all individuals within the organization and use quality circles to solve the organization's problems.

Schwable (1993:8) mentions the view of Taguchi about TQM as an administrative system that links to the production and process, continuous improvement, teamwork, low costs, and less time, focuses on matching with standards and measurements, and uses statistical methods for evaluation. Neyestani (2017:11) agreed with Fiegenbaum's perspective that TQM is an efficient approach for consolidating various groups of an organization's effort towards quality improvement to provide products and services with low costs that meet customer's needs.

All the above-mentioned pioneers agreed on some TQM values such as training, continuous improvement, and senior management participation. The case is that each one has his approach on reaching these goals (Errabou, 2013: 32). According to Suarez (1992: 16-20) and Neyestani (2017), Deming, Feigenbaum, and Taguchi focused on process,

Juran and Ishikawa focused on people. Crosby argues to focus on the outputs by reducing performance defects and stressed the importance of senior management in supporting quality and achieving high standards.

These ideas play a crucial role in developing quality improvement approaches to meet consumer needs as the basis of all philosophy. Feigenbaum focused on the concept of discrimination rather than focusing only on flaws. From his point of view, the consumer determines quality, and this is what Juran agreed with. Fiegenbaum explained that the philosophy of quality extends beyond the boundaries of the sections to include all activities within the company. Here, Fiegenbaum complies with Crosby's view of the limits of TQM.

Through these definitions, we can argue that the concept of quality is limited to the extent to which a particular product complies with standards and measurements already set by the institution in the form of specific forms that are supposed to conform to the needs and desires of consumers. So, the competition here is about the ability of the organization to develop the best measurements and the best designs and specifications and maintain it as long as it satisfies the consumer's needs and requirements.

However, due to the intensity of competition, this concept is no longer valid as the consumer is the leading party in defining these standards and specifications that the organization must achieve in its products if it wants to market them. TQM has also been linked to specific requirements, which are also about customer needs. However, due to the effects of globalization, including the necessity of uniformity and harmonization of these standards, the quality of service or products can be judged to take a global character. These standards or characteristics are called international quality standards. In this context, the quality of the product depends on its conformity with a set of international standards.

All mentioned definitions focused on internal issues like customer satisfaction, performance, zero defects, and low costs. For this study, we need to form a definition that not only links quality to a set of international standards and specifications, but also links TQM through these standards with environmental and social issues and concepts like sustainability and social responsibility. To achieve its broad goals of continuous improvement not only inside the organization but also in its surrounding environment, as

our research focuses mainly on public enterprises, where implementing TQM practices is not going to be an easy task due to the complexities related to the nature of these organizations and the social and environmental values that should carry during its functional processes.

According to what has been mentioned above, we can say that TQM is an administrative philosophy, a strategic input, and a means of managing change that aims at transferring contemporary organizations from the different modes of management and traditional thinking to patterns of thinking and practices that are compatible with the surrounding environment and current requirements. By motivating their talents and abilities with the aim of continuous improvement. This definition comes from the integration of the definitions mentioned above and the ISO definition that adds the social dimension to TQM through seeking to benefit the society as well as customers and the organization's members. Adding to Sallis (2002:3) definition of TQM as a philosophy and approach that helps organizations manage change and set their agendas to deal with many new external pressures.

2.1. The Principles of Total Quality Management

TQM philosophy is based on a set of principles the organization can adopt to achieve the best possible performance. However, the vision of researchers and writers varies in the determination of its principles.

Martine (1991: 32) refers to principles like compliance, prevention, and measurement-mastery, excellence, and responsibility. Weil (1994: 132) mention total integration of management, Cohesion among all organization's members, retention of functional errors, and continuous quality improvement.

According to Lyonnet (1991:4-9), total quality is based on expanding areas of activity improvement, priority of quality control, identification, and analysis of causes-quality means perfection with zero defects cost control through evaluation- quality is a source of profit. Quality is included in all the organization's activities; customer trust is connected to the organization's reputation and supervision is the responsibility of all organization members at every level.

Although researchers' opinions differed on the principles underlying TQM, they agreed on basic principles that can be mentioned as follows:

1. **Effective leadership:** Leadership within the concept of Total Quality Management means motivating individuals and encouraging them to have the desire and ability to achieve goals (Khatib, 2006: 55).
2. **Decision-making based on facts:** Its application requires relying on the techniques and resources to create the necessary channels to enable individuals to deliver the information they have about facts to where they should get this information to achieve quality (Azzawi, 2005: 34).
3. **Strategic planning:** Strategic planning concerns with defining the objectives and activities, vision, mission, and goals of the organization, and thus facilitate the development of policies and programs in light of an in-depth analysis of the internal and external environment in such a way that provides support for the organization's competitive advantage through renewal, innovation and continuous improvement (Slack et al, 1998: 784).
4. **Participation and teamwork:** Continuous improvement process requires strong participation by the staff with the building of the team spirit. This could only be done by creating the various conditions necessary to achieve this, like leadership-motivation-precise recruitment of positions and responsibilities, training, and other conditions (Cartwright, 1999: 41). Employees must be motivated and encouraged to contribute to quality improvement by enabling them to make the appropriate changes, take the necessary decisions, and innovate, leading to better organizational performance (Yong and Wilkinson, 2001:827).
5. **Focus on customer satisfaction:** Organizations were initialy found to satisfy the requirements of customers (both internal and external) who directs total quality management's operations and need to get feedback from the operations and their results to be able to reach satisfaction (Krajeweski and Ritzman, 1996: 91).
6. **Continuous improvement and excellence:** Continual improvement under TQM is reflected in the ability of the organization to design and implement an innovative system that continuously satisfies the beneficiary through the continuous pursuit of optimal performance (Azzawi, 2005: 62).

2.2. Importance and Objectives of Total Quality Management

The need for total quality has grown due to the continuous change of all the surrounding elements, represented by the globalization of the market, which is a result of the emergence of some organizations and agreements such as the World Trade Organization, where they contributed to the liberalization of trade exchanges and the opening of the international market, which led to the escalation of competition between institutions, and the growth of economic groupings (Lyonnet, 1991:8).

According to Bakri (2001:37) and Mustafa (2001:56), the technological developments, which have been the cause of the development of production techniques, and social developments that led to the development of needs and their diversity among individuals have led to the necessity for organizations to adopt quality as a competitive means, to increase their market share, join the World Trade Organization and find new techniques in running functions with the adoption of an integrated management system that considers both human and technological resources in the improvement process.

Organizations seek to achieve many objectives through the adoption and application of TQM philosophy, including reducing production costs and meeting the need of customers. Achieving the two previous objectives of total quality contributes to enhancing the organization's ability to achieve quality while reducing prices without affecting its profits. Thus, enhancing the competitiveness of this organization and achieving a competitive advantage in the market (Hegazy, 2000:27-28).

While Maricourt (1993:35) summarizes the objectives of total quality in terms of external goals that seek to provide the best goods and services to customers and achieve maximum satisfaction through the reduction of prices. Besides internal goals, which are also classified into social and economic objectives. The first is related to teamwork, motivation, and belonging and the other focuses on competitiveness through efficiency and effectiveness.

Khatib (2006) argues that organizations use quality certificates for advertising purposes to get new customers and enter new markets. Therefore, TQM leads to an increase the sales return while reducing costs. Generally, achieving TQM objectives comes only

through an integrated strategy that sets in mind achieving a high level of quality to ensure survival, continuity, and development.

2.3. Total Quality Management Application in the Organization

The process of the organization's adoption of TQM ideas and the attempt to implement and consolidate them is not an easy matter. This requires going through many stages and making many changes in all areas of the activities and operations of the institution.

According to Hanson (2003), many different aspects should be considered for the organization to succeed in TQM implementation, like the form of the organization, which plays a vital role in discovering the defects that comes with the implementation of TQM's failure with its financial and operational adverse side effects.

Oluwatoyin and Oluseun (2008) indicate the ability of TQM to be adopted by several organizations, including the public sector. However, the application of this ideology varies from one organization to another, as some organizations select from TQM principles, taking only some of them while others consider it as a self-processed program without taking in consideration other factors. This behavior might be the reason why many organizations failed to achieve their desired objectives when implementing TQM strategies.

The application of TQM requires changing the culture and values of the organization, adjusting its organizational structure, and guiding the patterns of supervision in a manner that is appropriate to this new concept, especially considering the comprehensive competitiveness experienced by business organizations in various practical fields. Accordingly, Researchers like (Ziada,2011; Schmidt and Vanga, 1997:7; Heizer and Render, 2001:26; Bernard, 2000: 127; Jablonsky,1996:62; Ghalibi,2009; Yong and Wilkinson, 2001; Kazem,2009:102; Patanjali and Pandey, 2013: 150), identify the most critical elements for successful application of TQM as support of senior management, customer orientation, creating work and culture environment, effective management of human resources, education and training ,adopting TQM leadership models, employee contribution, and building TQM information system

If we look at these previous requirements, we will find that they are centered on adopting the concepts of total quality management in all the operations carried out by the

organization and considering the customer as the basis in the thinking of the organization's senior management. His desires and needs are the main drives for the organization's current and future efforts.

When public institutions found themselves unable to compete with the private sector, as they witnessed a significant decline in efficiency and innovation compared to the private sector. Which relied on intense competition and open markets to unleash it in all areas. It had to find ways to save and develop institutions that aim to meet citizens' basic needs in terms of services and products, and its role is not limited to this. Rather, its role includes providing the well-being and prosperity of citizens and solving environmental, social, and health problems and everything that concerns the public interest (Cohen and Eimicke, 1996).

The challenges that face public organizations in the field of productivity and service quality has made many of them constantly seek to adopt some administrative methods, which have proven effective in improving productivity in the private sector. Then public sector organizations have resorted to the method of total quality management to develop their performance by building a deep culture of quality, and a base of values and beliefs that consider quality in serving the customer as the primary goal of the organization, and that the methods of teamwork, dealing with problems and change are determined to support and maintain that goal (Manasir, 1994).

The development and application of modern administrative systems and concepts in the public sector, such as transparency and accountability, have helped to increase the possibility of applying TQM. Public sector services are no longer seen as a given, as the objectives and operations of these services have become subject to intense review by both politicians and consumers (Manasir, 1994).

For a long time, the concept of TQM was limited only to the private sector and profit-making institutions, with the belief that it is not appropriate or not applicable in the public sector, but many studies, such as the study of Jreisat (1992), have concluded with the possibility of successful application of TQM in various public sector institutions, even the service ones. However, successful implementation of quality management in the public sector needs to amend the concept and gradually apply it.

Stringham (2004) explains the intellectual debate about the possibility of implementing total quality in the public sector. He mentions some scholars such as Cohen and Eimicke (1996) who argue that no fundamental problems are facing the public sector while applying total quality management and that the performance of the government can be developed by raising the level of employees through continuous development of operating processes and the formation of influential working groups.

Whereas Raqo (1994) believes that total quality can play a beneficial role in the public sector, but in the case that substantial adjustments are made to it to make it suitable for the characteristics of the public sector. They stress that the challenge lies in the producing institutions more than in the service ones due to the difficulty of identifying customers in those institutions.

Adopting the concept of TQM in the public sector requires making some urgent changes in government institutions and addressing several dimensions, which contributes to the success of its application in the public sector. Among these fundamental matters, as mentioned by Nazer (2004), delegating authority to employees in making decisions, as the application of TQM and increasing employee involvement in decision-making helps the public sector increase its response to environmental changes, besides the reliance of government decisions on the facts, and the use of rational methods and effective measurement tools in analysis processes, which help the government avoid citizens' interpretation, and develop standards for future decision-making.

Although TQM could be applied to both public and private sectors alike, there is a need for a different strategy for TQM application in the public sector due to the differences in the organizational culture and the high degree of environmental uncertainty in government agencies. Thus, it is necessary to start implementing TQM in small public sector institutions and focus on service sector ones before implementing this concept in large organizations that need very high efforts (Dokki, 2006:49)

Although the applications of the concept of TQM may differ, especially in the results that can be achieved, it can be said that judging the feasibility of this concept cannot be accurate until after its actual application and that the lessons that can be learned from failure in the application are not less valuable than the lessons learned from the successful application (Hegan, 1994: 420). Failure does not necessarily mean that concepts are

wrong, but it may reflect misapplication or failure to reconcile the concept with the new environment.

2.3.1. Total Quality Management Application's Levels and Stages in the Organization

Implementation of TQM in any organization requires good planning and great awareness of what must be considered while putting this system into practice and the most essential tools that enable the proper application and confirmed success.

According to Nguyen (2006:17), organizations' adoption of TQM is divided into five levels representing the development of awareness within the quality management over time. Starting from being unaware of TQM principles or unable to control continuous improvement methods of and enhance participation in decision making. It should be noted that some organizations that pass this stage obtain an ISO 9000 certification. Then they become uncommitted, which means being more advanced, seeking to implement TQM, but results and differences between before and after TQM application are not precise.

Then comes the imitator level. At this level, the interest in continuous improvement processes begins to emerge, changes resulting from TQM application could be seen, but still, some principles remain incomplete to understand. Real improvement could be seen at the improver level but not yet able to mainstream TQM philosophy within the organization. Then the achiever, as the last level, where organization's HRM principles completed and this could be seen in culture and valued used, continuous improvement becomes a normal process which is done sustainably (Ngueyen, 2006:18).

Suppose TQM represents a long-term organizational strategy that seeks to control the form of the organization and productivity in the foreseeable future, and achieve a competitive position in the future. In that case, the implementation of this strategy is done gradually according to planned stages, a new phase is started whenever the previous one succeeds.

It should be noted that theorists disagree on specific stages of implementing TQM in organizations, as Hagan (1994: 427-428) indicated that the application of total quality could be made by identifying the quality elements in the organization, knowing the expectations of the beneficiary, and creating a new system for providing services, and a

robust support system to provide feedback about the course of the implementation program.

While Saqqaf (1996:37-40) believes that the stages of implementing TQM do not deviate from the five phases of choosing an improvement project, analyzing the process to be improved, gathering and analyzing information, creating improvements considering the given information, and analyzing opportunities for improvement and development

Qudmani (1993: 44-46) and Tawfiq (2004: 104-109) mention six stages of implementation, starting with the zero phases (preparation), then planning, assessment and evaluation, implementation, diffusion, and finally, the continuous improvement phase.

Other researchers (Kazem, 2009:76-238; Heizer and Render, 2001: 171; Lozi, 2002:244; Joudeh, 2006: 216) agree with Qudmani and Tawfiq in their classification, but they differ from them in the last two stages. These scholars listed five stages instead of six for the successful application of total quality in any organization; preparation, planning, evaluation and assessment, implementation, and experiences' exchange and dissemination.

Analyzing these stages shows that the level at which the organization's standing in TQM application should be known to be able to move to the higher stages. Each organization aims to adopt the philosophy of TQM in its processes, and the internal system must pass the necessary steps from the preparation stage to the exchange of experiences. However, the application's success varies from one organization to another, and this success translates into the five levels that the organization is advancing in achieving over time.

On the other hand, it is hard to generalize certain stages that one organization has succeeded in applying to other organizations due to the differences between them. Service organizations differ from profit organizations, and organizations in developed countries differ from their counterparts in developing countries. The differences include human inputs in terms of culture and rehabilitation and others, in addition to the size of the organization, and therefore the stages that can be applied to TQM in a simple organization will be different from what would be the case in a complex organization. Therefore,

writers and researchers opinions varied about the stages of implementing total quality management (Saqqaf, 1996: 35).

From the aforementioned, application of TQM philosophy in the organization must be based on foundations, which are supported by a set of principles that help the application. This requires going through many stages and changes that affect the organization as a whole, including culture, workers, responsibilities, jobs etc. Adopting the TQM philosophy is not a routine matter, similar to the strategic plans that the organization used to implement because such belief may hinder the implementation and application process of TQM.

2.3.2. Benefits and Barriers of Implementing Total Quality Management

Generally, the optimal use of total quality management may achieve many benefits. According to Chin and Pun (2002: 272), TQM helps in the improvement in profitability and competitiveness through selling at higher prices, reduce the costs of the market, increase the number of sales, and then increase the profitability of the organization and the ability to compete, in addition to customer satisfaction.

Davis (2003:14-17) argues that TQM increases organizational effectiveness with the use of teamwork; improves communication and involvement in problem-solving. It can also help preserve the organization's activity by renewing the production process to adapt to the environmental change to ensure its survival and continuity in competition.

Studies have revealed many advantages of applying TQM in public organizations as a modern management method, as Hagan (1994) concludes that it helps improve employees' affiliation to work and increase their cooperation and interaction with each other, which thus improve the quality of services. While the study of Manasir (1994) showed that the effect of TQM was positive on employees, especially in training, building work teams, focusing on customers, showing respect, and awareness of the concept of TQM. Dobbins and Crawford (1997: 25) put forth that TQM implementation in public organizations leads to the use of national resources in the most appropriate areas and improves the quality of public products at the lowest cost. All reflect positively on the citizen.

In a study conducted on applying the innovation strategies in the public sector, Cohen and Eimicke (1996) try to find what managers in the public sector need in terms of applications of some basic techniques that help improve work in public institutions. One of the most important techniques that they recommend for the development of public institutions was TQM. They also state that the use of strategic planning, re-engineering processes, teamwork, and performance measurement standards, in an integrated way is essential for the application of TQM.

Anthony et al. (2002) explain that the application of TQM in the public sector leads to achieving benefits similar to the private sector, such as improving the quality of services provided to the public, reducing operating costs, improving and developing work procedures, and methods, increasing employee loyalty and raising the level of performance.

The difference is that these benefits are reflected in all citizens, not a specific group. The application of TQM leads to the use of national resources in the most appropriate fields and the best way and improving the quality of public products at the lowest costs (Dobbins and Crawford, 1997).

From the above, we conclude that one of the best alternatives that achieve the benefits and advantages of the organizations is to adopt the philosophy of TQM as a long-term approach. However, despite the reasons that require the application of TQM and the various advantages that the application achieves whether in public or private institutions, there are a set of difficulties that prevent the successful application of TQM.

According to Martinich (1997: 599-601), the biggest barriers to TQM application are the permanent change in administrative leaders, the difficulties of identifying customer needs, data collection and analysis, especially in developing countries and lack of employee's participation in TQM programs. Irani and others (2004:64) add the misconception of organizational cultures, the dependence on hierarchical management, which affects the spirit of creativity, the division of performance into results rather than improved processes, and the lack of conviction of senior management on training.

The success of the implementation of TQM in developing countries requires more than learning about organizational tools and methods. Planning and deep knowledge about the

organization and the impact of the surrounding environmental factors determine the specificities of the applied model, which should fit the cultural composition of the organization.

Bari et al. (1994) conclude that the application of TQM in the public sector does not have any negative effects, and there are no obstacles that prevent its application. However, the application of this concept in the government sector is not an easy task. The successful application requires work to provide a set of requirements, taking into account the existence of differences between public and private sector clients and the existence of different degrees and levels for the application of TQM in each of the two sectors, such as among the variation in the needs and the ability to achieve satisfaction with the public.

Hegan (1994:412) also believes that implementation of TQM in the public sector is not an easy matter, as the managers and individuals working in the public sector decide for themselves the services required for the public, given that the government sector is the only body that provides these services . The public has no choice in requesting this service from non-governmental institutions. Hegan also believes that the absence of communication between public sector organizations and citizens is the most crucial reason for the low public satisfaction with the quality level of services provided by government institutions.

While Woodward et al. (2004) stress the difficulty of organizational change in public sector organizations, which may face opposition by workers and what some changes bear in terms of difficulties in the organizational culture and the effects of the external environment on the applications required for change.

Ciampa (1992) describes the reasons for the failure of many programs aiming for a change in many governmental organizations because they begin by trying to change the knowledge, attitudes, and beliefs of their workers, while what is required is the knowledge and awareness that the behavior of individuals is usually derived from the nature of the roles assigned to them, and the laws and the systems through which they work. Ciampa (1992) believes that change can occur by assigning new responsibilities, the work of individuals within the laws and systems of work teams and developing the work environment.

Qahtani (1993:22) also indicates that an accurate system must be found to measure the level of quality in the government sector, similar to the private sector, based on appropriate statistical methods to determine non-positive cooperation in accomplishing tasks. The system for measuring the time variance required to perform a specific task could define for us whether the variance is within the expected limits or not.

Qahtani also mention that one of the most critical obstacles facing the application of the TQM model in the government sector is the continuous change in administrative leadership, which prevents them from controlling total quality programs. Besides the confusion surrounding the issue of training and evaluation of individual performance and the multiplicity of beneficiaries, the organization's objectives and goals are lack of financial accountability due to the weakness of the financial and information system in the government sector (Qahtani, 1993:23).

Manasir (1994: 52) has stated that to overcome the most important obstacles facing the implementation of TQM in the government sector, ten steps have been identified, which is the need to identify beneficiaries and survey their opinions and the extent of their satisfaction with the quality of the service, determining the services provided by the organization and setting standards for them, identify the organizations with high - quality services, establishing excellence in quality and service as a primary goal of the organization, constantly reviewing the service delivery system, especially the policies and procedures, train workers on modern technologies and giving them sufficient powers with the necessity of appreciating individual accomplishments.

It should be noted, from the above, that any TQM program cannot achieve success, except through the commitment of the top management and all employees at all levels, and the concerted efforts in a coordinated manner to change the culture of the organization by focusing on providing the best products and services, and improving continuous working methods, in addition to the quality improvement teams identifying problems, isolating their causes, proposing solutions and providing recommendations that address them, and developing measurement tools and appropriate statistical control maps to preserve the achieved gains. This calls for a continuous review of individual performance and rewards for individuals who deliver outstanding work and adhere to the required quality levels (Dokki, 2006:57).

Finally, we can say that the success in TQM application depends on several requirements; in which the most important is the internal environment and the applicable organizational structure. The others are awareness and unlimited support of senior management and the conviction and enthusiastic participation of all employees at every step continuously. The lack of this could explain the situational failure faced by some organizations in applying the concept of TQM.

2.4. Total Quality Management Application Methodology in Organizations

The TQM approach is a strategic management approach that focuses on the internal environment of the organizations. It helps organizations to have a clear vision for future competition through a policy of quality that is consistent with the organizations' overall strategy, to be able to get benefit from the opportunities at the external public or private environment level in general, as well as meet the challenges posed by this environment (Abbas, 2015:32)

2.4.1. Strategic Planning for Total Quality Management

The success of the TQM application is based on the development of proper strategic planning for quality that considers the organization's specificities and matches with its strategy to ensure its survival and continuity.

According to Howell (2000: 18), strategic planning is an administrative technique to determine and define an organization's direction and reach the goal through strategic management decisions. Goldsmith (1997: 25) argues that strategic planning is a long-term process aimed at helping the organization build relationships with the environment by setting future strategic preferences and techniques and transforming them into actions, with complete flexibility to change according to environmental conditions.

Strategic planning for TQM is a process linked to long-term quality objectives with identifying effective ways to reach those goals, which is one of the vital responsibilities of senior management, which is implemented on a systematic basis (Mukhtar, 2002: 159). According to Yahdiah (2003: 78-86), the phases of developing TQM strategy starts with creating the internal work environment through spreading the culture of quality, developing the organizations' missions and define strategic objectives through identification of the elements of success which have a direct impact on customer

satisfaction. Then analyze the country's general external environment and the internal work environment and choose one of the quality strategies for competitive conditions.

From the above, we can say that the macro-level of strategic planning is focused on improving the quality of the whole organization. While the micro-level of strategic planning for quality management focuses on quality improvement plans of each level of the organization's various activities processes.

Therefore, any organization's achievement of a distinct level of quality in its product and service depends on the accuracy and relevance of the strategy it draws in this field so that all its policies are directed to serve this strategy, besides the allocation of the internal and external environment of the organization. All this requires developing a solid policy to control quality and work on its implementation, which we will explain in the following section.

The quality policy is considered as a fundamental step to support the organization in formulating strategic planning for TQM. It ensures the basic foundations for organizational restructuring and the main activities in quality control to meet the internal and external environmental requirements. The quality policy also works as a general framework for the establishment and review of quality objectives. The development of quality policy in the organization requires the necessary preliminary diagnosis to know strengths and weaknesses and opportunities and threats in quality management, to carry out the necessary practical measures (Abbas, 2015: 42).

The procedures, which represent the quality policy, are usually written, especially in large organizations. Management should publish them inside and outside the organization. Then comes the role of different departments of the organization to clarify and define their objectives and work to achieve them within the overall objective of the organization's project (Hussein, 2008: 218-220).

Quality improvement policy represents a bet on the future of the organization. It is based on some foundations includes the delegation of individuals' responsibility through direct participation at the level of operations management and control (Azzawi, 2005: 59). Besides the organization-wide dissemination of the customer/supplier relationship

concept and the organization's openness to the external environment through the partnership with customers and suppliers (Sarayra and Assaf, 2008: 14).

The total quality policy includes several rules and pillars that must be adhered to when making decisions at all administrative levels within the organization. Quality policy must satisfy customers and gain their trust by offering free defects, products or services with the most significant benefit, communicate with them continuously, deepening the collective responsibility, works to achieve the concept of teamwork and participation in decision-making and provide organizational easiness and flexibility to gain continuous improvement (Kayali, 2006: 24).

TQM policy also has many objectives such as raising awareness among organizations and consumers and set the quality culture in the organization, providing products and services that meet customer's expectations, strengthening cooperation between organizations and international bodies of standards and specifications, and develop the efficiency of human resources (Abbas, 2015: 45).

Implementation of quality policy requires reviewing the laws necessary for the organization's development and application of quality policy, adopt of economic laws in line with international laws to improve access to markets and increase competitiveness, formulation of a quality management department and strengthening organization's responsibility to provide products that meet the domestic and international market's requirements (Kayali, 2006: 26).

Organizations often succeed in adhering to total quality management programs and disseminating their principles among all their employees. However, their attempts ultimately fail in the long term due to the lack of change in the organizational culture (Abbas, 2015: 46).

Quality culture is one of the main pillars in improving organization's performance and their role in promoting the values, beliefs, and behaviors of the employees for effective TQM application. According to Alimat (2005: 35), building a strong quality culture in the organizations should be through knowing the changes to be made, building an integrated plan to implement the required changes, and convince the staff of the

organization of the importance of the changes and provide moral and material support to those who will be affected by the process of change.

Miller (2008: 2) believes that applying the TQM system depends on spreading the culture of quality to the employees. This facilitates the review and evaluation of progress towards achieving organizational goals and commitment to continuous improvement, focusing on customer requirements, setting objectives, and defining and standardizing the process. Amrita and Cheng (2007: 5) defined seven dimensions of quality culture; stability and creativity, respect for employees, orientation towards outputs, detailed approach, commitment to approach, and implementation. Therefore, the cultural change must precede the implementation of total quality.

The centralization of the decisions creates a gap between senior management and the employees, which makes the process of change difficult even if there is a desire on both sides, considering that total quality is a long-term process. In addition, culture cannot be changed without changing leadership styles. Senior management must be fully aware of the need for change. They must be able to clarify the organization's new vision, remove all the obstacles, and have the determination to involve all workers to take part in the new changes (Mounir, 2006: 61-62).

The organizational culture also has an impact on the performance of individuals and the overall performance of the organization, and this effect is evident in that a clear and robust culture provides employees with a clear vision and a deeper understanding of how activities are performed and provides the appropriate cultural framework and job stability. Thus, this leads to a decrease in the rate of work turnover and a quick response to senior management decisions (Issawi, 2012: 36).

The relationship between organizational culture and TQM is interdependent. It has excellent benefits for organizations, as many studies that dealt with total quality have demonstrated a correlation between it and the organizational culture, and most of them support the existence of this relationship, such as the study of Mishnan (2016), where the results of the study indicated the existence of a strong correlation between the degree of practicing organizational values and the extent to which TQM is applied, emphasizing the role that the constituent values of the organizational culture play in implementing TQM and achieving organizational effectiveness.

Rashid's study (2012) also confirmed the existence of an interdependent relationship between organizational culture and TQM, as the results of the study showed that both the group culture and the culture of rationality enormously help to remove obstacles that affect the application of TQM related to employees, customers, and information management, while the hierarchical culture strongly helps to remove planning and managing operations' obstacles.

2.5. The Role of Total Quality Management in Achieving Excellence in Performance in Organizations

In recent times, many organizations have shown a tendency to adopt the concepts of TQM as a means to achieve excellence in performance, through their reliance on the principle of prevention is better than treatment, especially in service organizations, as an essential aspect of their output is not subject to the principle of reprocessing defects. The performance is supposed to be correct the first time, which is consistent with the concept of total quality (Mahjoub, 2005: 24).

Previous studies and literature have dealt with the relationship between excellence in performance and TQM in different ways as some studies link TQM with Excellence Management by the first one being the criteria for evaluating excellence, as Salami (2003) emphasize that, and consider it one of the requirements for achieving excellence, and that the accreditation of excellence is not depended upon the completion of the application.

Some studies like Kanji (2002), confirm the coincidence of the two concepts and linked the management of excellence in parallel with the management of total quality. Other studies like Youssef (2007) have shown that the management of excellence is the results achieved from the successful application of TQM, meaning that excellence is the next stage of the application of TQM. It depicts excellence as a final stage within the stages of the development of the quality concept, that TQM represents the rule of excellence management, which is more related to our research topic.

Excellence in performance depends on the principles and philosophy of total quality, as Tawfiq's (2010) study confirms TQM programs have a significant impact on competitive abilities. Successful management can lead to positive results in the level of performance and degree of distinction.

Excellence will not be achieved unless commitment to quality prevails at all performance levels in the sense of inputs, outputs, and processes. As TQM is the basis for continuous development and improvement of performance through which the organization aims to achieve a significant goal represented in reaching customer satisfaction by relying on facts and providing an environment that prepares individuals to work with enthusiasm, ability, and commitment in all areas of work (Mustafa, 2001).

2.5.1. Basics about the Concept of Excellence in Performance

In light of the changes that have occurred in the current era, the organizations are no longer required to achieve performance, but rather excellence in performance as a necessity for survival and continuity and achieving the goals. One of the primary and perfect approaches to this is the philosophy of TQM, which allows the idea of continuous improvement in modern organizations.

Guerra (2007: 84) considers that measurement of performance moved from just measuring quantitative indicators such as productivity and economic indebtedness and increase production and control of costs to the use of other standards such as quality and respect for specifications of all kinds and time management so that these standards apply to the whole dimensions of the organization. So, performance works as a reflection of the organization's ability to achieve its objectives and to achieve efficiency and effectiveness (Cohen and Brand, 1993: 43).

Rice (2011: 9-10) argues that excellence in performance is determined according to the achievement of goals, internal processes efficiency, stakeholder’s satisfaction, the organizational values, and the ability of decision- makers in the organization to understand, realize and interpret the real precedents available in the external environment and their changes to ensure continuous access to human and financial resources, raw materials and technology.

Many studies that dealt with total quality and excellent performance have indicated a correlation between them, as in the study of Muhammad (2017), which concludes that there is a moderate direct correlation between the conviction of senior management in the application of total quality and outstanding performance. The study of Muhammad (2012) also indicates that the application of the principles and requirements of TQM positively

affects the performance of organizations. Also, the study of Musa (2006) finds a positive relationship between TQM and improving the overall performance of organizations, as well as the presence of a statistically significant effect between TQM and activates administrative and executive functions, leadership style, and change management.

So, for this research, we will take excellence in performance as a comprehensive concept that considers the organization as one unit that works to achieve success in taking responsibility towards society. We will rely on (Martine and Karim, 2009: 32) argument that for the performance to be excellent, it must take into account the following three dimensions:

- **Economic dimension:** Through which the organization satisfies the wishes of shareholders, customers, and suppliers through products and services which in a way or another intended for use by the community.
- **Social dimension:** This is based on the ability of the organization to make its human resources compelling actors in the society.
- **Environmental dimension:** Based on the active contribution of the Organization in the development and improvement of its environment.

The reason for using the concept mentioned above is that the idea of excellence in performance is expressed in a more extensive way for the effectiveness of the organization, as it reflects its ability to achieve its strategic objectives of survival, continuous adaptation, and growth by responding to the internal environmental changes and adapting to the external environment surrounding it. This comprehensiveness is an important factor for any effort to achieve institutional performance .The equitable assessment of the overall excellent functioning of the organization, economic, social, and developmental dimensions must be taken into account. These three dimensions are the pillars of sustainable development, one of the topics we seek to investigate in this research.

2.5.2. Total Quality Management Techniques for Excellence in Performance

The choice of appropriate technologies to implement the TQM system is one of the pivotal decisions where serious problems arise due to the unjustified use of technologies

that do not suit the conditions of the organization, its nature, and the products or services provides.

According to Konodo (1997: 121-122), achieving TQM goals at the organization level requires a set of supportive techniques, including the cost of quality, work teams, generating ideas, appropriate timing, and benchmarking. Bashir (2014: 95) adds extra requirements: problem-solving, appropriate timing, suggestion systems, and statistical process control.

The researcher will focus on three methods, which are the comparative measurement of best performance (benchmarking), the employee empowerment, and the re-engineering processes, as they are among the most important and most widely used techniques, and the many benefits they bring to organizations, as will be evident in the following sections.

2.5.2.1. Comparative Measurement of Best Performance (Benchmarking)

The study of Abbas (2015) refers that comparative measurement of the best performance is one of the most essential modern trends that increase the interest of researchers and managers as it encourages the continuous improvement of performance and works to detect shortcomings in terms of performance and excellence. It is based on the understanding of other excellent competitors' performance and benefits from their ideas.

According to Mohsen (2006: 190-191), comparative measurement has become an indispensable tool in measuring the quality of products and services and enhancing the competitiveness of business organizations as an effective means of measuring quality. It helps organizations design their strategies and increase efficiency and effectiveness, improve educational and training processes, reduce costs, ease of service design, teach individuals new ways to improve work and improve internal communication and employee satisfaction.

While Rayburn and Gayle (1996) view comparative measurement as a process of comparing activities or processes with the best applications according to the global classification, to diagnose the strengths and weaknesses in the performance of the activities or operations, and to know the gap between them and their competitors from other units, and the researcher agrees with this definition that a comparative measurement

is a tool that can be used to evaluate performance by diagnosing the negatives and positives found in performance.

According to Mohsen (2006: 190-193) and Bakri (2002: 282), comparative measurement is an ongoing process of comparison and drawing of plans and effective application which starts with the selection of functions to be measured and compare them with the best performance, select the organization of the functions with the best performance, data collection, and analysis, setting performance goals to ensure improvements and excellence and implementation of the optimization plan to eliminate the performance gap and adapt future trends to meet beyond customer expectations needs.

At the production processes level, comparative measurement prevents the return to the zero points in the design of production methods and processes and takes advantage of the latest technologies reached by the pioneering companies. It also leads to creative ideas through the organizations simulating the processes used in the leading organizations in the same sector or outside the industry itself, and work to introduce the necessary improvements to the methods of work in the organization given that these methods' success is proven in other organizations. Comparative management also prevents employee dissatisfaction by setting flexible goals based on results already achieved in the competing companies (Zairi and Ashari, 2005).

On the cultural level, it encourages the emergence and development of a culture of continuous learning in the organization. It contributes to achieving added value for consumers, as it provides practical evidence and not theoretical facts. On the financial level, comparative measurement improves the organization's financial capabilities, leads to rationalization in expenses, and reduces the time and cost required for continuous development and improvement processes (Knutsson et al., 2012).

At the strategic level, comparative measurement helps organizations develop their strengths, address weaknesses, and build competitive advantage. It is also a tool for objectively setting goals based on the information obtained from the external environment. This method encourages organizations to innovate by scanning markets continuously and using the information in developing new products and improving current operations (Nemec et al., 2008). The external focus of comparative measurement creates external competitive standards that necessarily increase the efficiency and

effectiveness of internal performance measures and make them more competitive (Kotler et al., 2005: 50).

The researcher chooses the comparative measurement technique for its aforementioned benefits and importance and its connection with two critical aspects of the research: total quality and ISO standard specifications. Concerning ISO standard specifications, it is noted that according to the quality system conforming to the standard specifications, management must make sure that all everyone understands the activities related to quality and that they are applied accurately. In this system also there is a clear definition of the duties, responsibilities, and relationships of all those whose work affects the quality (Shabrawy, 1995).

Since comparative measurement process is a comparison of what is going on in the unit with what is going on in another successful unit in the subject matter of comparison, and on this basis, the concept of comparative measurement is consistent with the concept of ISO standards in this aspect when applying the quality system. According to the requirements of the standard specifications, a comparison is made between what is already in place and what should be, according to what is stipulated in the specifications. Moreover, the difference between the two is that the comparison in the case of comparative measurement is made with others, while in the case of ISO standards is the specification itself (Ismail, 2007: 8).

The comparative measurement technique is also linked to the concept of total quality that is based on continuous improvement of performance and directing it towards achieving the organization's goals of meeting customer satisfaction by providing and creating an appropriate environment to achieve continuous improvement in the performance of the services provided by the organization (Sumaidaie and Youssef, 2010: 108).

The primary goal of TQM programs is the continuous improvement of quality by highlighting deficiencies and identifying areas for improvement. It is natural that recognizing the shortcomings and how to overcome them requires comparison with other best competitors, and not making a comparison with them may lead to losses, in terms of market shares and customers, in favor of competitors who have excelled in customer satisfaction aspects, which are essential points of convergence between TQM and comparative measurement (Atarji, 2002: 47).

Consequently, we conclude that the relationship between comparative measurement and total quality management is aimed at achieving the same goal in terms of identifying deficiencies and weaknesses, both of which are based on the principle of continuous improvement, and the adoption of a philosophy based on distinction, creativity, innovation, and research and development processes (Shikha, 2010: 59).

Ross (1995: 235) argues that TQM is an integrated, comprehensive management philosophy based on improvement, while comparative measurement is one of its methods and components. Heizer and Render (2001: 176) consider it as the core of a total quality program, which includes selecting a proven standard of performance that represents the best performance of processes or activities and Tuana and his colleagues (2003: 507) see it as one of the most crucial TQM tools.

We conclude from the above that comparative measurement is a powerful tool and one of the fastest techniques to measure and improve quality. It is a stage where efforts are focused on choosing the job or operations to be compared with, besides the preparation of the method through which this will be achieved.

2.5.2.2. Empowerment of Employees

Another technique is the empowerment of employees as an effective technique in total quality, which creates the great interest of the employees in their work and their functions and their involvement in making work decisions to establish the spirit of responsibility in the workforce and develop motivation and confidence among individuals (Maani, 2010).

Empowerment is one of the foundations and principles on which the application of the TQM approach implementation stands. According to Boumediene (2007: 145-146), empowerment is about giving employees the power to act, take decisions and actively participate in the management of the organizations in which they work, solve their problems, think creatively, take responsibility, and control the results.

The integration and empowerment of workers are one of the methods to motivate the employees, which leads to raising their morale, where the greater the degree of participation of employees in the administration, the higher the level of performance to achieve excellence (Trivellas and Santouridis, 2009). The success of empowerment depends on several basic principles. According to Samarrayi (2007: 73), the most

important ones are worker's education and motivation, while Trivellas and Santouridis (2009: 663) add clearness of goals and building team spirit and cooperation.

Shagawi's (2002) and Otaibi and Hamal's (2004) studies point to the idea of empowering workers to support the efficiency and effectiveness of performance and productivity in business organizations in the public and private sectors. The studies have found that there is a strong positive relationship between empowerment to build confidence in organizations and job satisfaction, quality of decisions, belonging to the organization, clarity of the role of job responsibility and productive performance, job design, means of control, relations between administrative units, and creativity. It was found that there is a positive close relationship between building trust and the level of communication in the organization and that the organization's ineffectiveness is related to the weakness of empowerment that generates a lack of trust between employees and management.

The results of the statistical analysis of the studies of Minhajul (2016) and Baumgartner (2014), which aim to determine the effect of employee empowerment on satisfaction and service quality, show that employee satisfaction and service quality depend heavily on employee empowerment and that employees who are satisfied with the service, provide better quality services. The studies indicate that by empowering employees, the organization could increase employee satisfaction, which increases the quality of the service provided.

Also, Ugboro and Obeng (2000) study aimed to identify the relationship of TQM with management commitment, employee empowerment, employee satisfaction, and customer satisfaction. The study concludes that there is a strong relationship between TQM and all the subjects studied and recommends changing the system and culture in the organization to implement TQM.

According to Bari and Sabbagh (2008) and Maani (2010), adopting empowerment brings many advantages at the individual and organizational levels. At the level of the organization, empowerment contributes to improving the quality of the product or service provided, reducing costs, increasing competitiveness, the best utilization of resources, reducing work turnover, and increasing the effectiveness of communication between the organization and its service customers. As for the individual level, empowerment is helpful in satisfying needs and improving the ability to resist work pressures and increase

self-confidence, besides encouraging creativity and commitment to team spirit, raising self-motivation, and developing a sense of responsibility.

As we are investigating TQM strategies in this research, it is necessary to highlight the relationship between total quality management and employee's empowerment. Achieving quality requires people who can change the ways of working, to make the leadership committed to achieving employee satisfaction as an integral part of quality management. Empowerment plays a fundamental role in applying the methodology of total quality management. Within its framework, employees must be prepared to make the required changes in the application of TQM (Joudeh, 2006: 140).

The most important pioneers of Quality Management, like Deming and Juran, focuse on the importance of empowerment in achieving total quality in institutions by delegating powers to workers, self-monitoring, and the need to inform workers about the goals of their units and their actual performance (Maani et al., 2011: 214).

Hamid (2004: 174) indicate that employee engagement, empowerment, leadership, and commitment to quality are essential elements for the success of TQM. The strategy of empowering workers entrenches the employees' sense of loyalty and belonging and develops skills, abilities, and talents. However, it has its caveats as it requires effective management and a clear institutional strategy, and an organizational structure that enhances a sense of responsibility and skills development, keeping communication channels open, and directing and training workers to strengthen empowerment.

Therefore, the policy of empowerment starts with senior management, so employees do not expect to start solving problems and making the necessary improvements on their own. They must be supported by senior management, who gives them the powers. Accordingly, the policy of empowerment is not successful simply because the administration decided to follow this policy but must increase the staff capacity so that they can do their work to the fullest.

2.5.2.3. Reengineering Processes

Re-engineering is defined as re-thinking the basic principle and radically redesigning the administrative processes to achieve quick and fundamental improvements, not marginal

and gradual ones, in the critical performance standards such as cost, quality, and speed of performance (Joudeh, 2006: 138).

According to Hammoud and Nayef (2001:43), reengineering processes is what the organizations use to maintain their competitive position in the light of the developments that require continuous improvement in quality and time. Reengineering processes are based on the radical change in the organization's operations to develop productivity and provide products or services of high quality to satisfy customers. Bakri (2001: 310-316) argues that the process of re-engineering goes through several stages: goal setting, identification and study of current processes, comparative measurement with the best performance, defining the future vision, redesign of operations, change application' and continuous improvement.

The success of the re-engineering program starts with senior management belief in the need to excel and manage the change processes efficiently and effectively, then identify the basic processes of priority in reconstruction and its elements, design performance standards for assessment and measurement of improvement in systems after re-engineering application and the existence of a solid external incentive for change (Joudeh, 2006: 123).

Accordingly, the application of the re-engineering approach achieves many goals for organizations in terms of efficiency and effectiveness. Among these goals are the change in performance through the change of work method and tools and empowering workers to design and carry out work (Sakarneh, 2009: 154-155). Ajami (2008:154) adds reducing competition between functional departments and increasing cooperation between workers, determining the future shape of the administrative process within the organization, eliminating the unnecessary and ineffective administrative procedures and processes, which helps high-level organizations to stay at the same level, while enables the other organizations to become more competitive.

The theoretical and field study of Qasim (2009) and the study of Ogit (2013) on improving service quality and competitiveness through re-engineering process conclud that the use of the re-engineering method leads to a reduction in administrative costs, speed of completion of work and improvement of service quality and improving administrative communication, facilitating it, and increasing job satisfaction.

Since TQM is considered one of the main axes of this research, the researcher must address the relationship between TQM and the re-engineering process. Khalil (2008:4) state that both focus on operations and require a change in the organization and the behavior of individuals while investing in time and measuring performance with objective measures. Total quality differs from re-engineering in that it means gradual change and improvement of what is in place, while re-engineering is a radical change.

While Lawzi (1999: 277) argue that TQM and re-engineering are two common aspects that have similarities between them. Both are based on a logical premise that excellence in performance is necessary to achieve a competitive advantage, and both require an administrative chief to lead the organizational and operational change. In addition, both work to improve relations with customers and suppliers, strengthen and enhance the capabilities of employees, as well as improve products, services, and processes.

As for the differences, the main difference between TQM and re-engineering is that re-engineering is the product of a specific effort at a specific time, as it focuses its efforts on the main parts of the company, delves into its details, organizes methods, and identifies areas that make operations flow easily and effectively between various departments, while total quality is a requirement that has no specific end, as well as the efforts of TQM, precede the efforts of re-engineering (Lawzi, 1999: 278).

From the preceding, it is clear that institutions can achieve organizational excellence by adopting the previous approaches. The institution can also adopt more than one approach at the same time; For example, it can adopt the approach of "re-engineering" and undertake a process of radical change to what is prevalent, re-design its administrative processes, work systems, and procedures again, and develop new and modern methods of work to achieve fundamental improvements in performance and development of services provided to its customers (Attia, 2017: 425).

While at the same time take into account the application of total quality standards when re-designing these activities and various processes and taking the continuous measurement of the performance of the institution and comparing it with other leading institutions in this field as it represents a methodology for comparative measurement (Attia, 2017: 426). The Foundation may use these four approaches simultaneously, or it may use them on different periods, according to the nature of the goals it seeks to achieve.

2.6. Excellence in Performance Models within Total Quality Management

To unify organizations' efforts and spread TQM philosophy, some excellence models appeared, representing a way to benefit from the experience of the outstanding performance of other organizations.

These models are relied upon in offering prizes for which organizations compete according to their applied standard, not just for the awards, but to raise the efficiency of national economic performance and thus competitiveness in the global economy. These models are used to evaluate institutions and determine where to focus for improvement aimed at excellence through the use of evaluation outcomes in future planning processes (Saudi, 2008: 4).

Most of the models spread in the world are similar in the concepts that they are based. For example, the Scottish and Singaporean models focus on educational institutions, but the Scottish model describes the characteristics of managing educational institutions comprehensively, while the Singaporean model focuses mainly on education as a means of economic and social development (Bashioh and Albarwari, 2007: 88).

The models of South Africa, Latin America, and Australia are developed based on the three American, Japanese, and European models (Saudi, 2008: 5). The South African model differs from the European model in terms of the main criteria, as the model includes six enablers and five outcome criteria (SAQA, 2011: 1). Whereas the Latin America model of excellence contains the same nine criteria for the enablers and outcomes of the Malcolm model (Mounjid, 2013: 69)

The focus of this research will be on the European model, the American model, and the Japanese model because of the comprehensiveness of the standards that make up each of them. They are the most appropriate models in terms of application to public sector institutions and the most widespread. Many countries, especially the Afro-Arab countries, which Sudan is one of them, depending on one of them in proposing related awards (Abboud, 2003: 161).

2.6.1. The Japanese Model of Outstanding Performance (Deming Model)

The name of William Deming is associated with the quality movement in Japan and is considered the first to establish the scientific and applied foundations of TQM. According to Tanne and Porter (2004: 201) and Jagadeesh (2014: 431), this model works as an administrative system for the organization to reach excellence in performance and is divided into four main groups: orientation; where the direction of the organization is determined by its policy criteria, then implementation is carried out, results are measured, and plans are formulated to guide the organization.

The applicants for the award combine the advantage of having extensive experience and management principles that have contributed to the success of their business through improving quality as an important key to the success of work. In addition, the challenge, which is an essential content of the award, provides a unique opportunity to learn helpful quality approaches (Sahamoud, 2013: 18).

The Deming Prize Committee does not specify any issues to binding the applicant. However, the latter is responsible for identifying those issues, thus enabling the development of generally applicable approaches to quality activities (Jubouri, 2004).

Therefore, the Japanese model focuses on achieving the quality advantage in the internal operations, continuous improvement, and the optimal methods of operations. This side related to effective operation through self-evaluation so that the strengths and weaknesses are identified and work on the development and improvement in internal and administrative processes and compare the performance measurement results with competitors (Abbas, 2015: 68).

2.6.2. European Model for Excellence in Performance Management (EFQM)

This model is based on an essential basis, which is the improvement, so it is like an image of total quality management. The European model of performance is known as the best practice in organization management and attaining outcomes (Salami, 2003: 32).

According to Slack (1998: 784), the European model of excellence contains many principles like reach balanced results which satisfy various stakeholders groups, provide value-added to the customer, leadership with a clear vision, operation management,

success through individuals, a reflection of development and innovation, building partnership with customers, suppliers, educational structures and NGOs and taking responsibility for a sustainable future.

This model includes nine main standards interacting with each other with relationships. The nine elements are divided into two groups. The first group includes assisting (enabler) factors represented in leadership, human resources management, policies and strategies, resources, and processes. The second group represents the set of results achieved or expected from the application of the system. Which can be used to measure the organization's degree of success in using the assisting factors to achieve the objectives of the total quality management system, which includes achieving employee satisfaction, customer satisfaction, and community satisfaction (Kasheida, 2005: 31).

Thus, the set of assisting indicators is a factor in determining results indicators and feedback from outcomes, which in turn used to improve the set of assisting indicators. This is the reason for the interactive nature of the model (Kaufmann and Şerban, 2011: 105-113). Moradzadeh (2015: 3) explains that the EFQM is one of the critical frameworks for evaluating the quality of institutions' performance and enhancing their competitiveness, achieving excellence, and evaluating the professional status of employees and their degree of progress.

The model is considered as one of the leading frameworks that help organizations enhance their competitiveness powers and achieve the sustainability of excellence, besides helping to employ and invest human resources and develop realistic action plans for its management (Alfi, 2012: 13).

The study of Azhashemi and Samuel (1999) indicates that this model is based on the analysis of the components of management in successful organizations and their classification into methods and organized processes, through which we reach the results. The model is also concerned with the need to maintain effective tasks of leadership, concern for individuals, effective communication, and advocacy to participate in continuous improvement.

The EFQM is one the most popular and vital models due to its integration and comprehensiveness and ease of application in different institutions. It also helps

organizations to evaluate and measure their performance, due to its reliance on the institution's self-evaluation; which leads to enhancing its competitiveness and its ability to face various challenges and developments, as indicated by many different studies like (Azhashemi and Samuel: 1999; Davies, 2008; Petrič and Gomišček, 2011; Hashemi and Hashemizadeh, 2014; Bolboli and Reiche, 2015).

2.6.3. Malcom Baldrige Model

This model aims to create a spirit of honest competition among US organizations in the field of quality and community service, unify the policy of American organizations in achieving a total quality management approach, establish guidelines for the self-evaluation in the field of quality improvement, improving the efficiency and capabilities of the organization and achieve the principle of learning (Aqili, 2005: 17).

The Baldrige model is an image of the concept of TQM in an integrated system that seeks to achieve the organization’s goals. According to Foster et al. (2007: 335) and Baldrige National Quality Program (2010: 48), the model is concerned with elements that are the basis of evaluating the organizations to determine the level of performance excellence, which is related to TQM, such as leadership, strategic planning, focus on customers, focus on workforce and operation management and measuring results.

Through these elements, it is clear that Malcom Baldrige American model is based on the ability to innovate to achieve the organization's strategy and customer satisfaction by providing goods and services that meet current and future needs in the future. The model mechanism is to translate the vision and mission of the organization through a specific strategy and compare performance results with the target standards.

These three models provides a method for measuring performance in all aspects of the organization, developing work, continuous improvement, measuring customer satisfaction, as well as identifying weaknesses, strengths, and diagnosing future improvement opportunities, which helps to achieve efficiency and effectiveness (Bin Abboud, 2009: 2). These models also contribute to supporting planning, development, productivity improvement programs, rationalizing spending and ensuring commitment to providing services of an outstanding level, which is reflected in the participating institutions and the society as a whole (Shaban, 2009: 222).

As indicated by Hilali and Ghabour (2013: 13), the TQM approach is a comprehensive approach that combines all the institution's building elements, and its various components. This is based on distinguished foundations that achieve high capabilities for the organization, and this helps it to cope with all variables and developments in the external environment, this leads to achieving permanent competitive advantages for all aspects of the organization, and its various levels. According to this, many countries have sought to develop different models for organizational excellence through total quality strategies, applying them in their various institutions, evaluating them, and providing national and international awards for quality and excellence.

As a conclusion for this chapter, we can say that the economic, technological, and social changes resulting from the globalization of the market, and the increase in competition between institutions have contributed to the change of the latter's view from focusing on the quality of the products or service only to a more comprehensive view that focuses on the quality of all operations, activities, and stages of work in the institution by adopting what is called the total quality. However, achieving TQM and embodying it in the institution requires coordination and direction of all efforts through what is called TQM.

TQM requires adjustments and changes in the pattern and style of management in the institution. These changes must also include the organization's values, beliefs, and work procedures. All of them pouring into one goal, which is customer satisfaction. This goal must be consistent with the institution's strategy because the survival, success, and ability of the institution to achieve growth depend on and are closely linked to consumer loyalty and satisfaction. In general, the application of quality management based on the aforementioned helps the organization to a large extent to create a competitive advantage.

The beginning of the application of the concept of TQM was in the industrial sector. However, this application extended to include the governmental administrative sector to reduce the bureaucratic method in management and make the beneficiaries satisfied with the provided services or products. Applying the concept of total quality management in administrative agencies requires managers to participate and train employees on the principles of total quality in terms of analyzing job opportunities and identifying the needs of the beneficiaries.

There is no specific method agreed upon by all researchers towards applying the concept of total quality. However, there are two basic steps through which this concept can be applied; the first one is understanding the essential elements of TQM (analysis of business processes and working with beneficiaries and suppliers). The second step is providing an enhanced environment for the application (learning and training of quality management elements, identifying quality improvement projects, creating quality improvement opportunities, and establish an appropriate organizational culture for development).

As a summary of all the above mentioned in this chapter, quality is the focus and basis around which total quality revolves by including it in all aspects of work to achieve the marginal satisfaction of the consumer, but this requires coordination and direction of efforts to achieve this goal through TQM, as a management philosophy based on several foundations and requirements that seek to achieve the institution's goals like customer satisfaction and excellence, using a set of tools and techniques. TQM is also linked to specifications called the ISO series, which we will discuss in the third chapter of this research.

CHAPTER 3: ADOPTING ISO STANDARDS AS AN INPUT TO SUSTAINABLE DEVELOPMENT

The presence of the concept of sustainable development in the world of economic organizations has pushed the latter to adapt and respond to the current requirements and developments that the concept has produced in its surroundings. Especially those related to social and environmental aspects, which have become a source for achieving distinction and increasing competitiveness in international and local markets.

As we discussed in the previous chapter. To achieve the requirements of sustainable development in the economic organization, the latter resort to rely on modern management tools and techniques derived from the adoption and continuous use of the most important existing and updated international standards and specifications issued by the ISO, which serve and embody the dimensions of sustainable development, each separately.

The economic aspect could be managed, and economic efficiency and effectiveness could be achieved by obtaining the ISO certificate in quality management according to the specifications of ISO 9000. The organization could also improve its performance from the environmental aspect by obtaining and adopting the environmental management specifications ISO 14000. As for the social aspect, it is based on the OHSAS 18000 standard, according to the Occupational Health and Safety Administration and the ISO 26000 standard for social responsibility.

Thus, in this chapter, we will try to investigate whether the economic organization obtaining and adopting these specifications could help it achieve sustainable development by trying to embody its dimensions. Accordingly, the following topics will be covered in in-depth detail in this chapter:

- Quality management in the organization according to ISO 9000
- Environmental management in the organization following ISO 14000
- Managing the social aspect of the organization in accordance with ISO 18000 and ISO 26000 specifications

3.1. ISO Standards Specifications Related to Sustainable Development

The word (ISO) is derived from the three letters of the International Organization for Standardization name. It is a non-profit organization located in Ceneva. It has been established in 1946 and started working in 1947 (Haddad, 2009:11). Its mission is to issue and unify international standards and specifications in various fields at the global level to help facilitate trade exchange in goods and services and develop cooperation in the development within the world's countries (Qadar, 1998: 234).

ISO standards are a set of internationally recognized technical specifications for the operation, models, performance, and management of production processes and commodities (Meissler and Thomas, 1999: 10).

The importance of ISO specifications for economic organizations is that it organizes and directs administrative work, raises efficiency in work and performance and reduces costs. In addition to the continued development to obtain a product or service of high quality in terms of design, review, implementation, marketing, and storage, which helps the organization to gain customer satisfaction (Zakaria, 2005: 103).

In addition, there are specifications issued by the International Organization for Standardization that coincide with achieving the requirements of sustainable development, especially in its environmental and social aspects and the economic field (Rashi, 2011: 56). This can be explained as follows:

3.2. ISO 9001, 2008 Standard Specification for Quality Management System

At the end of the 1980s, quality practices were spread on a large scale. To avoid confusion in the application of quality within the organization, the need arose to create the ISO 9000 family, which is a set of specifications that provide requirements and guidelines for the establishment of quality management systems in the organization. International Quality Management System ISO 9000 is one of the most important systems organizations seek to adopt under the prevailing competition (Abass, 2013: 147).

ISO 9000 is a series of written specifications issued by the ISO in 1987, which defines and describes the main elements required in the quality management system, that must be designed and adopted by the management of the organization to ensure that its products

correspond to or exceeding customer desires (Aqili, 2005: 63). It is also known as the series of specifications related to the management of total quality in the industry and services, divided into a set of specifications that vary according to the degree of comprehensiveness of each (Yahdiah, 2003: 186).

ISO 9001 was formulated in the new version ISO 9001-2008, where the standards ISO9001-9002-9003 have been integrated into one standard, which is ISO 9001, to give a competitive advantage to organizations that put quality within their management interests and make satisfying customer desires one of the ingredients of success, survival, and excellence. Since then, the ISO has offered new specifications that deal with an integrated quality system, such as consumer protection and environmental protection.

From the previous definitions, it can be concluded that the ISO 9000 series is a specification that carries with it a set of requirements and the necessary instructions for establishing quality management systems in industrial or service organizations, aiming to provide products or services that match specific requirements, by giving the minimum limits for control, and rules that must be adhered to, to ensure the continuous development in the level of product or service quality.

It should also be noted that the concept of ISO 9000, as a quality management system, should not be confused with the technical specifications of products and services. ISO 9000 is not a substitute for these specifications that determine the minimum quality of products. To ensure this, the production of these goods and services must be through a quality system that matches specific requirements (Rashi, 2011: 133).

To remove the ambiguity around this confusion, Said (1998: 8) argues that ISO 9000 specifications could be described as a quality system framework, which includes the organizational structure, responsibilities, actions taken, processes practiced, and resources required for quality management.

Accordingly, the quality management system, in this context, is a set of administrative and technical work procedures whose completion requires the use of different resources in light of a specific organizational structure capable of achieving the customer's satisfaction by providing products that conform to the required specifications (Kayali, 2006: 57). The application of the quality system, under this specification, gives assurance

and proof that the organization has a solid management regulation, consistent with the philosophy and principles of total quality management, and is continuously developed to keep pace with modern technical developments (Mousawi et al., 2003: 118).

According to Forman (2001: 13) and Loudoyer (2000: 34), the organization's accreditation on the specifications of ISO 9000 enables it to obtain many advantages, the most important of which are continuous improvement in all technical processes, strengthening teamwork and effective participation, optimal use of resources. In addition to optimizing the use of the organization's various resources and meeting the needs of customers, which helps to improve the image of the organization in the business environment.

Implementing the quality management system in accordance with the ISO 9001-2008 standards requires demonstrating the ability to provide products that consistently meet customers' regulatory needs, seeking to increase customer satisfaction through the effective application of the system (Abbas, 2015: 15). In particular, to implement the process of continuous improvement on the model of the Deming ring[3] to improve the quality symbolized by PDCA, which represents an abbreviation of four words, explained as Plan (Setting goals), Do (implement), Check (measure and evaluate), Act (continuous improvement) (Haddad, 2009: 173)

According to Mathieu (2002: 5), Deming ring can be dropped on ISO 9001 Quality Management System as follows:

- **Planning:** The ISO 9001 standard that contains the basic principles and terminology is used to understand the quality management system.
- **Implementation:** The ISO 9004 specification is used to contain the guidelines through which the results are improved.

[3] In 1950, Edwards Deming (one of the total quality pioneers) proposed a model for improving business processes that should be analyzed and measured to determine the source of products and the cause of differences that deviate from customer requirements. He recommended that business processes being placed in a continuous cycle so that managers can identify and change the parts of the process which need improvements. To do so, Deming formed what has been called Deming Cycle (PDCA), which considers a basis for continuous improvement in total quality, connecting the concept of design, production, sales, and market research (see; Jaques. and Christophe 2001: 29; Dudin et al., 2014: 239-246; Nguyen et al., 2020: 1-15).

- **Testing:** ISO 9001 is used to demonstrate the ability of the system to provide quality services and products acceptable to the customer.
- **Optimization:** Optimization is done by ISO 9011 as a method of reviewing the quality management system.

Taie and others (2009: 225-226) argue that the organization should plan and implement the necessary monitoring, measurement, analysis, and improvement processes, relying on methods (approaches) and statistical techniques, to demonstrate the conformity of products with the quality management system and to achieve continuous improvement. While Salti and Elias (1999: 32) add that, in the case of non-compliance related to the product or the quality system, the reasons for its emergence are determined, and appropriate corrective measures are taken to prevent this from happening again.

The aforementioned steps and requirements crystallize the process method model, according to the international standard ISO 9001-2008, which is based on the need for the organization to identify and manage many related activities (Rashi, 2011: 143).

Also, this model consists of two primary cycles: the first is at the level of the main requirements, in which the necessary means to implement operations are provided. In the second cycle, the customer is the main component, by defining his requirements that represent the inputs of the processes and taking into account his response on the products, which works as feedback for the organization to improve performance (Jaques, 2003: 14).

According to Abbas (2015: 157), the rules of applying the ISO 9001-2008 model are: Unify standardization, raising organizations administrative and technical efficiency, raise the overall quality of products and services, reduce costs while promoting market competition, rationalize the consumption of fuel and natural resources and reduce pollution and achieve continuous improvement.

ISO 9001is a quality system that works to provide the organization with all the aforementioned benefits. It is then required to highlight the relationship between these standards and the concept of TQM.

TQM is a modern management philosophy, a strategic input, and a way of thinking that leads to the success of each organization through the production of goods and services that fulfil the wishes and aspirations of the client and all stakeholders (Ibrahim, 2010:

120). As for ISO 9000 specifications, they are basic procedural requirements, represented in following a set of administrative and technical methods and documented specifications that contribute to controlling the quality of the performance of various activities. These specifications are considered a guide that may take the form of an indicative or mandatory in the organization (Muhammed, 2009: 120).

Obtaining the ISO 9000 certificate has become a means of support for the reputation and image of the applied institutions, according to the prevailing organizational culture that focuses on the customer. An applied study by Abdelal (2010) concluded that among the reasons for companies to obtain ISO 9001 certificate, 85% was to gain the customer confidence. Therefore, it is consistent with total quality management in the principle of focusing on the customer.

According to Haddad (2009: 163-164), the principles of ISO 9001 are based on the foundations of total quality management; customer focus, effective leadership, full participation of employees, use of the operations, and continuous improvement methods.

Based on the above, the ISO 9000 system and TQM agree that both are methods to improve the quality of products (goods or services). However, there is a difference between them. ISO is a set of general standards or conditions issued by the International Organization for Standards and applied in the same way in all organizations seeking to obtain this certification (Abdelaziz, 1999: 11).

As for total quality management, it is first a culture, a philosophy, then an administrative approach that consists of principles, and depends on means and tools, applied by organizations in their way, and is not pursued by any side. Its strength is the human resource, its interest is in continuous improvement, its goal is the customer, and its stakes are the competitiveness of the organization (Alaali, 2008: 332-333).

The ISO 9000 system is not necessarily part of the organization's strategy. Instead, it is a system that is based on technical operational procedures to manufacture a product that matches international specifications, and to improve operations, in accordance with preventive and corrective measures, determined by the competent department of quality in the organization (Hansal et al., 2020: 41).

In contrast, total quality management system is an administrative philosophy that aims to develop the organizations' performance, achieve profit, and improve their competitive position, according to a key and comprehensive strategy. Through senior management commitment to spreading the culture of quality and the effective use of material and human resources for the continuous improvement of administrative and production processes and applications (Saadi, 2016: 113).

According to Azzawi (2005: 80-81), obtaining ISO 9001 certification is not an end, but rather a way for an organization to improve its overall performance and achieve customer satisfaction. What implicitly means achieving total quality, given that total Quality Management is covering and concerned with achieving quality in all areas of the organization. Therefore, this specification represents one of the total quality management system requirements and is not a substitute for it. It is a preliminary stage, through which it is possible to start and build total quality pillars within the organization (Taie, 2009: 35).

While Hammoud and Nayef (2001: 73) argue that the relationship between total quality management and ISO 9001 is integral, as total quality management can be adopted without obtaining the ISO, or vice versa, but the best is to adopt total quality management as an entry point to obtain the ISO certificate.

Also, Saleh and others (2008: 148) argue that companies that apply the TQM system seek to obtain the international standardization ISO 9000 certification to formalize their quality systems. As for companies obtaining ISO certification, this certificate represents a strong base for implementing a total quality management system.

3.2.1. ISO 9001 Specification as an Input to Sustainable Development of the Organization

The organizations strive to obtain ISO 9001 quality management standards for its many advantages such as creating a good reputation in local and international markets, increasing products'demand which increases profitability, improving internal and external relations, and continuous improvement of the relationship between the administration and its employees (Muhyawi, 2006: 194).

Where Salti and Elias (1999: 35-36) mentioned a study on one of the institutions operating in the home appliances industry, which found that the failure rate (the value of the customers' demands of the affected products divided by the annual sales value), has decreased by 17% and that the cost of guaranteeing the unit has decreased by 76% in the three years following the establishment's obtaining of ISO 9000 certificate of conformity.

According to Aqili (2005: 67) and Dararka (2008: 232), the most important economic benefits provided by ISO 9001 quality management includes a contribution to increasing the ability of the organization to compete, obtaining market share locally and internationally, continuous improvement, rationalization of resources utilization, customer's trust and satisfaction and improving production performance.

Other researchers (such as Vloeberghs and Bellens, 1996; Ivanauskienė and Urbonavičius, 2003; Tarí et al., 2013) link ISO 9001standards application benefits with the organization's internal and external environment and thus divided them into internal benefits such as communication, effectiveness and reduce defects In addition to the external benefits which include improving the quality of products, providing a competitive advantage, meeting customer expectations and ability to maintain market share.

Another study carried out by Lloyd's Organization for Quality Assurance (a British center that awards ISO 9000 certificates) supports and consolidates the previously mentioned benefits derived from the adoption and implementation of ISO 9000, as this organization issued a study in the form of a report, that included the results of a survey conducted on 400 companies, which have an ISO 9000 certificates in Britain (Sayed, 1998: 18).

From the above, we conclude that ISO 9001 standards develop quality management systems within the organization to improve management style and high-quality standards through which the latter can organize their operations and manage their resources to achieve economic quality in all activities to satisfy customers and increase competitiveness.

3.3. Environmental Management System in Accordance with ISO 14001 Specification

Given the importance of the environmental management system as a necessity to ensure the continuation of the activities of the organizations, the World Organization for Standardization has incorporated this element in the organization's operations through the establishment of environmental management standards ISO 14000, which is considered one of the most essential tools to achieve the integration of sustainable development within the administrative concerns of managers of economic organizations, Which works to improve the environmental performance following with the environmental policy of the organization (Abbas, 2015: 164).

According to a study by Cabinet (1999), which targeted a group of industrial enterprises that obtained the ISO 14000 certificate in five European countries, namely: France, Belgium, Switzerland, Sweden, and Norway, and sought, through a questionnaire, to extract the economic effects and environmental benefits resulting from the application of these Institutions to the environmental management system in accordance with ISO 14000.

The study reached a basic conclusion that this system helped the institutions improve their economic and environmental performance by achieving financial savings, increasing productivity and financial indicators, rationalizing energy and resource consumption, reducing pollution, and improving the image of these institutions with the relevant parties.

The Danish pharmaceutical company Novo Nordicsk was also able to reduce the energy consumption per unit produced by 48% due to its use of the ISO 14000 standard (Azzawi, 2005: 238). While Yahyaoui (2010) showed that adopting and implementing ISO 14000 standards in the organization can lead to positive environmental, social, and economic impacts.

ISO 14000 environmental management specifications help to achieve the mentioned above benefits by applying a product life cycle assessment and management method, and analyzing the environmental aspects of the organization's products or services, leading to continuous improvement in product specifications regarding environmental quality (Hassan, 2007: 20).

Thus, obtaining a certificate of conformity to the standard may make its products or services not harmful to the environment. This represents a competitive advantage, as it shows the extent of its interest in the environmental aspects, which makes consumers accept the products of the organization, and leads to an increase of its market share (Dulaimi, 2001: 5).

Where one of the German studies indicates that the global market share of Sony Global Company decreased by 11% in the field of televisions, compared to an increase of 57% for Nokia Company, due to the German consumer magazine publication of an assessment about televisions, in which the produced by Nokia were the best environmentally (Azzawi, 2005: 23).

In this regard also, the study of Lawrence and Denise (2000: 206) indicate that the public positively thinks about environmental protection, and also showed that more than 80% of customers use an environmental standard in their purchasing behavior, which supports the idea that, environmentally compatible products, have become a basic indicator of purchasing behavior.

In addition to the above, ISO 14000 specifications work to achieve efficiency and effectiveness in performance, which means that organizations will manage environmental resources to reduce waste and embody the planned environmental goals (Tari, 2013: 300).

Also, the control process imposed by these specifications on the behavior of employees in the organization will reinforce the organization's commitment to environmental ethics by controlling the attitude of individuals and work methods that have a potential environmental impact and helping to train workers as far as their role in protecting the environment are concerned (Boiral, 1998: 60).

To support all of the above benefits, Hussein and Rashid (2008: 167) refer to a study for a group of companies that had adopted the environmental management system in accordance with ISO 14000. The study concluded that all of these companies had benefited effectively and significantly from applying this standard. The results were as follows: 12% improving working conditions, 23% ensuring survival, 28% achieving competitive advantage, 40% improving relations with partners and stakeholders, 61% direct and substantial financial benefit, 65% improving reputation and image.

Another study published by the French Standardization Agency AFNOR in 2008, aimed to evaluate the ten years that followed the issuance of the ISO 14000 standard and its effects on the institutions that adopted it. Among the most important results of this study was the identification of the benefits that were: 77% improve the image of the organization, 65% comply with environmental legislation and laws, 64% improve environmental performance, 58% respond to the will of the organization's team, 49% address imbalances and prevent accidents, 39% distinguish from competitors, 38% evaluate the organization's performance, especially from the environmental aspect, 37% answering customers 'requests and aspirations, 23% reaching new ways of working, 19% coping with external pressures (AFNOR, 2008).

ISO 14000 series is defined as a set of requirements that deal with the environmental management system directed to all organizations of different sizes and types wish to effectively manage their various environmental and economic aspects (Bakri, 2002: 66).

It can also be defined as a set of measures representing an input that defines the systems of an organization's operations, emphasizing on the environmental aspects of its activities, products, and services. Organizations should seek to satisfy their customers and effectively manage their environmental issues (Allam, 2005: 7).

The report of the United Nations on environmental programs shows that the concept of environmental management in accordance with ISO 14000 at the level of the organization is based mainly on the development of environmental plans and mechanisms to monitor and evaluate the environmental effects of the industrial institution. It is necessary to clarify the tools and methods used to prevent pollution and rational use of resources (UN, 1996: 177).

ISO 14000 is a well-documented standard that defines environmental management adaptations to enable the organization to formulate policy and objectives and take into consideration the legislative and environmental requirements to develop and improve the environmental protection system while balancing the needs of the environment (Fayhan and Bayati, 2008: 1115).

The issuance of the ISO 14000 series of international standards for the International Organization for Standardization was the result of the interaction of several factors that

prompted the organization in particular to adopt this standard. The most important of which are the emergence of the sustainable development concept, besides the launching of ISO 9000 standards, and the development of international environmental legislation and the increasing awareness about the environmental issues (Azzawi, 2002: 219-221).

Regarding ISO 14001. The Rio de Janeiro Conventions in1992 was the main driving force of this specification. Which was established in 1996.Based on the British Environmental Standard BS7750. The latter is considered the basis for ISO 14001 because it is less flexible and more specific, and challenging to apply at the international level. Therefore, ISO 14001 was adopted as a global standard after the requirements of the British standard were simplified, and its practical requirements were met within the international standard (Hajar and Saqr, 2006: 25).

ISO 14001 is the only mandatory standard that provides the organizations with the the environmental management system requirements and the development of a clear environmental policy that considers the prevailing environmental laws and regulations. ISO 14001 is an ideal administrative structure in practical steps that assist the organization in assessing its environmental impacts (Taie, 2009: 387).

ISO 14001 is defined as a set of specifications for how organizations work to eliminate pollution by establishing a formal system and data for monitoring environmental performance (Barachini, 2013: 24). It is also defined as a set of standards that preserve the environment. It thus allows organizations and bodies worldwide to follow one agreed on environmental management to ensure environmental protection against pollution in parallel with economic and social requirements (Selkhine and Djillali, 2020: 78).

Therefore, it represents the mechanism through which follow-up and development of environmental performance could be done. As the international organization for the ISO 14001 standard obliges the economic organizations that wish to adopt this standard, to incorporate its foundations into their organizational structure, and to define a clear policy towards protecting the environment, and apply this policy effectively, as evidence of its serious endeavor to protect the environment (Abbas, 2015: 171). However, as a tool for managing the impact of the organization's activities on the environment, it provides a systematic approach to planning and implementing environmental protection measures (Haslinda and Chin, 2010: 101).

In this way, it expresses the commitment of the economic organization to play an active role in thoroughly examining its operations. At the same time integrating environmental considerations through conducting studies to reduce the waste at an early stage of production and looking for an opportunity to convert its secondary products into materials that can be re-used. This provides customers, shareholders, and entities related to environmental issues with guarantees that enhance confidence in the organization and its products (Jubouri, 2010: 245).

The studies (see Gasim, 2006; Hillary, 2004; Gavronski et al., 2008; Taie, 2009; Erauskin et al., 2019; Kiatkulthorn and Sundstedt, 2016; Daddi et al., 2012) confirm that adopting ISO 14001 standard contributes to the organization's competitiveness by improving the organization's image and its relationships with clients, authorities, and the local community, besides waste recycling. All contributes to reducing costs and eliminating the financial burdens that the organization bears when violating laws and legislations related to protecting the environment, in addition to improvements in the areas of production, procurement and purchasing, and sales and marketing.

The implementation of the environmental management system requires an obligation by all the organization's employees (ISO, 2004: 5). In addition, senior management shall review all steps related to the environmental management system in search of practical measures aimed at continuous improvement of the environmental performance of the organization, as well as ensuring the continuity, safety, efficiency, and effectiveness of the environmental management system (Adikhari, 2010: 73). Management review outputs should also include decisions or actions related to potential changes in environmental policy, goals, and elements of the environmental management system, in line with the commitment to continuous improvement (Baracchini, 2007: 25).

3.3.1. Integration oF the Requirements of Both ISO 9001: 2008 and ISO 14001: 2004 Standards

The ISO 14001 standard specifies environmental management requirements to enable the organization to formulate a policy and objectives that take account of the legislative mandates and the tremendous environmental impacts. It focuses on the environmental quality of the organization. The international standard for quality management, ISO 9001, focuses on the quality of production and production processes. It is thus similar in many

principles with ISO 14001 to form the basis of the Integrated Management System (Abbas, 2015: 180).

ISO 9001 is being built to improve its use with ISO 14001, the two criteria can be used without the need for additional requirements or opposition, both systems are based on the Deming PDCA style, they focus on continuous improvement, implementation, and evaluation requirements as well as reconciliation, then, control and audit of management records which have similar requirements and fall under one heading. The two criteria require the commitment of senior management in the organization to formulate policy and objectives (Taie, 2009: 393).

Although both ISO 9001 and ISO 14001 are based on the practical approach, there have differences. ISO 9001 requires a documentation system in the form of a record, while ISO 14001 does not require that. ISO 9001 requires a particular product design control In contrast, ISO 14001 specification requires a method to identify the environmental aspects of the organization's activities, products, and services and a system that respond to emergencies. In addition, a quality management system focuses on customer satisfaction and the quality of the product or service, while the environmental system emphasizes the satisfaction of regulatory bodies and local groups and on reducing the environmental impact (Azzawi, 2005: 227).

However, although the requirements of ISO 9001 and ISO 14001 vary somewhat in some principles and requirements and each specification concerns specific dimension, one does not exclude the other. Both could be combined into an integrated management system to achieve the optimum performance of both quality and environment. The existence of one system may be more effective because it helps the organization simplify systems, optimize the use of resources, and create a general framework for continuous improvement of the organization's overall performance (Abbas, 2015: 181).

For example, APS Group, which is a long-standing name in the publications management market has managed to enhance its competitiveness and operational capacities after obtaining the quality management system certification ISO 9001. It was also able to reduce waste in costs and energy and fulfilled the environmental requirements after adopting the ISO 14001 environmental management system in 2006. Many advantages occurred, the most prominent of which was increased sales by 30% (but not at the expense

of the environment), improved company image, and reduced waste management costs (Shutrawy, 2020: 159).

3.3.2. Total Quality Management's Relationship with the Environment Management System in Accordance with ISO 14001

TQM is an interactive and managerial approach the organization uses as an essential competitive tool to achieve excellence. At the same time, the need to introduce the environmental system according to ISO 14001 as part of the organization's administrative and operational activities emerged. As a result of what was imposed by sustainable development requirements and entrenched by pressure groups, especially those related to consumer protection. The integration of the two systems led to the emergence of the concept of environmental total quality management (ETQM), in accordance with ISO 14001 (Abbas, 2015: 191).This is what will be discussed in this section.

Although the term TQM is well known, ETQM is a contemporary term used in recent years. Studies on total quality management of the environment began in 1991 as a way to address many environmental issues in industrial sectors. The specialists in this regard emphasize that the organizations that apply this philosophy must consider the moral orientation in producing goods and services that do not harm the environment and the public health of the citizens of society. If this is unavoidable, they should reduce the damage (Anzi and Obaid, 2009: 2).

The concept of environmental total quality management is based on an administrative philosophy that seeks to harmonize between environmental protection and economic success, and is consistent with environmental policy and its objectives. These environmental management specifications do not determine the environmental performance of each organization. Instead, they require organizations to consider all the environmental effects, as well as laws and legislation requirements, while formulating policies and objectives (Alsaid and Abbas, 2018: 252).

Therefore, ETQM is the result of the introduction and application of TQM methods in environmental management to influence the requirements of sustainable development. It is a preventive approach based on the support of senior management for teamwork and continuous improvement of all phases of the product life cycle from inputs, processes,

and even outputs, besides natural materials and environmental pollution of all kinds (Hâkim, 2009: 379).

ETQM has taken the principles of TQM such as senior management commitment, resources management, focus on customer satisfaction, and continuous improvement with an environmental perspective. Therefore, the fundamental pillars of the application of environmental quality management in the organization contribute to the achievement of environmental goals, which in turn depends on the efficiency and effectiveness of the senior management and employees and their full awareness of the requirements of the consumer and the surrounding environment and this will contribute to achieving sustainable development (Taie, 2009: 375).

The functions of environmental total quality management are derived from ISO 14001 that works within the framework of the Deming Cycle for continuous improvement of operations, which is one of the main pillars of TQM. The Deming cycle was dropped on environmental management in the framework of improving environmental performance. According to researchers (Chardonner and Thibandon 2003: 62; Stans and Siebel, 2010: 12; Othman, 2008: 527), these functions include the following:

1. **Planning:** In this context, the organization defines the objectives and processes to implement environmental policies based on ISO international standards specifications. It should also include all the organization's activities.
2. **Implementation:** In this process, the operations and objectives are carried out as planned, covering all the activities and functions of the organization, the task in which the environmental processes and policies set by the organization are carried out.
3. **Control:** Here is the monitoring and follow-up of the objectives and requirements of environmental policy while assessing environmental performance. Environmental control is carried out and considered as a subsystem of the organization's overall control system.
4. **Development and improvement:** This task calls for, if necessary, to correct and evaluate the processes related to planning, implementation, and environmental monitoring while working to ensure their effectiveness

The application of Environmental Total Quality Management (ETQM) in organizations is imperative because the environmental product is required globally and achieving socio-economic and environmental benefits, which are considered the dimensions of sustainable development. This can be illustrated by the following:

1. **Economic advantages:** includes saving in costs, obtain financial incentives from the government, increase in revenues, reduction in rates of liability and legal compensation, and interring new regional and global markets (Hassan, 2007: 87).
2. **Social advantages:** Prevent injuries caused by pollution of the internal environment of the organization, control individuals 'behavior and work methods, reduce waste, and improve environmental performance through training and motivating (Bakri and Mounir, 2006: 159).
3. **Environmental advantages:** Protect environmental systems and efficient use of natural resources, cooperate with public authorities in solving environmental problems and responding to lobbyist demands and environmental laws and regulations and be more committed and caring for environmental considerations (Buzian and Sanusi, 2008: 10-11).

From the above, we conclude that ETQM is a modern administrative philosophy that integrates the objectives and economic policies of the organization, with those related to the preservation of the environment, through the development of a comprehensive and integrated environmental management system, not only looking for the excellent level of performance but always seeking for excellence.

Studies have shown that adopting the concept of environmental total quality management leads to many benefits for organizations, as it contributes to raising productivity and reducing costs (Hassan, 2007: 87) and achieving financial savings by focusing on preventive measures and benefiting from the financing advantages granted to the organization for its commitment to environmental legislation, such as soft loans and credit facilities from banks. In addition to government subsidies (Foster and James, 2001: 44). It also improves the organization's reputation (Gasim, 2006: 283) and environmental performance (Azzawi, 2005: 238) and increases organizational effectiveness and sales volume through the adoption of clear environmental strategies (Bakri and Nouri, 2006: 159).

3.3.3. ISO 14001 as an Input for Organizations to Achieve Environmentally Sustainable Development

The increasing pressures, especially from environmental protection societies (such as green societies), and the increasing interest of governments, especially in developed countries, in environmental management and nature protection, and their imposition of relevant laws and legislation, in addition to international agreements that govern the environmental performance of the state and its organizations. All this had an impact on the organizations 'endeavor to adopt environmental management, following ISO 14001 standards (Taie et al., 2009: 39-391).

ISO 14001 standards have been developed to contribute to sustainable development from an environmental perspective to the extent that they help the organization move towards sustainable development goals and try to place environmental issues within the interests of decision-makers. On the other hand, it works on motivating organizations to implement better environmental management. It is considered a step towards integrating the pillars of sustainable development into the business core (Dilemi, 2001: 9).

The primary purpose for which environmental management has been set up, in accordance with the international standard ISO 14001, is to prepare and qualify organizations to deal with environmental issues and to manage them within a clear policy that takes into account the prevailing environmental laws and procedures (Abdulrazag, 2005: 3).

The organization's relationship with suppliers is an essential component of external environmental management, under ISO 14001 specifications, as the organization evaluates the environmental performance of suppliers to determine the possibility of responsibility in managing work with them and can encourage or require the supplier to achieve improved environmental performance (Hassan, 2007: 32). Often suppliers are involved in the design process. Thus, the necessity to pressure suppliers has become a way to improve their environmental performance and prove their responsibility towards the environment (Abbas, 1998: 149).

The state also plays a significant role in promoting environmental performance through strategies, policies, legislation, environmental regulations, and incentives. For example,

by giving great incentives to organizations that consider environmental protection and restrict taxes on those that pollute the environment (Mustafa, 2006: 284). Governments also support companies to obtain a certificate of conformity to the ISO 14001 environmental management specification due to its role as an alternative to the stringent and costly regulations and legislation (Azzawi, 2005: 237).

As a result of the increased interest in environmental aspects and the considerable numbers of environmental regulations and instructions, the trend towards accepting the international standard ISO 14001 has become a way to reduce the number of times of environmental audits that are conducted on products and services, which leads to cost savings for multiple checks (Abdulrazag, 2005: 4). As well as avoiding contradictory requirements and obligations imposed on organizations due to differing laws, instructions and regulations, due to the risk that lies in adopting local standards within the environmental field, which constitute an obstacle to international trade (Dielmi, 2001: 55).

Based on the foregoing, it can be said that the environmental management specifications in accordance with ISO 1400) have a clear contribution to achieving the sustainable development of the economic organization from the environmental point of view. This is through the aforementioned advantages, the most important of which were rationalizing the consumption of natural resources and energy, reduce environmental pollution, reuse of waste, and organization's compatibility and adaptation with legislation and legal obligations (Labella et al., 2020).

ISO 14001 environmental management system also provides foundations, starting with setting the environmental policy, and then goals and objectives, passing through the control of processes, measurement, and valuation, up to the review. The whole process is carried out periodically and continuously, which leads to the continuous improvement and development of the environmental performance of the organization, consequently, leading to sustainable development (Rashi, 2011: 189).

3.4. Standard Specification for Social Management ISO 18000 and ISO 26000

Given the development witnessed by the field of work in the large industrial organizations and the complexity of its methods and conditions, that led to a significant increase in work

accidents and occupational diseases. Accordingly, the economic organization devoted great attention to preserving the workforce from the negative effects, including occupational safety and health and contributing to society's well-being (Abbas, 2015: 202). For this reason, most of the leading organizations adopt specifications for the management of the social aspect represented by ISO 18000 for the performance of occupational safety and health and the standard of social responsibility ISO 26000 (Rashi, 2011: 171).

3.4.1. Occupational Health and Safety Management System OHSAS 18001[4]

The system of health management and work safety OHSAS 18000 is one of the most critical modern systems that the organization seeks to adopt in its competitive policy to ensure better conditions and increase the performance of individuals, which affects productivity levels (Abbas, 2015: 203).

The OHSAS 18000 is divided into two criteria: OHSAS 18001 contains the basic requirements of this system, through which the certificate is obtained, and OHSAS 18002, which guides the implementation's requirements (Forman et al., 2002: 111). The 18001 OHSAS system, according to ISO 18000, works to monitor the environmental aspects, the health and safety procedures within an organization's activities. Failure to apply this system could lead to accidents and injuries and exposure to diseases or cause physical damage to the buildings and work environment (Harbi, 2008: 35).

Economic consideration also calls for the need to pay attention to occupational health and safety because of their repercussions on the organizations and the national economy of any country. The occupational accidents and diseases have many effects that decreases the organization's productivity and raise the operating costs. All this casts a shadow over the gross national product of the state's economy. Paying attention to occupational health and safety has become necessary for the development of any country (Dolan et al., 1995: 552).

[1]Occupational health and safety are modern fields that have taken the attention of industrial establishments. As the worker's presence in a certain work environment, may result in several risks that negatively affect the other production elements, so the responsibility for occupational health and safety is a social and economic responsibility, to which every individual inside and even outside the organization adheres (Ali, 2018: 223-280; Madsen et al., 2020: 1-34).

The OHSAS 18001 system is defined in accordance with ISO 18000 as a system that defines the requirements that must be met in any occupational health and safety management system to enable the applicable system to control occupational health and safety risks and improve their performance (AFNOR, 2004: 94). It is also known as the part of the Integrated Management System, which includes the organization's structure, planning, activities, tasks, responsibilities, procedures, processes, and resources necessary for the development, implementation, establishment, servicing, and maintenance of occupational safety and health policy (Badohan, 2011: 92).

OHSAS 18001 standard also proves that an organization’s safety management system complies with the highest international standards recognized in this field. The certificate also confirms that all employees and customers are fully aware of occupational safety and health objectives and have been trained to provide a safe and healthy environment for all (Shareif and Abdulrahman, 2008: 155).

Many organizations seek to adopt the standards of this system to achieve many benefits, including helping the organization to provide a legal framework that defines requirements (Alali, 2004: 71), identifying the dangers, improving the organization's performance in the field of occupational health and safety (Hussien and Rashid, 2008: 177), reducing costs, enhancing employees ‘confidence, and continuous improvement through self-assessment (Jubouri, 2004: 18).

The management of occupational safety and health systems is based on performance-related standards.It is linked to the Deming Cycle (PDCA), which was designed in the 1950s to monitor business performance on an ongoing basis. According to Haiba (2014) and Abbas (2017: 10), applying this principle to occupational safety and health could be as follows:

1. **General requirements:** The organization must establish and maintain a system for managing occupational safety and health and its requirements.
2. **Occupational safety and health policy:** A policy of occupational safety and health must be established and approved by the organization’s senior management. It declares the overall objectives and commitment to improving the performance in this field.

3. **Planning:** It includes planning for hazard identification and risk assessment and control, routine and non-routine activities, and activities of all employees who are relevant to the work environment of the organization, equipment, and facilities in the work environment.

4. **Application:** Which includes structuring responsibilities, training, awareness and efficiency, consulting and communication, operations control, emergency preparedness, and emergency response.

5. **Inspection and corrective measures:** monitoring and performance measurement, records management, auditing,[5] and senior management review.

3.4.2. Standard Specification for Organization's Social Responsibility ISO 26000

ISO 26000 is a new form of social control and is an essential tool for organizing and achieving social responsibility. This standard includes four main aspects of social responsibility: the cultural side - the socio-cultural aspect - the environmental and legal aspects, and finally, the aspect of economic development (ISO, 2006: 10).

One of the most important characteristics of ISO 26000 is that it provides guidelines for the social responsibility of all organizations, whatever their size or type, to contribute to achieving sustainable development through responsible social and environmental behavior. The integration of sustainable development in the organization means providing products and services that satisfy customers without harming and works in socially responsible ways in all its aspects, functions, and levels (Meligy, 2009: 7).

The ISO 26000 specification is designed to helping the organization address its social responsibilities, ensure performance results and development, increase customer satisfaction and confidence, promote common terminology in the field of social responsibility, comply with the documents, treaties, and conventions in addition to the other ISO standards already exist and not to conflict with them (ISO, 2010: 4).

1 Auditing is a test service that precedes obtaining a certificate of conformity to the Occupational Health and Safety Management System and comparing it with the requirements of this system, which helps identify the points that need more work before conducting the official evaluation, through external auditing. After that, the institution is granted a certificate of conformity with occupational health and safety standards for a period of time, not exceed 3 years (Richard and Joseph, 2013:1-63; Kadhim and Hussein, 2018:3045-3056).

According to Mugaddam (2014) and Jounot (2010), the organization can achieve many important benefits when embracing ISO 26000. The standard encourages decision-making, enhances the reputation of the organization, prevents or reduces various conflicts with consumers about products and services, and contributes to the long-term survival of the organization by promoting the sustainability of natural resources and environmental services and enhance the public interest, and strengthening civil society and non-governmental organizations.

According to AFNOR (2008:11) and Meligy (2010: 20-28), to achieve these benefits, the standard is based on many principles, including accountability, transparency, moral behavior, respect for the interests of the parties concerned, respect of laws and human rights.

3.4.3. OHSAS 18001 and ISO 26000 Specifications as Input to Achieve Socially Sustainable Development

The accreditation of OHSAS 18001 can contribute to achieving socially sustainable development by reducing accidents and maintaining the health of individuals, which are an essential part of the social aspects of the organization. On the one hand, ISO 26000 is an important tool to control the social responsibility of organizations. The main objective is to adopt socially responsible policies and increase its initiatives and attention to improve the conditions of employees (Abbas, 2015: 221).

Many organizations seek to adopt the occupational health and safety management system in accordance with OHSAS 18001 to identify and evaluate work hazards, protecting the organization's personnel from work accidents, responding to laws, providing a safe and healthy working environment, and alleviating the pressures of unions and trade unions (Saleh, 2009: 186). Thus, this standard contributes to achieving the safety, security, and well-being of individuals in the organization, which falls within its social responsibility in the framework of the requirements and priorities of sustainable development.

According to Gilles (2013: 46), the success of the organization in achieving social responsibility depends on its commitment to three criteria; respect and responsibility towards the internal environment (workers) and the external environment (members of society). In addition to supporting the community and protecting the environment.

Whether in terms of commitment to the products' compatibility with the environment or in terms of the initiative to provide what serves the environment and improves the environmental conditions in the community to address various environmental problems.

Many multinational organizations have sought to embody their social responsibilities aimed at achieving sustainable development. For example, Shell Company takes the Greenpeace and the Human Rights Organizations' advice regarding its environmental policies. While the French Lafarge Foundation, which specializes in building materials, has established a global partnership with the International Organization for the Protection of the Environment. The Danish pharmaceutical company Novo Nordisk has also joined many environmental protection agreements, such as the United Nations Convention on Biological Diversity (Woot, 2005: 167-168).

ISO 26000 standard revolves around seven essential axes ;human rights, decent work, the environment, consumer protection, fair practices, local development, and corporate governance in the triple line, environment, economics, and sociology (Chauvaeu and Rose, 2003: 49). These axes are interlinked with sustainable development dimensions and principles.

ISO 26000 also stipulate that national legislation and international standards of behavior must be respected, many of which are explicitly mentioned in the Human Rights Charter and the Declaration of the Principles of Work Fundamental Rights issued by the International Labor Organization. The standard also states that the productive activity of the institution can affect suppliers, customers, service providers, waste management and management, bankers… etc. (Mamuni, 2020: 37).

In this way, the International Standard ISO 26000 encourages institutions to contribute to sustainable development through respect for the rule of law, and participation, as basic principles to enhance responsibility and reduce the severity of social problems.

3.5. Methodology of ISO Standards Specifications Integration in the Organization

As a result of the global concern in social and environmental issues, with the emergence of sustainable development, and the increase in consumer awareness of the need for organizations to commit to protecting the environment and paying attention to social

aspects. It became necessary for organizations to strive to think beyond quality, such as focusing on the health and safety of employees and environmental responsibility.

Consequently, they needed to search for modern management systems to achieve this and make it easier to reconcile economic, social, and environmental aspects. Accordingly, a methodology for integrating quality, environmental, and occupational health and safety systems was developed in 1990, which is called the Integrated Management System (Hammoud, 2000: 42).

The integrated system is defined as an approach or steps directed to consider comprehensively and coherently the different management requirements (quality, environment, health, and occupational security) (Said and Muasho, 2017: 280). It is also defined as a logical and systematic management approach, which allows making optimal strategic and operational decisions that consider all major aspects that lead to the organization's effectiveness in terms of quality, environment, and health (Mariana et al., 2015: 353).

In this context, the integration establishes and strengthens the relationships between the base units by combining and merging them into one system in an internally consistent behavior (Talbia, 2011: 12). It allows the creation and dissemination of quality, environment, occupational health, and safety (Gillet and Goinard, 2006: 16). Thus, it can be considered a strategic choice conditioned by several factors, such as the internal and external environmental impact, the goals of the organization, and all the systems it contains (Chater et al., 2011: 21).

The integration system is based on the conceptual symmetry of the three economic, social and environmental systems. The more the organization integrates these dimensions into one system, the more it guarantees that its tasks are consistent. The actual implementation of the integrated system is somewhat complicated, but in return, it reduces costs and guarantees the highest returns (Herve, 2015: 8).

According to Tatu and others (2014: 14), an integrated system establishes for the continuous improvement of the organization’s overall performance, and this is achieved when continuous improvement is integrated into the organizational culture of the organization. It is a way to avoid the organizational risks associated with quality, safety,

environment, and security (Bellini and Parry, 2010: 4). Implementation the integrated quality system strategy is usually through the ISO 9000 standard and in the ISO 14000 system and the Occupational Health and Safety System OHSAS 18000,which means the elements of the other two systems are integrated into the system already existing within the organization, which is ISO 9000 (Brunelle, 2005: 6).

There is no official international standard to facilitate the integration of management systems based on ISO 9001 and ISO 14001and OHSAS 18001. Organizations use different methodologies to integrate the systems, according to their needs, the nature of the organization's system, and the prospects of its activities (Hâkim, 2009: 393). According to Stamou (2003: 79), the selection of the method of integration is due to the management of the organization and its officials, as a specific method does not need to be better or more efficient. Rather the choice is made according to the reality of the organization and its internal circumstances.

According to Adikhari (2010: 73), and Faucher (2006: 3) the integration steps include identifying the implementation requirements and objectives of IMS, gathering information on management system standards, preparation of the project plan, and communication. Then define the implementation body and the owners of the process. After that, provide the necessary training and awareness, conduct a preliminary review, and find the gap. Then, improve the documentation map and draw policies and goals and implement the integrated management system. After implementation comes, conduct internal audit and management review, pre-evaluation, and quality certification. The process ends with continuous evaluation and review.

According to Brunelle (2005) and Grouf and Rafiq (2020), applying an integrated management system brings many internal benefits to the organization, such as increasing operational efficiency, reducing costs, and motivating employees. In addition to the external benefits such as achieving a competitive advantage, improving the organization's image of the organization, strengthening the relationship with stakeholders. According to Fakeir (2018) study, this system raises and improves the economic, social, and environmental performance of the organization. Thus, it contributes to achieving sustainable development.

Whatever methods are available to integrate sustainable development into the organization, the latter must choose that appropriate, dynamic and scalable approach. Because the application of sustainable development policy, at the level of economic organizations, must be in every process, through which it seeks to improve the environmental and social aspects continuously, in addition to the economic one. Thus, the principle of continuous improvement is the best way to allow the organization to continuously develop to achieve sustainable development (Sherief and Abdulrahman, 2008: 163).

Continuous improvement is the change for the better. Its work is focused on improving every aspect of operations and trying to identify all the changes that occur during work and the processes or projects that need development. Therefore, it seeks to enhance all the processes and activities that convert inputs into outputs in a continuous base (Bakri, 2002: 233). According to Joudeh (2006: 182-191), many elements that interact with each other to work within the method of continuous improvement in the organization, the most important of which are customer focus, cooperation, and teamwork, management commitment, management relations with employees and the use of technology.

The method of continuous improvement is based on the use of the Deming ring PDCA (Plan-DO-Check-Act). Accordingly, the continuous improvement mechanism works according to the following stages: analysis and evaluation of the current situation, setting goals for improvement, implementation, and then measuring, analyzing, and evaluating results (Segot and Gasquet, 2001: 29). According to AFNOR (2008: 89).The continuous improvement approach is a basic mechanism for the work method for the integrated use of the relevant ISO specifications, concerned with sustainable development, in the economic organization. Like ISO 9001, ISO 14001, OHSAS 18001 supported by the guidelines and principles of ISO 26000, all strive to achieve sustainable development.

The ISO 9001 system works to continuously improve the utilization of resources, reduce waste, and achieve the required quality that meets the aspirations of customers and then achieves their satisfaction. As for the ISO 14001 system, seeks through its requirements to continuously improve aspects related to environmental protection, reduce pollution, and improve environmental performance. As for OHSAS 18001 and ISO 26000 systems, they work to achieve continuous improvement in the management of occupational health

and safety for workers by reducing accidents and preserving the health of individuals, which is an integral part of the social aspects of the organization in the framework of social responsibility (Weil and Pascal, 2007: 20).

In addition, continuous improvement requires the interaction of three main processes: management review, auditing, and corrections. Which is contained in the requirements of ISO 9001.14001.26000 and OHSAS 18001 systems. Consequently, the systems work side by side to collectively form an integrated system in the organization, which works on continuous improvement and development of the most prominent pillars of sustainable development and then contributes to achieving it (Forman et al., 2002: 221).

Thus, we can conclude that the organization obtaining of ISO specifications certificates of conformity to (Quality Management ISO 9001, Environmental Management ISO 14001, Occupational Health and Safety Management ISO 18001, and Social Responsibility Management ISO 26000), and the commitment to the integrated and continuous use and application of these standards; would contribute to achieving sustainable development. The organization has considered the most prominent aspects that constitute the pillars of sustainable development by adopting these specifications.

ISO 9001 specifications help achieve sustainable development goals from an economic point of view by improving product quality, reducing costs and reducing defects and waste. In addition to improving productivity as a result of improving processes and achieving customer satisfaction and confidence. Thus, improving the institution's added value, which will benefit the national economy as a whole.

As for environmental management specifications in accordance with ISO 14001, they work to integrate environmental considerations into management and decision-making processes to contribute to achieving the goals of sustainable development from an environmental point of view by achieving better environmental performance. It also helps the organization gain better efficiency in the use of resources and energy and get access to a greater return on investment, as a result of waste and extravagance's costs reduction, in addition to decreasing environmental pollution, which contributes to improving the image and reputation of the organization.

The specifications of ISO 18001 and ISO 26000 also contribute to achieving sustainable development goals from a social point of view. On the one hand, the ISO 18001 standard aims at managing Occupational Health and Safety in the organization. Through the great attention and the superior care provided to working individuals, by ensuring their health, psychological and physical safety. Consequently, providing the appropriate conditions for the continuous improvement of workers performance to increase their productivity. On the other hand, the ISO 26000 standard would improve and regulate the relationship with the relevant parties in the organization and enhance employee's loyalty, morale and rights. As well as reducing the various conflicts with pressure groups, contributing to the public interest, improving the welfare of society, achieving transparency and integrity in dealings and reports, and enhancing competitiveness. In addition to the possibility of improving the financial performance of the organization.

The economic organization's use of the previous specifications, concerned with embodying the dimensions of sustainable development in it, contributes to building an integrated management system that works to combine environmental, social, and economic considerations and stakes, of sustainable development, within the management priorities and interests of the organization. In addition to that, this system works according to a continuous improvement methodology, which contributes to achieving the continuous development of sustainable development aspects. It works to link total quality management and the principles of sustainable development, ISO standards reflect the ideas of total quality and its goals.

This combination results in the approach of ETQM. Which is an attempt to find a way through which environmental considerations are integrated, within total quality management, as a new management approach that helps the organization achieve sustainable development, through its positive repercussions on the performance of the organization's activity, represented in the selection of resources, research, and development... etc, on the one hand. On the other hand, the performance of administrative functions leads to improving the overall performance of the organization and the surrounding environment.

Therefore, the organizations' acquisition and adoption of these specifications and their integrated and continuous use with each other would achieve sustainable development by embodying its dimensions.

CHAPTER 4: THE IMPACT OF THE APPLICATION OF TOTAL QUALITY MANAGEMENT ON THE DIMENSIONS OF SUSTAINABLE DEVELOPMENT IN THE ORGANIZATION

The economy's orientation towards more concern for the environment and society has led to an increase in the awareness of economic organizations and made them more concerned about their environmental and social responsibilities. Not only as a volunteer or charitable work or assistance, but also because assuming responsibilities from a purely administrative perspective based on carefully planned objectives, policies, programs, and practices.

This management approach is the philosophy of TQM, which helps economic organizations to integrate sustainable development in all their activities and practices. By developing and implementing a set of sustainable strategies that will enhance the organization's economic performance on the one hand. Besides, preserving the natural environment and all its resources, and taking into account all the concerns of society on the other hand.

Thus, it became necessary to conduct more specialized studies to assess the impact of applying TQM in the organization on the dimensions of sustainable development, which we will address in this chapter within the following topics:

- Integration of sustainable development dimensions in the organization through total quality management
- The impact of the application of total quality management on the economic performance of the organization
- The impact of the application of total quality management on the social performance of the organization
- The impact of the application of total quality management on the environmental performance of the organization

4.1. Integration of Sustainable Development Dimensions in the Organization through Total Quality Management

The integration of sustainable development in the organization through total quality management is an essential aspect of the success of sustainable development, by reducing the negative aspects of the organization's activities and bearing part of the responsibility of achieving social welfare and protecting the environment. It is something that many organizations have pursued, either voluntarily or because of the pressure exerted on them, which has produced responsible organizations with committed products that serve the sustainable orientation (Nasser, 2010: 50-53).

Total quality management is a management philosophy, focuses on many modern concepts, which are based on a combination of basic administrative means, innovative efforts, and specialized technical skills to raise the level of performance and continuous improvement (Khatib, 2001: 83). According to Borcosi and Brancusi (2017: 58), applying total quality management in the industrial and services sectors has shown unprecedented success. Through improving profitability, quality and performance, lower costs, and Zero defects.

According to Stephanie (2003: 33-34), the application of total quality management in organizations is one of the most important engines of sustainable development. By satisfying the desires and requirements of customers, solving the problem of the high rate of waste of raw materials through the method of zero defects and thus protecting the environment.

Total quality management has three dimensions: (1) Economic, which is associated with reducing costs to obtain quality; (2) social, which relates to employee's motivation and customers satisfaction; and (3) environmental, which is concerns with disposing of waste by recycling or developing non-defects products. These three dimensions matched with sustainable development pillars (Abbas, 2015: 227).

The approach or philosophy of total quality management helps the organization to adopt the concept of sustainable development by developing effective plans or strategies to fulfil all responsibilities (economic, social, and environmental) and benefit the

organization, society, and the environment, that is, benefit all stakeholders (Idrisi, 2018: 47).

However, organizations that implement TQM cannot achieve equitable growth and balance and preserve the environment unless these organizations are also sustainable. In the sense that sustainable development is the goal of economic organizations. They are the most involved in economic activity and the most dealing with the environment in its various components. Thus, the organization's economic, social, and environmental responsibility is evident (Abbas, 2015: 228).

According to Laville (2009: 23-31), economic responsibility represents creating a stable macroeconomic environment, maintain competitive markets, control available resources, sponsor projects that generate the largest number of jobs and opportunities, attract investments, help transfer knowledge and technology, provide incentives for human resource development, respect the rule of law and protect the environment and natural resources.

Total Quality management also aims to benefit from social policies through the social responsibility of economic organizations. Social responsibility is derived from the flexible and comprehensive nature of total quality management, which encourages every organization, regardless of its size and scope, to adopt appropriate measures and practices, according to its financial capabilities, and in a manner that responds to market requirements (Mayouf et al., 2018: 191).

The integration of total quality management and the organizations' social responsibility is reflected in the voluntary integration of social and environmental concerns into the productive and commercial activities of the organizations and their relationship with their partners. In addition to the growing awareness that the organization's success cannot be achieved only through profit maximization in the short term but also by adopting responsible behaviors in the long term. Therefore, in addition to the economic function of the organization, there is a societal aspect, i.e., a role in society, and the organization is also required to comply with environmental responsibility (Ghalibi, 2009: 524).

Total quality management plays an important role in achieving sustainable development through some points that contribute to integrating the dimensions of sustainable development in the strategy and culture of the organization, including:

1. **Changing the organizational culture**: The success of applying the TQM approach lies in changing the organizational culture in the organization because it is the way that distinguishes it from other organizations (Sultan, 2003: 433).

A study of Pun (2001) discussed the relationship between cultural values and total quality management practices. The study has shown the urgent need for organizations to establish a new organizational culture, based on total quality management philosophy to maintain a competitive advantage and ensure continuous improvement of performance.

Changing the culture of individuals within the organization is the essence of the application of total quality management. It will lead to continuous improvement of production processes and outputs. Through the development of leadership and management skills of senior management. In addition to developing the experiences and attitudes of employees within the organization. Thus, TQM aims to bring about long-term cultural and professional change within the organization and make it more responsible towards society and the surrounding environment (Rifai, 2003: 11).

2. **Changing consumer behavior**: TQM is one of the best mechanisms for organizations to change production and consumption patterns, mainly in the long term, to reduce the environmental impact of production by manufacturing high-quality, efficient, environmentally friendly, and recyclable products. Whose production process respects environmental obligations and social responsibility and conforms to international standards and the optimal use of available resources (UN, 2001: 4).

In addition to strengthening the relationship with consumers to ensure a change in the consumption pattern in the desired direction. That is, sustainable consumption that meets their needs and takes into account environmental controls (UN, 2008: 57).

3. **Establishing environmental projects**: Economic organizations must implement environmental projects such as disaster and emergency projects, investments to

clean the local external environment, environmental security investments and investment in waste, which is considered one of the most important environmental projects in terms of benefit and cost (UN, 2008: 57).

However, Heider (2010: 4) argue that financing these projects is one of the most important issues of concern to governments, entrepreneurs, and institutions. Especially those related to environmental financing because of the high cost of such projects. While (Banna and Amier, 2019: 142) believe that this type of financing receives great attention at the international level, in light of international concerns with environmental affairs and issues of financing environmental projects or green investments in particular. International financial institutions have added a new condition for projects to finance them, which is the extent of their interest in the environment, their use of clean technologies, and their production of environmentally friendly products.

4.1.1. Total Quality Management Mechanisms to Integrate the Dimensions of Sustainable Development in the Organization

In the framework of total quality management philosophy, there are some mechanisms that organizations can use to integrate the dimensions of sustainability in their activities. The researcher will try to explain them as follows:

1. **Continuous improvement**: Total quality philosophy is based on continuous improvement. This is the best method for achieving sustainable development because the application of sustainable development in the organization requires continuous improvement of the environmental, social, and economic aspects (Sherief and Abdulrahman, 2008: 163).The continuous improvement of total quality management affects three main areas; the technical field, the human resources field and the organizational field (Mahmoud, 2009: 101).

Applying the philosophy of continuous improvement helps the organization get rid of waste in operations as much as possible, which leads to improvement in the time, cost, and quality of operations. Besides improving the social aspect by changing the culture of employees and the organization and helping the organization create an interactive leadership environment that seeks to change for the better. Thus, the principle of continuous improvement is the core of total quality management. It is one of the best

ways for continuous and sustainable development to achieve economic and social development while improving environmental performance (Volsk, 2009: 98).

2. **Six Sigma Model (Sustainability Integrated Guidelines for Management):** This model was developed in 1999 by the British Standards Institute (BSI) to increase the effectiveness of continuous improvement. As an initiative to help economic organizations face the various challenges posed by society, the economy, and the environment. Besides, assist them to plan for a more sustainable future. By spreading the awareness about the importance of adopting the concept of sustainable development, and the necessity to integrate it into all stages of its strategic management (BSI, 1999: 2).

The model consists of four stages; Leadership and vision planning, implementation, observation, and reporting (BSI, 1999: 5). It is based on the same foundations on which the international standard specifications- detailed in the previous chapter -are based. The philosophy adopted in its description is the philosophy of total quality management, based on the principle of continuous improvement, derived from the Deming cycle (planning, implementation, evaluation, and improvement). However, the addition that came with the model is introducing the principles of accountability, disclosure, and transparency (Aggeri et al., 2005: 83).

According to Bernard (2000: 232), the Six Sigma methodology works to maintain the efficiency of operations by relying on statistical methods so that they can be generalized to all activities.

Six Sigma is considered an extension of total quality. It takes the concept of quality and processes to a new level, where customers' needs are met and surpassed. It is essential to know that total quality and Six Sigma are related to each other. The improvement in one of them affects the other radically. However, this does not mean that Six Sigma is a different approach from total quality. On the contrary, it is one of the total quality strategies that continuously improves performance (Mahmoud and Munir, 2010: 43).

3. **The Fractional Model**: This model is based on the operations approach, one of the total quality principles. It is an approach based on the descriptive methodology for organizing a specific activity through its analysis, making the necessary

adjustments, and reach the goals to be achieved. The fractional model is one of the models that helps an economic organization to integrate sustainable development (Mitonneau, 2006: 8).

This model includes seven dimensions and basic elements that give the organization a better concept of sustainability, namely, treatment and prevention. Besides, raising the organization's ability to coordinate between the increase in the economic capital and the social and environmental ones. In addition to the integration with the three dimensions of sustainable development. Then recycling and horizontal integration with suppliers, vertical integration with customers, and finally evaluation (Jonker, 2006: 55).

The formulation of a two-pronged philosophy of total quality management and sustainable development at the conceptual level and its application by organizations would contribute to the formulation of their mission and vision to meet the demands of consumers on goods and services produced sustainably. Moreover, sustainable development is an innovative advantage of economic organizations because it guarantees profit and long-term competitive advantage (Abbas, 2015: 246).

This benefit is evidenced by six positive economic impacts of sustainable development; the prediction of constraints and risk tolerance, cost reduction, innovation, market differentiation, brand strength, increased sales, and improved economic and financial performance (Mrani, 2009: 6). To clarify this, we will highlight the impact of applying total quality management in the organization on the economic dimension of sustainable development in the following section.

4.2. Total Quality Management in the Organization and Economic Sustainability

The economic performance in the classical concept is to maximize the profitability of shareholders. While its modern concept is to maximize profitability for the economic organization, which has become a partner in sustainable development, in the framework of considering the sustainability criteria through environmental protection and social justice (Rashi, 2011: 73).

According to Shelly (2014: 79) study, the extent of the success and continuity of TQM systems in the economic organization’s activities is linked to all concerned parties. In this sense, the rehabilitation needed by the economic organization lies in the integration of

TQM and sustainable development in its management in all fields. This leads to the development of production methods with optimal use of resources and energies while raising the efficiency of the human resources and creating a sustainable value for the organization.

The literature did not agree on a specific definition of value, as many researchers still raise the distinction between value acquisition and value creation. According to Christos (2008: 8), the value is the perceived benefit process of the last beneficiary or the target of the business results. It also means the perceived technical, economic, and social benefits of the product or service (Norton, 2004: 16).

The sustainable value of the organization means the ability of business organizations to meet the needs and requirements of the future (Hart and Milstein, 2003: 65). Therefore, sustainability is a broad concept that encompasses several fields of knowledge, starting with the satisfaction of beneficiaries or stakeholders and ending with financial performance. In the framework of sustainable development and TQM, the creation of sustainable value is the way for business organizations to develop their strategic capabilities, lead innovation and achieve competitive excellence (Stevenson, 2005: 8).

The sustainability of the organization is based not only on the assumption of improving the financial and environmental performance of the organization (energy-waste-pollution), instead, it means improving the balanced and synchronized performance of the business in different dimensions (environmental, economic, social, and moral). Then it is a concept that expands to include the processing chain of the organization's activities (Notat, 2007: 10). Thus, creating sustainable value for the organization means improving the value of owners, investors, customers, stakeholders, besides the ethical, social and environmental values (Laszlo et al., 2005: 2).

Hart and Milstein (2003: 59) presented the general basis of an organization’s sustainable value, divided into two axes. The first one represents the current performance indicators that reflect the interior trends of sustainability. The second axis represents external performance trends, which reflects the external trends of sustainability.

According to Hart and Milstein (2003), Cardoni and others (2020), and Sadovska (2018), the first group of sustainable value drivers is related to the growth and development of

industry and consumption and its negative effect on the environment (pollution of all kinds). So, performance indicators related to the efficiency of resource use (outputs/inputs), cleaner and green production technology, pollution reduction, and sanitary treatment of production waste are the most critical indicators for creating sustainable value for the organization.

The second set of sustainable value propositions relates to the performance of organizations in the field of community service and interdependence in the context of creating a balance between the views of all stakeholders. The third set of sustainable value guides focused on technological developments that made many industries advanced and shortened the product life cycle, while the fourth group focused on indicators such as equitable distribution and population growth.

According to Laszlo (2008: 27), there are six levels organizations can adopt to develop sustainable value. It starts with modifying the organization's activities to achieve a competitive advantage for its sustainability strategies, then developing a culture of sustainability and brand identity, get access to new markets directed to the needs of customers and society, adopting product differentiation strategies based on technical, environmental, and social characteristics, reducing energy use indicators and finally adopting a risk management approach and protecting the organization's right to operate.

While Sebhatu (2009: 5) argues that the measurement of sustainable value is not based on indicators of economic performance, such as profitability and productivity only, but must include indicators of environmental performance and social responsibility.

The application of total quality management in the organization according to an organizational framework directly contributes to improving the organization's performance. This indicates the existence of a correlated relationship between total quality management and the sustainable value approach. Both of them aim at continuous improvement of performance. Consequently, the sustainable value approach focuses, within the framework of total quality, on achieving a balanced value for all beneficiaries, including the customer, through the balanced performance of the organization, which is based on the three social, economic and environmental dimensions. This integration is

done by using what is known as the Sustainable Balanced Scorecard[6], which is one of the total quality management tools to achieve sustainable value (Coelho, 2005: 37).

The main motive behind the balanced scorecard proposal was the deficiencies in the short-term financial performance measures that ignore strategic information related to quality, human resource development, research and development, innovation and customer satisfaction (Dayan, 1999: 875).The main reason behind the development of this model is to form a realistic base for the appropriate orientation of the organization's shares. That is, to put in place a business development strategy and not a balanced management review system (Lascelles and Peacock, 2007: 218).

The Typical Balanced Scorecard model was criticized for disregarding the social and environmental dimensions of performance measurement (Anati, 2008: 38). So, modifications were made to this form in 2001. Therefore, additional dimension of the four dimensions proposed by Kaplan and Norton was incorporated, which is the societal dimension. The model became the sustainable, balanced scorecard (Naro and Nouuera, 2008: 28).

The purpose of the researchers (Bieker et al., 2001; Figge et al., 2002; Zingales and Hockerts, 2004) from the amendment was to make the balanced scorecard used in the application of social responsibility strategies in organizations. Alternatively, making it a tool for measuring the overall performance of the organization. Instead of just measuring financial performance.

According to (Manasreih, 2011: 309), the contribution of the economic organization to achieving sustainable economic development at the macro level is shown by maximizing the national gross income and ensuring its sustainability. Through increasing production, economic rationalization of the used energies and resources, raising the growth rates of projects and improving economic performance.

[6] In 1992, Norton and Kaplan proposed a performance measurement model, called the Balanced Scorecard, to expand the performance measurement framework to include, in addition to the financial aspect, other dimensions related to both clients, internal operation of functions. Besides growth and learning. Norton and Kaplan used to consider the Balanced Scorecard as a dynamic approach that includes many financial and non-financial measures of performance. It can be considered a complex mixture of measures related to results, besides measures related to causes (see Madsen and Steinhem, 2015; Sardinha et al., 2007; Hansen and Schaltegger, 2016).

In this regard, the studies (Hammoud, 2000; Azzawi, 2005; Joudeh, 2006) have proven that total quality plays a significant role in raising the productive efficiency of the organizations. The application of TQM philosophy helps achieve customer satisfaction, raise the level of productivity and increase efficiency. Thus, increasing the profitability of the organization through continuous improvement and reducing waste. In addition to raising the efficiency of human resources.

While Zorelli (2006: 9) emphasized that adopting total quality philosophy leads to a reduction in production time and waste of raw materials, which means economic rationalization of energies and resources in the organization, thus, total quality management contributes to giving the organization the advantages of quality and lower cost.

This contribution results in improved productivity and increased profits for the organization. Consequently, it has the necessary liquidity to support and consolidate its relations with the surrounding community and environment. This comes by supporting civil society institutions such as hospitals, paying attention to institutions that guarantee special groups such as the disabled, and establishing development projects. In addition to the ability to save costs for research and development, to provide environmentally friendly products. This leads to achieving sustainable development with its economic, social, and environmental dimensions (Aboud, 2006: 227).

Through the preceding, it becomes clear that it is necessary to link total quality with the economic content to make the product comfortable for the organization on the one hand and the price is within reach of the purchasing power on the other hand. In addition, to ensure the success of organizations in the current era, total quality must be linked to the needs of society, related to health, safety, and security that affect humans and the environment, where all efforts are made to achieve sustainable development from a social and environmental point of view, which will be covered in the following discussions.

4.3. Total Quality Management Application in the Organization and Environmental Sustainability

The adoption of TQM is one of the organization's strategies aimed at providing high-quality outputs and flexibility in understanding the problems resulting from environmental pollution and providing solutions (Shelly, 2014: 80).

The environmental dimension is one of the dimensions of social responsibility. An organization that behaves in a socially responsible manner towards its stakeholders, its responsibility towards the environment is part of this great responsibility (Iynes and Andrachuk, 2008: 378). This interest is crystallized in the degree of integration of environmental considerations into the activities of the organization. Which is subject to internal and external pressures and motives, the most important of which are governmental and stakeholders' pressures, the economic motives and the organization's capabilities (Besseba et al., 2018: 33).

Within the framework of sustainable development requirements, the concept of environmental behavior has also appeared. This means integrating the environmental dimension into the organization's policies and strategies, to combine with total quality management, to achieve continuous improvement. By adopting what is known as a cleaner production policy. With the inclusion of the environmental component in the current and future programs of the organization (Rashi, 2011: 104). This is what we will clarify through this section.

4.3.1. Total Quality Management Strategy within the Concept of Cleaner Production (CP)

According to Abbas (2015: 270), the cleaner production policy in the organization's functions, in the context of sustainable development requirements, is essential for its sustainability and enables the achievement of total quality. The application of the cleaner production approach contributes to the preservation of resources and the optimal use of them and reduces the pollutants resulting from industrial processes.

The concept of cleaner production was introduced as the continuous application of a preventive strategy that complements production processes to increase efficiency and reduce risks to humans and the environment (Hanson et al., 2000: 2). According to Lebeer

(2007: 7), cleaner production is an integrated process and strategy that eliminates pollutants before they occur.

According to the studies by (Saad, 2005; Berkel, 2011; Jaques and Chantal, 2002; Zainura, 2012), the organization obtains many advantages through adopting a cleaner production policy as it improves operating efficiency and product quality, recovery of lost materials and the possibility of enhancing the working environment in terms of health and safety. It also enables cost savings, waste treatment, and recycling. Cleaner production also increases the organization's market share and competitive advantage. However, Organizations may face some obstacles while implementing cleaner production systems, like high costs, weak economic returns, lack of experience, and inability to obtain modern technology (Magawrah and Hafifi, 2011: 2-6).

According to Tahoun (2005: 97-98), cleaner production is implemented by identifying options that achieve comparative advantages for the organization regarding technical, economic, and environmental aspects. The organization sets its priorities by taking short, medium, or long-term measures based on these systems. After setting the priorities, the organization can apply the cleaner production technique (Saad, 2005: 240). Governments can also promote cleaner production by developing environmentally friendly policies, for example: exempting or reducing taxes with environmental fines and taxes and guaranteeing environmental project loans (Jamal, 2011: 39).

Regarding the relationship of TQM with cleaner production, Tahoun (2005: 114) argues that TQM is an organization's cleaner production mechanism where the organization applies total quality systems based on the continuous improvement of production processes. Thus, moving to modern production based on quality and reducing the proportion of waste. That is environmentally responsible production. The cleaner production policy, in turn, contributes to improving the quality of the products provided by the organization to community members, reducing gas emissions, and providing financial revenues through cost reduction, which is what TQM aims at (Suror and Mohammed, 2021: 235).

A study by Ismail (2014) aimed to find the relationship between TQM and cleaner production technology and know its implications for production concluded the existence of a reciprocal relationship between them. The results also showed the effect of this on

enhancing the quality of environmental performance. According to Hegaz (2004: 71), cleaner production is based on the continuous application of total quality management, as an integrated preventive strategy, based on two fundamental bases: environmental and consumer protection, and production efficiency within the organization to achieve economic, social, and environmental benefits. Thus, it contributes to promoting sustainable development.

4.3.2. Total Quality Management Techniques in the Organization to Achieve Environmental Sustainability

TQM contains a set of methods derived from management policies in general, which work to achieve environmental performance, and are consistent with the organization's environmental aspects. It is based on the principle of continuous and sustainable improvement. Among the most prominent of these technologies is the Deming Cycle.

In 1950, Edwards Deming proposed a model for improving business processes, which should be analyzed and measured to identify sources of variation and deviation from customer requirements. Deming recommended putting business processes in a continuous loop so that managers could identify which parts needed to be changed or improved, which is called the Deming Cycle (PDCA), referring to Plan-Do-Check-Act (Nguyen et al., 2020: 4-5).

The Deming cycle is the basis for continuous improvement in total quality. It links the concepts of design, production, sales, and market research. Using this cycle to explain these functions or steps carries the content of continuous and indefinite change based on problem-solving methodology (Othman, 2008: 527).

According to Chikuku and others (2011) and Nguyen and Hens (2013), in general, the Deming cycle within the framework of the environment and achieving environmental performance includes the following:

1. **Planning:** In the environmental context, planning means defining the objectives and processes that enable an organization to implement environmental policies. In this regard, it is based on international standards approved by international organizations such as ISO. Also, environmental planning must be inclusive of all activities of the organization.

2. **Do**: The function of implementing environmental processes and policies, as planned. It covers all the functions of the organization.

3. **Check**: It is the function of monitoring and following up the processes related to legal procedures, operational requirements, and environmental policy objectives, while working on environmental performance assessment, through evaluating the success of environmental measures taken by the organization.

4. **Act**: This function requires correct and evaluation of operations-if necessary- Environmental standard ISO 14001 can be used to achieve continuous improvement of operations and ensure their permanent effectiveness.

Perumal and others (2012) study about the link between environmental management systems, such as cleaner production, and ISO 14001. Concluded that ISO 14001 has the ability to improve the environmental performance of organizations and improve the overall activities within the organization continuously. While another study by (Chikuku, 2010) has shown that integration of cleaner production technology with ISO 14001 in a single environmental management system contributes to achieving a relative reduction in operational costs and reduces waste.

Another technique of total quality management to achieve environmental sustainability is the Sequential Exclusions Model (UDSO). This model represents the elimination and exclusion of anything that would cause loss or waste at the idea or application level. The model represents a constructive input to the continuous improvement of the process to maximize it (Shelly, 2014: 104).

This model can serve as a basis for analyzing root causes of problems to determine why they occur and how to address them at all levels. It uses the Deming Cycle for each sequence of exclusions indicated within the U-D-S-O characters and in a non-stop manner which means (understand, document, simplify and optimize) (Othman, 2008: 527). According to Majid and Sifa (2008: 24), this model must consider the importance of activities. From which any process consists, as there are routine activities, and high value monitoring ones.

Consequently, the aforementioned models are considered a means or technique for achieving environmental performance within the organizations' economic policy. The

latter became required to integrate environmental considerations into its strategic vision and its policy priorities, objectives, and stewardship interests, by adopting modern management practices that serve to protect the environment and preserve its resources, in addition to providing environmentally friendly, high-quality products. This is reflected in the promotion of the environmental dimension of sustainable development.

For Example, Microsoft Company is concerned with environmental sustainability and preservation by using information technology to improve energy efficiency. Through developing and manufacturing the company's software products with a technology that uses energy in a more efficient and saving way. The company has also set a goal to reduce the emission of carbon dioxide. (Gashi and Darja, 2018: 225-226).

While the Toyota Company, the leader in the automotive market adopted a set of plans aimed at developing energy-generating technology, which is the basis for improving the environmental performance of vehicles. This technology is being developed in three stages: improving fuel efficiency to reduce carbon emissions. Make the gas emission cleaner to help reduce atmospheric pollution. Besides seeking to diversify energy sources (Mounir and Abraham, 2012: 11-13).

4.4. Total Quality Management Application in the Organization and Social Sustainability

Based on the fact that the human resource, at present, has become the capital of the economic establishments. The management of its affairs represents the social aspect of the organization. In addition, it contributes to the well-being of society. The human resource has a vital role in achieving total quality, whether at the level of the service or the product provided (Amer and Abbas, 2017: 169). Thus, the first approach in this topic will be to know the role that total quality plays in achieving sustainable development, from a social point of view, though concern for internal customers (workers and employees) and external ones (consumers).

4.4.1. The Role of Total Quality in Qualifying Internal and External Customers to Achieve Social Sustainability

The philosophy of total quality views the organization as a technical system and as a social system that contains individuals. Accordingly, aspects related to the trends of

aspirations, motives and behaviors, and the interaction between groups in the reality of work are also important. It also believes that the human element is the most potent factor in management success, and the quality of work is an essential part of the concept of total quality (Aziz, 2000: 144).

Realizing the needs of internal customers is to ensure that employees, departments, and units depend on each other. Some may assume that the communication process occurs naturally, but what should be pointed out is that the process of change does not happen on its own, and it must be facilitated and encouraged. Many tools can improve communication within an organization, such as Quality Circles[7] (Mahmoud and Munir, 2010: 95).

The Quality Circles program is a communication model that provide the necessary information and reduces resistance to change. Through the flow of information horizontally and vertically between different administrative levels to continuously improve the organization's quality system (Martland, 2017: 277). Thus, the implementation of the communication strategy leads to achieving total quality and enhancing the social dimension of sustainable development (Alag, 1998: 294).

Motivation is also considered as one of the essential tools for rehabilitating internal customers (employees) to achieve social sustainability (Selemi, 1998: 20). Following the motivation strategy requires studying the organization's environment to determine the appropriate incentives, which allows achieving total quality and sustainable development, through meeting the needs of workers, improving the organization's image in front of society, and developing performance (Maher, 2001: 120). Consequently, enhance the social dimension of sustainable development.

Training also contributes to developing the human resources capabilities of the organization. The training strategy in light of total quality is represented in the

[7] Quality circles are one of the most common methods used in organizations that implement TQM. Short-term teams are formed to hold meetings to discuss institutional problems of all dimensions, solve these problems and find new opportunities for improvement. The number of members of the team ranges between 4-10 members. Membership is optional, and they hold periodic meetings to discuss and analyze quality problems, and then provide solutions. Each unit has its supervisor and leader, whose primary mission is to train the team, working under him in this unit, to master the problem-solving strategy commensurate with the nature of work and the problems facing the institution they belong to, and also train them to use statistical and stimulate the team spirit (see Shpresa and Gadaf, 2013; Alhol et al., 2006).

commitment of the organization's management to train its members on all ways to preserve the environment and achieve sustainable development. Besides working to develop a program that keeps pace with the changes in the environment in which the organization is active (Masoudi, 2010: 105).

According to Fattah (2000: 100), and Juda (2009: 117-123) the TQM training strategy covers conceptual quality training, training on quality tools and leadership training, which focuses on managers, to acquire skills in decision-making, and dealing with individuals and organizational knowledge.

From the above, we conclude that human resources are the backbone of change towards sustainable development, and investment in human resources is one of the most important investments for the organization to meet the challenges. Accordingly, organizations resort to applying total quality philosophy, which focuses on raising the level of performance, improving the work environment, and paying attention to the human resource inside and outside the organization. This will positively impact sustainable development in its three dimensions, economic, social, and environmental.

The global economic systems have also become characterized by a common pattern based on consumer respect and satisfaction. This is based on the importance of competition as a basic determinant of the position of any organization in the market. In the same context, all stages of TQM are also related to taking into account customer requirements. Customer satisfaction is considered one of the most important criteria that enables the organization to ensure the quality of its products and services (Sahn, 2002: 71).

Customer satisfaction represents the impression or feeling created by comparing product characteristics and customer expectations (Ray, 2001: 22). After purchasing or consuming a particular product or using a specific service (Derbaix and Bree, 2000: 505).

However, the study presented by Parasuraman and others (1985) is considered the first serious attempt to measure service quality. These researchers were able to design a measure of service quality. It is known as the perceptions or expectations scale, which was later known as the gap scale or the Servqual model. (See; Kasper et al., 1999: 197; Muhyawi, 2006: 98; Sarran, 2004: 12). Assessing quality through the gap model means

identifying the gap between customers' expectations of service level and their understanding of actual performance.

Which means knowing and identifying the compatibility between the expected service and the perceived service. The main focus of assessing the quality of services in this model is the gap between the customer's perception of the actual performance level and the service expectations. That gap depends on the nature of the gaps associated with design, marketing, and service delivery (Urban, 2009: 633).

The gap model includes five gaps. Four of them are related to the service provider; research, design, presentation, and communication, and the fifth is related to the customer. It is also called the actual gap, which results from the presence of some or all of the aforementioned gaps (Dhanalakshm and Kanimozhi, 2013: 49).

Some studies like (Lewis et al., 1994; Green, 2007) concluded that the most widely used metric of service quality is the one that relies on the gap model. However, it does not suit all services. The dimensions of the quality of services differ according to the difference between sectors, the quality of services provided, and the culture of countries and the difference in service providers.

This scale also received other criticisms taken up by those interested in this field (Sultan and Wong, 2010; Babakus and Boller, 1992; Teas, 1993). Most of them emphasized that relying on comparing expectations with actual performance affects the gap scale’s efficiency and that the gap model is only suitable for measuring the quality of services in cases of complete certainty by the service user regarding its characteristics.

As a result of these criticisms, Cornin and Taylor (1992) developed an alternative scale and called it the Performance Trend Scale, which was later called Servperf (Service Performance) model. The study was applied to four service sectors; banks, the cleaning sector, fast food restaurants, and infectious disease centers (Ismail and Aidos, 2017: 6).

According to Ahmadi and Bidarpoor (2011: 751), the performance trends scale proved to be better than the gap model in measuring the quality of services, especially concerning ease of application and simplicity of measurement. While Porral and others (2013: 604) mention that the model is based on the exact five fundamental dimensions of the gap model for measuring and evaluating the quality of services.

In this model, quality is defined as a concept related to a customer's understanding of the actual performance of the service provided. Whereas trend is defined as performance evaluation based on a set of dimensions associated with the service provided (Mualla, 1998: 362).

The performance trend model rejects the concept of the service quality gap and focuses on evaluating the actual performance of services, which means the side of the perceptions of the customer only. This is because the quality of services is expressed as a kind of direction. It is an indication of the clients' previous perceptions, the experience of the organization in dealing with customers, and the level of satisfaction with the current performance of the service (Salah, 2016: 57).

According to the performance model, satisfaction is a mediating factor between pre-service perceptions and current performance (Shelly, 2014: 94). Within this framework, customer evaluates the quality of service according to indicators such as reliability (providing a reliable service with a high degree of validity and accuracy). Response (providing the service permanently). The degree of the service provider’s understanding of the customer’s needs. In addition to the safety index (the degree of feeling safe in the service provided). And finally, the tangibility index (physical facilities available) (Damour, 2005: 443-446).

The studies by (Cronin and Taylor, 1992; Zhou, 2004; Kim et al., 2005) dealt with determining the nature of the relationship between service quality and customer satisfaction, on the one hand, and between it and the purchasing intentions of the consumer on the other hand. The results of the studies indicated that measuring service quality based on performance (according to the trend model) is more advanced and efficient than using the gap between perceptions and expectations. Also, the study of Tees (1993) indicated that an increase in perceived performance over expectations does not necessarily reflect an increase in the level of service. Also, the emergence of negative gaps may sometimes occur as a result of customer’s ideal expectations.

In contrast, the results of some studies (Idris 1996; Caruana et al., 2000; Johnson and Anuchit, 2002; Mahmoud and Khalifa, 2015) showed that the gap measure has a relatively high degree of reliability in explaining the variance in the overall perceived quality of the

service, and determining the relative importance of its different dimensions and manifestations.

Other studies found that there is no difference between the results of measuring service quality using the scale of actual performance (perceived quality by customers) and the gap model, represented in the difference between expected quality and actual perceived quality and that the two models are equally valid for measuring service quality, and they are the best (Mualla, 1998; Imam, 2003; Chicui et al., 2003; Carrillat et al., 2007; Brochado, 2009).

In the same context, Caruana (2000) stated in his study that despite the difference between these measures and strategies. However, it is the most widespread and applied. He agreed with Cavaness and Manoochehri (1993) that these measures revolve around five basic elements to improve service quality; understanding customer needs, defining the organization's goals and service delivery standards, assigning more tasks and training to workers, providing the opportunity to complain, and paying attention to building a quality culture that allows continuous improvement in service performance.

In conclusion, we can say that achieving the required quality standards and ensuring their sustainability depends on the processes of sustainable improvement and development that the organization undertakes at the internal level. This comes by adapting administrative systems, developing work and training procedures, and instilling a culture of sustainable development in human resources. In addition to the external level, through the search for excellence in customer relations, customer satisfaction, and meeting current needs while considering the needs of future generations.

4.4.2. The Relationship of Total Quality and Social Responsibility with the Social Dimension of Sustainable Development

There has become a general trend to take the concept of the social dimension of the organization to improve performance and increase its effectiveness. Organizations no longer rely on building their reputation only on their financial positions, and their valuation is no longer based solely on its profitability (Jadi and Attia, 2013: 2). Instead, modern concepts emerged to help create a work environment capable of dealing with the new trends endorsed by sustainable development, which is linked to achieving social

justice, advancing human welfare, as well as preserving human rights. Confronting these obligations and others led to the emergence of social responsibility (Mullenbach, 2002: 5).

Therefore, we will address in this section the social responsibility of organizations and their relationship and integration with TQM to achieve sustainable development.

Corporate social responsibility (also known as corporate citizenship, or responsible business) is a modern concept that expresses business organizations taking responsibility for the impact of their activities on customers, suppliers, employees, shareholders, communities, and other stakeholders and their environment. This commitment demonstrates that organizations must comply with the legislation and take voluntary initiatives to improve the well-being of their employees and their families and the community and society at large (Ismail, 2009: 202).

According to Abbas (2015: 308), the social responsibility of organizations is an essential element in forming organizations' reputations and participating in realistic and effective strategies for providing social services that integrate with total quality management. Social responsibility was defined by Drucker (1977: 584) as an organization’s commitment to the society in which it operates. According to Holmes (1985: 435), this commitment is achieved through various social activities such as fighting poverty and pollution, improving health services, creating job opportunities, and solving the housing and transportation problem, among others.

The classic view of social responsibility is based on the ideas of Milton Friedman (Bakri, 2001: 23). Which crystallizes around the fact that organizations should strive to provide consumers society with the best services, pay workers' wages, and pay taxes, while respecting the rule of law and concluded contracts. It also acknowledges that adopting social responsibility will reduce profits and increase work costs (Freidman, 1970: 189).

As for the modern view, the most prominent supporter is Paul Samuelsson, who believes that the concept of social responsibility includes the economic and social dimensions (Davis, 1973: 321). According to Tamimi (2002: 22), adopting this concept would bring profits to the organization in the long run and strengthens its position among stakeholders. It also helps it avoid government pressure.

While the environmental concept focuses on the fact that social responsibility is not confined to the organization and its interests only, instead extends its limits to the consideration of the desires of many external parties and groups affected by its behavior in general (Schermerhorn, 2001: 126-127). As Wan and Wan (2006: 179) and Ferone and others (2004:127) believe, social responsibility allows the organization to serve society and the stakeholders.

While Hopkins (2004: 10) argues that social responsibility is concerned with treating stakeholders ethically and socially responsible. The economic responsibility represents the direction of the stakeholders within the organization and the moral responsibility towards the environment and society, through creating better living standards for members of society while maintaining the maximization of the organization's profitability.

Thus, the concept of social responsibility includes achieving a balance between economic and social goals (Davies, 2008: 312). According to the International Organization for Standardization (ISO), social responsibility includes the organization's practices to take responsibility for the impact of its activities on society and the environment. To become compatible with sustainable development and the welfare of society. Sustainable social responsibility is based on ethical behavior and respect for laws. It must also be integrated with the organization's daily activities (ISO, 2010: 4).

Through this concept, we can deduce that social responsibility includes organizations bearing all the adverse effects that their activities can have on the environment and society, aiming to achieve social benefit. Thus, social responsibility contributes to sustainable development (Mugata, 2011: 2).

In this regard, ISO 26000 defines social responsibility as translating an organization's decisions and activities to society and the environment. By adopting transparent and ethical behavior. Which contributes to sustainable development, including health and well-being in society, and considers stakeholders' expectations. As well as respect existing laws and compliance with international standards and incorporate them into the organization as a whole and practice and apply them at various levels of management (ISO, 2014: 5).

This definition is more comprehensive .It focuses on the organization's role in achieving sustainable development and development in society. Besides responding to the aspirations of stakeholders. The definition also indicates the importance of the integration of social responsibility in organization management.

Despite all this, social responsibility is not without criticism. In addition to the aforementioned ideas of Milton Friedman, other scholars have emerged who oppose in their writings the concern for social responsibility (Ghalibi and Idris, 2009: 52; Henderson, 2005: 32; Doane, 2005: 25). Given that the expense of controlling pollution, occupational safety, and others affect the organization's budget. It also reduces its focus on achieving its economic goals and violates the principle of profit maximization, which is the essence of the existence of economic organizations.

Moreover, others like Banerjee (2007: 54) and Bakri (2001: 53-54) argue that social responsibility gives organizations additional power, which increases their economic influence. They also indicated that most organizations lack the necessary skills to fulfil such social roles, besides their limited capabilities in this area compared to the state and the difficulty of accountability for these social activities.

While some researchers (Ghalibi, 2009: 86; Asiri, 2007: 23; Jounot, 2010: 15) agreed that social responsibility of the organization with certain limits represents an important and helpful process for the organization in its relationship with its communities, to face the criticisms and pressures imposed on it. Also, fulfilling social responsibility would achieve several benefits such as improving the organization's image, better social risks management, increased market share, and maximization of profits. In addition to social justice, improving society's quality of life, developing the environment, and achieving development.

Despite all the above, the debate is still raging around the social responsibility of organizations and the focus on the social role they play in society and the working environment. Visions varied about whether this responsibility is a choice for organizations or an obligatory commitment towards the society through which they achieve their profits (ISO, 2004: 25-30).

Especially in light of pressures the organization faces, from multiple parties, such as consumers, governments, civil society organizations, and others (Bakri, 2001: 31). As a result of all of that. The concept of social responsibility has been linked to some challenges in various business sectors, especially the industrial sector. The most important are the increasing calls to protect the environment, the emergence of the total quality management concept, and the quality standards related to industrial products (ISO). Besides responding to the requirements of sustainable development and integrating concepts like cleaner production in the industrial policies (Wahiba, 2012: 3-4).

According to Khalidi (2018: 66), the economic organizations derive their duties towards society based on their economic strength and the tremendous financial and human resources that enable them to play their social and economic role to the fullest.

In a field study of KPMG Organization, in 2005, with the University of Amsterdam. On the state of social responsibility in the world. A field survey was conducted for 1600 of the largest international organizations. The study showed, concerning the motives for issuing development reports and commitment to social responsibility, that economic considerations are the main motivation by 74%, followed by 53% for reasons related to development, innovation, and education, and 51% for reasons related to the organization's values (ARADO, 2007: 46).

This is strengthened by the experience of Microsoft Company which is one of the largest software companies in the world. The Company was concerned about the shortage of qualified IT workers. Therefore, it launched an initiative costing about $ 50 million, whereby employees devote part of their time-which was time paid- to helping colleges develop and standardize curricula and train their staff. Thus, the Company merged its economic goals with aspects related to social responsibility (Mugharbel and Fouad, 2008: 17).

Also, the studies of Kawamura (2005) and Suzuki and Tanimoto (2005) showed a great deal of awareness of the importance of social responsibility in Japanese organizations. They explain that the Japanese model of social responsibility is based on three foundations: ethics, stakeholders, and sustainability.

While Caroll (1991: 42) referred to the comprehensiveness of the content of social responsibility. Caroll mentioned that the organization has four types of responsibilities; voluntary, moral, legal, and economic responsibilities. These dimensions affect the various parties benefiting from the internal and external environment of the organization.

Accordingly, the overall responsibility includes four levels, the most important of which is the efficiency of economic performance. The organization must work to produce goods and services effectively and successfully and strive to achieve the required levels of profits. This must be done in light of compliance with the laws and legislation it operates and the ethical aspect, such as fairness and honesty. As for the voluntary responsibilities, they depend on the extent to which the organization feels and appreciates the requirements of its environment and works to participate in it (Ghalibi and Ameri, 2005: 82).

While Ernuit and Ashta (2007: 20) believe that the social responsibility of economic organizations includes two primary dimensions: The first is the internal dimension, which focuses on responsible social performance towards workers and everyone within the organization. The second is the external dimension that focuses on the social role and the organization's initiatives towards society and the external environment as a whole.

Carroll (1991: 40-42) defined social responsibility in the organization, for the aforementioned levels, with three basic concepts related to the environment, society, and stakeholders. Then other researchers (Yakhoush and Geneina, 2010: 58; Stringham, 2004: 185; Faalag, 2013: 31-32; Arifi, 2003: 28; Sweiden and Shafiq, 2006: 9; Attarca and Jacquot, 2005: 6) clarify these concepts as follows:

1. **Towards the community**: Organizations must identify society's needs and maintain open communication channels with the external environment and contribute to charitable and volunteer organizations. In addition to participating in educational and health projects and providing equal work opportunities for members of society, especially those with special needs.
2. **Towards the environment:** The organization's interest in preserving resources and concern for the environmental effects of decisions made, and adherence to environmental laws and legislation. Besides seeking to direct suppliers' and

contractors' policies towards protecting the environment. In addition to human and workers' rights.

3. **Towards stakeholders**: These are the individuals and organizations, who are directly affected by the organization's behavior and activities, and share its performance. Consequently, they are the ones that the organization is responsible for, such as customers, employees, suppliers, creditors, trade unions, and others.

Organizations usually follow specific strategies for social participation and dealing with issues of social responsibility. According to Zenat (2016: 50), Josas (2004: 372), and Temri (2011: 1), four basic strategies describe the degree of commitment of the organization to the standards of social responsibility:

1. **Obstructive Strategy**: The strategy followed here is a reaction strategy. Whereby the organization leaves the problems unresolved until the public knows about them. Then it tries to address it and reduce the negative impact. The organization is also concerned with economic requirements rather than social requirements.

2. **Defensive Strategy**: Organizations make legal maneuvers to reduce or avoid the obligations associated with the problems it causes, especially with the increasing activities of environmental and consumer protection organizations.

3. **Adaptive Strategy**: Organizations that adopt this strategy are bound by ethical, economic, and legal rules. Based on the assumption that their social responsibility is not to bypass governmental legislation to not be subject to legal accountability. Therefore, the organization's behavior is in line with societal norms and values.

4. **Proactive Strategy**: Organizations of this type take the lead in providing social requirements and are willing to deal with government legislation and respond to external pressures. Organizations also accept criticism of their activities and support environmental and societal actions and initiatives.

The organizations' follow-up to any of these strategies depends on the extent to which the organization's management is convinced of the role assigned to society, and the need to reflect this role in all its activities, to create an integration between its strategies and its social responsibility (Ernult and Ashta, 2007: 18).

In addition, organization’s success in achieving social responsibility depends on its commitment to respect the internal environment (workers) and the external environment (members of society), and support the community, in addition to protecting the environment. Whether in terms of commitment to the compatibility of the product is provided with the environment, or the initiative to provide what serves the environment, improves the environmental conditions in society, and addresses various environmental problems (Gilles, 2013: 46).

According to (2011: 13-14), organizations rely on implementing these commitments on four leading indicators, through which the social responsibility assessment is evaluated. These indicators concerned about employees, protecting the environment, contribution to community services and production development indexes.

4.4.3. The Role of Total Quality Management in Achieving the Social Responsibility of the Organization

One of the most basic requirements for implementing TQM, and achieving social responsibility, is senior management that can lead their organizations to commit to society. By following distinguished management controls that lead to positive results for society as a whole and continuing to develop relationships with internal and external stakeholders on an ethical basis and in a responsible manner (Abbas, 2015: 337). Accordingly, the organization’s responsibility towards society, within the framework of the total quality strategy, includes the responsibility towards internal and external customers and the responsibility towards the environment.

Senior management is supposed to listen to employees' problems, work to solve them and involve them in decision making and awareness of their tasks. Social development can be achieved within the organization by following stimulation, communication, and training on all methods to achieve sustainable development (Maher, 2001: 120).

Social responsibility within the framework of total quality management also means responsibility towards external clients. The work to achieve a high degree of customer satisfaction is one of the main axes of total quality management. Therefore, all measures that enable the organization to assess the level of customer satisfaction must be taken to build a good image, reputation, and credibility. So that the relationship between the two

parties goes beyond the profit side to include the environmental and social aspects (Mayouf et al., 2018: 188).

It is noteworthy that several factors led to this approach that combines total quality management with social responsibility. Which creates a new role for the organization, contributes to society's work and the environment, and moves away from the idea of material profit only. According to Abbas (2015: 338), some of these factors are the high level of awareness among customers, and the many countries' preference for investments that adopt environmental effectiveness in their activities. Thus, grant them excellent facilities, in addition to restricting the process of penetrating many markets, with controls in line with these new trends, and the spread of movements and trade union associations that press to achieve these orientations.

With the numerous influences of the media, the increasing flow of information and access to it, consumers are now able to distinguish reputable organizations in the area of social responsibility and also of high quality. Thus, organizations with holistic performance, through social responsibility policies, leverage their good reputation to develop their sales, and create a solid commitment to customers for their products and services (Seid and Bawi, 2010: 222).

According to Ghalibi (2009: 83). Social responsibility shares with total quality management many points, one of which is focusing on occupational health and safety, to protect the environment and society from all dangers that may affect workers and all the structures and individuals surrounding the organization. While Boudali (2005: 11) added that both concepts focus on the rights of consumers, such as safety, compensation, education, and obtain information. Besides the right to be heard, to choose, to satisfy basic needs, and to live in a healthy environment. Ziada (2011: 230) argues that total quality and social responsibility anchor principles of social justice, the fight against poverty, and the achievement of well-being.

Thus, if the organization adopts the dimensions of social responsibility and merges them with the philosophy of total quality management and relies on its indicative requirements in accordance with OHSAS 18001 and ISO 26000 specifications, it will improve its commercial reputation and achieve customer and employee satisfaction, in addition to the well-being of society. Thus, contributing to promoting sustainable development. As

organizations take into account, when carrying out their activities, the requirements of business practices, local development, the environment, working conditions, consumer protection, and human rights (AFNOR, 2010: 5).

From the above, we conclude that the philosophy of total quality management works to achieve a balance between the interests of the organization, which is to achieve the welfare of the customer, and between the welfare of society. Therefore, total quality is a mechanism for self-regulation, through which the commitment of organizations to economic, social, and environmental controls is ensured. This leads to achieving sustainable development.

It is clear from all that has been mentioned through this chapter that sustainable development has penetrated the economic sphere and imposed itself on all economic organizations, regardless of their type, size, or activity. The latter is concerned more than ever before, with taking into account all economic, social, and environmental aspects and contributing to the embodiment and adoption of practices that serve this development in its three dimensions and abandoning practices that do not comply with its objectives.

With the development of this necessity, and to achieve it, organizations have integrated the concept of sustainable development in their mission, vision, goals, and strategy, by making use of Total Quality Management as a modern and combined management philosophy, model, and approach. It can act as a primary pillar for organizations to rationalize their activities and practices, eliminate pollution and improve environmental performance. In addition to reducing costs, eliminating accident rates, increasing employee efficiency, and raising the level of their performance, improving the reputation and image of the organization while increasing its competitiveness. Besides acquiring new consumers, and thus increasing its profitability.

The organizations' achievement of sustainable development is based on several elements. The first component is about sustainable economic performance, which calls for mandatory and obligatory monitoring of the activity of the organization and its relations with all stakeholders by integrating the social and environmental aspects of the organization in parallel with its economic objectives to have a comprehensive and integrated performance.

The second component is related to social responsibility in the organization. This guarantees the organization, to a large extent, the support of community members for its goals and mission, and the recognition of its existence and the contribution to its success.

Social responsibility is related to sustainable development. Social responsibility policies and programs contribute to solving problems related to economic, social, and environmental aspects. The economic dimension of social responsibility includes engaging the organization in achieving economic development. As for the social dimension, it makes the organization a responsible citizen who must participate in solving community problems and take the initiative to participate in charitable and voluntary work. The environmental dimension directly drives organizations to participate in achieving sustainable development.

Most definitions of social responsibility constitute procedures by which organizations incorporate social and environmental issues into their policies and operations. As the organization’s adoption of social responsibility in its vision and strategies is one of the main pillars on which it depends in determining its environmental goals and convert them to workflow plans, which facilitates the preparation of environmental policies. Thus, the scope of the organizations' social responsibility includes the direct and indirect effects that the organization's activities can have on the environment and society.

Since business organizations are the primary cause of environmental damage due to the toxic waste and environmental pollution that exacerbate environmental problems, social and environmental responsibility has had a role and importance that emerges through the transition of business organizations, especially industrial organizations, to what is known as clean production, a policy aimed at sustainable development that focuses on preserving the environment.

To achieve this, many organizations adopt total quality management as a modern management philosophy, working to integrate the organization's economic goals and policies with those related to preserving the environment and protecting society. In an integrated and comprehensive management system, based on continuous improvement which meets the aspirations of organizations and promotes sustainable development efforts as well.

Achieving sustainable development in the economic organization also depends on specific stages and tools. It begins with setting sustainable development issues within the strategic priorities of the organization, and then determining policies and goals that are embodied through tight administrative systems (environmental management systems ... and others), which are conducive to developing and renewing the production or service process. All this is done by providing the necessary funds and measurable standards, within the framework of participation, transparency, and accountability.

As for the tools, it is represented in the organization's commitment to those initiatives set by international organizations (such as the Organization for Economic Cooperation and Development, the United Nations ... and others), seeking to achieve sustainable development, and the attempt to adhere to the application of international standards and specifications in all fields, in particular the standards issued by the ISO, which was the topic of our discussion in the previous chapter.

We should also not forget that the evaluation of the overall performance of the economic organization, in light of the requirements of sustainable development, has gone beyond the economic and financial performance to the statement of the amount that the organization has contributed to the scope of concern for social and environmental performance. By including social and environmental considerations. In addition to the economic and disclosing them when evaluating and presenting the organization's comprehensive performance. This is clarified by the applied study in the following two chapters.

CHAPTER 5: AN EMPIRICAL STUDY IN THE SUDANESE PETROLEUM PIPELINES COMPANY

After we discussed in the previous chapters the theoretical foundations of the concept of total quality management, and how to integrate total quality strategy within the overall strategy of the organization and clarifying the importance of obtaining ISO standard specifications to organizations and the possibility of using them, to achieve excellence over competitors. In addition, the strategic role that total quality plays in achieving sustainable development in the organization was also discussed, and at the end, we presented how the integration of the most important ISO standards, ISO 9000, ISO 1400, OHSAS 18000, and ISO 26000, with total quality management strategy, can contribute to achieving sustainable development dimensions. Besides their role in increasing the organizations market share and competitive position.

This chapter aims to present and discuss the applied aspects of the study topic by dropping the previous theoretical foundations on the study case to identify the reality of practical practices of total quality strategy within the comprehensive and sustainable framework. Also, to identify the status of sustainable development practices in the organization under study and the extent of its dependence on standard specifications (ISO 9000, ISO 14000, OHSAS 18000, and ISO 26000).

To achieve the aims of this chapter it has been studied as follows:

- Brief History about the Sudanese Petroleum Pipelines Company
- Total Quality management in the Sudanese Petroleum Pipelines Company
- Social Responsibility in the Sudanese Petroleum Pipelines Company
- Training and Capacity Building in the Sudanese Petroleum Pipelines Company
- Environment, Occupational Safety, and Health in the Sudanese Petroleum Pipelines Company

5.1. A Brief History, Strategic Goals and Structure of the Sudanese Petroleum Pipelines Company (SPPC)

The Sudanese Petroleum Pipelines company is a pioneer of oil products transport pipelines, affiliated to the Ministry of Oil and Gas. SPPC is one of the pillars of the oil industry in Sudan. It is a multi-faceted group of companies and has a long history.

Its establishment started with the expansion of Al-Jazeera and Al-Managil project when the number of factories increased, so the energy demand also became increasing, specifically in central Sudan. At that time, petroleum products were transported by railway trains. In 1973 there was a railway cut that led to the stoppage of these trains. Which interrupted the transportation of petroleum products, and it was necessary to think about building a line to transport the petroleum materials, as studies were put in place to establish a line to transport the petroleum products from Port Sudan to the storage warehouses in Alshajara area in Khartoum. So, the company was established in 1976 under the name of the General Corporation for Petroleum Products Pipelines and went through several changes. Then became the Sudanese Petroleum pipelines Company in 2014.[8]

5.1.1. The Organizational Side of the Sudanese Petroleum Pipelines Company

Based on the foregoing, the researcher will focus on the organizational structure of the Sudanese Petroleum Pipelines Company Limited, which is considered as one of the leading service institutions in its field of specialization. Starting from the introduction of the Company, then focusing on the general organizational structure as well as the units that form it.

5.1.2. Structure of the Sudanese Pipelines Company[9]

The main company building is located in Khartoum, and the company has branches in Port Sudan, Atbara, Al-Jaili and Al-Shajara. The company consists of five departments: Human Resources Management and Administration Affairs, General Administration for Financial Affairs, General Administration for Construction and Oil Services, General

[8] From the company documents.
[9] An Interview with Human Resources and Manpower Management Director on 16.12.2019 at 10.00.

Administration of Planning and Information, General Administration for Operation and Maintenance. The company also includes some specialized departments directly affiliated to the general manager's office, which are: Executive Office, Insurance and Community Development Department, Quality management and excellence Department, the legal administration, and The Environmental and Occupational Safety and Health Administration.

The company also has many business names, including Sudanese Company for Construction and Oil Services SCOS, Petro Trans Company, Coral Company, S & PJ. V Marine Services Partnership, and Petroset Company. Which provide petroleum services in different fields and to various groups of institutions.

5.1.3. Services Provided By the Sudanese Company for Petroleum Pipelines[10]

Depending on the official information gained from the company itself, there are two chief services provided by the Company for Petroleum Pipelines:

1. **Transportation of petroleum products:** The Sudanese Petroleum Pipelines Company is transporting petroleum products (gasoline - petrol - kerosene) to meet the country needs of energy since 1976 by providing fuel through transporting it via an 8-inch line that extends about 816 km from Port Sudan to Khartoum with a design capacity of 600,000 metric tons per year. Upon the discovery of oil in Sudan and the progress of its production, it was necessary to keep pace with development, and in the year 2000, the operation of Line 8 "from Al-Rouyan to Port Sudan for gasoline exports was reversed. The company constructed a gasoline export line in the year 2005 that runs from Al -Jaili refinery in the north of Khartoum to the port of export in Port Sudan, with a diameter of 12 inches and a length of 741 km, and a design capacity of 875 metric tons per year.

Al-Rouyan- Alshajara sector (line eight) is used for transporting the export gasoline to the State of Ethiopia and transporting gasoline to Alshajara station and Bahri Thermal Station (power station) with a capacity greater than 700 thousand metric tons per year.

[10] An Interview with Human Resources and Manpower Management Director on 16.12.2019 at 10.00

In 2013, due to the increase in domestic consumption of gasoline, the operation of the 12 "line for gasoline from Port Sudan to Rouyan was reversed by constructing a pumping station in Port Sudan station with a capacity of 900,000 metric tons per year. The company manages, operates, and maintains these lines and storage facilities accompanying those lines that extend from Port Sudan to Khartoum.

2. **Petroleum pipelines:** The Sudanese Petroleum Pipelines Company operates and maintains the 8-inch line that runs from the port of export in Port Sudan to Alshajara in Khartoum, and the 12-inch line that runs from the petroleum area of the Al-Jaili refinery to Port Sudan. The company's cadres perform all maintenance operations for the operating units and maintenance of warehouse warehouses, in addition to the maintenance and operation of the lines of some companies operating in the oil field in Sudan.

5.2. Total Quality in the Sudanese Petroleum Pipelines Company

We have noticed, after examining a set of documents and internal records, that the Company has two forms of strategies: a general strategy and a total quality-based strategy. The Company adopted a total quality management system and documented it to implement business methods, to maintain a high level of quality of products and services directed to customers on the one hand, and the continuous improvement of its products and services, to meet more of the needs of its customers on the other hand.

Accordingly, it identifies the necessary processes for the quality management system and its application in all levels of the organization, besides defining the sequence map and the interaction between these operations, and the criteria and basic methods to ensure effective operation and monitoring of these operations, then following up, measuring, and analyzing these operations. After that implementing the necessary procedures to achieve the planned results and the continuous improvement of these operations through quality plans, work procedures, and registration.

The company defines the outlines of continuous improvement processes through the quality policy and its objectives. It has developed several tools for collecting data that would support performance indicators. The results of audits, corrective and preventive measures taken to analyze data, records prepared by management, and sounding customer

satisfaction opinions, requests for improvement (complaints, inconsistencies, or opportunities for improvement) all form the data necessary to develop the mechanism of continuous improvement, and the related information translated into projects of continuous improvement.[11]

In 2009, the company's lab obtained ISO/IEC 17025/2005 laboratory accreditation certificate in the field of testing, as the first laboratory in Sudan and the first petroleum laboratory in Africa. The company also obtained Quality Management System standard ISO 9001/2008, ISO14001/2004 standard for environmental management, and ISO 18001/2007 standard for occupational safety and health.

These certificates were renewed every three years until the year 2017, and during the field study period, the company was preparing to renew these certificates for the year 2020, as the company will convert to the ISO 45000 system instead of the ISO 18001.

The Sudanese Company for Petroleum Pipelines is the first Company to implement the integrated management system 9001-14001 and 18001, where the Company obtained a certificate of conformity to the integrated system in 2011. The quality policy of the company is based on three basic principles, which are satisfying the clients of the company, enhance the company performance and the professionalism of the company.[12]

The quality policy in the company depends on respecting legitimate demands, security, and the environment. So, the quality policy project must be a project for all managers and study groups assigned to this task, to be distributed to the units and individuals. This leads to improving the methods of quality management. This project aims to establish a program to evaluate the current status and the applied procedures in the company, and the reports related to the ISO international standards, extract the differences and show the work plan, make a proper follow-up to the progress of the project, show results every time and solve problems according to priority.

The company also has a quality charter that works to improve and increase the satisfaction of the company's clients, improve the effectiveness of the listening system for the company's customers, enhance trust relations with them, and develop an organization

[11] From the Total Quality Management Department’s Documents.
[12] From the Total Quality Management Department’s Documents

adaption to their needs. It also works on forming an idea of customer interest at all levels of the company and establishing a framework for consultation with the field group to make quality a common concern[13].

Since the work in the quality management system is considered recent for the Sudanese institution, especially the service ones. The Company has used a consulting agency to assist in developing the quality management system and its application in the Company, as it chose the International Quality Center to implement this project. In which the center is committed to assessing the current situation of the company and assisting it in establishing the quality management system under the selected specification, in addition to identifying the required documents, conducting training and improving the senior management of the company and assisting the organization in carrying out the self-evaluation of the applied quality management system before performing the final control.

The core tasks of the company's quality management system include taking into account customer requirements and needs, Participation of the quality management system in creating and defining a quality policy in the company, as well as setting quality goals, developing quality curricula and tools, i.e., quantitative measures to avoid making mistakes related to operations within the quality management system. Besides working to coordinate between various departments and clients, editing process reports, reviewing system rules, and distributing them as a quality manual, propose an annual quality control program, organize the application of these programs, and follow up the corrective tasks.

In addition to, pay attention to training, information, and control of the quality management system, detecting errors, following them up inside the processes, and correcting them, prepare all basic files and records in the programmed meetings on the implementation of the quality management system, summoning all concerned and provide reports on the implementation of operations, by each official, and representing the company before the ISO certification bodies.

The company's acquisition of quality management certification for ISO has been reflected in many benefits, including improving the relationship between the company and its

[13] An Interview with Total Quality Management and Excellence Director on 21.12.2019 at 12.30

customers, building confidence and loyalty, continuous improvement, reducing operating time and costs, and high credibility of products and services.[14]

5.3. Social Responsibility in the Sudanese Company for Petroleum Pipelines

The vision of the company in the field of social responsibility revolves around comprehensive social security while the mission is contributing to social reform. As the company became fully aware that increasing profits alone are not enough, and that company must also contribute to achieving the common interest, on a large scale and supports citizens along the petrol lines with service projects such as schools, wells, aids, and other local services.

The objectives of the company in the field of social responsibility include securing the tubes, insurance of establishments, securing individuals within the facility, achieve overall social responsibility, coordination with the security services, machines, and equipment insurance, securing communications, secure the camps, and control over the executive body in the company.

The characteristics of social responsibility within the Sudanese Petroleum Pipelines Company include correspondence with goals and values of the society, participate in community projects, contribute to reduce the unemployment problem, support social and environmental security, and reduce waste.

Within the framework of social responsibility, the company undertook a field survey on the path of oil pipelines, so that the societal impact and the company's contribution are measured in the framework of social responsibility and balanced development through respect and responsibility towards workers and members of society and social support. Besides the protection of the environment, both in terms of commitment to aligning the product that the company provides to society with the surrounding environment or through the initiative to serve the societies of the region, by improving their conditions and helping to address the problems and conditions surrounding them[15].

[14] An Interview with Total Quality Management and Excellence Director on 21.12.2019 at 12.30
[15] From the company documents

Table 1: The Company's Contributions in Community Projects and Activities in the period from 2009-2016

State	Years	Number of Projects	Costs in Pounds
Red Sea	2010-2016	11	77.061.00
Nile River	2010-2015	3	1.083.202.00
Al Jazeera	2010-2016	4	1.331.50000
Khartoum	2009-2015	5	224.440.10
Various Activities	2010-2015	14	951.000.00
Total Cost			4.360.203.10

Source: from company documents

Table 2: The Percentage of the Company's Contributions in Community Projects and Activities in the period from 2009-2016

State	The ratio
Red Sea	17.7%
Nile River	24.8%
Al Jazeera	20.5%
Khartoum	5.1%
Various Activities	31.9%
Total Cost in Pounds	**4.360.23.10**

Source: From company documents

The matter of social responsibility clarifies the extent of the need for the company's decisions to be framed with moral values to limit the negative effects that affect the life of the societies or the surrounding environment as society has increased its aspiration for the company to contribute to increasing its welfare and carrying out various social activities that fall under the heading of corporate social responsibility.

5.4. Training and Capacity Building in the Sudanese Company for Petroleum Pipelines

Training represents one of the main links in the company's strategic planning process. The Sudanese Company for Petroleum Pipelines offers training programs capable of

contributing effectively to preparing the company's cadres and developing the integrated professional aspects of the trainees and effective participation in the implementation of plans and the promotion of the company's performance. The company annually sponsors the training of more than 400 students from universities and institutes of technical education. Through the Training and Capacity Building Administration, and is also the sponsor of the Shendi Technical College.

5.4.1. Training and Capacity Building Administration[16]

The mission of the training administration is to provide training programs for the various employees of the company that meet the requirements of the job and contribute to the development and placement of technical and administrative performance competencies, based on qualification and effective training that contributes to performance development, refining cumulative knowledge in the field of operation and maintenance, through modern programs, and implementing integrated knowledge and skills programs, that contribute to carrying out the required company activities, while achieving excellence.

The vision of the training administration is excellence in achieving the best level of training in the most recent means and methods, in improving the administrative and technical process to keep pace with future developments in the oil sector and achieving the highest level of efficiency.

The Purpose of the training administration's establishment was to manage the company's training and qualification process to provide them with knowledge, refining skills and capabilities to perform a business at the best level of quality, efficiency, effectiveness, and lowest costs.

Training programs and plans are defined and developed, following the directions and goals required to be achieved, with a specific methodology and scientific method. The most important general objectives of training in various fields in the company include increasing trainees' knowledge and information, qualifying and developing institutional capabilities, developing and qualifying pipeline networks and warehouses.

[16] An Interview with Training and Capacity Building Director on 30.12.2019 at 10.00.

One of the most important priorities of the Training and Capacity Building Administration is to raise the efficiency of the job by developing the skills and capabilities of managers and qualifying employees and raising their level of capabilities and skills, which is reflected in improving the level of job performance, depending on plans and career succession plans, and based on the training and identifying training needs methodology. According to the company's strategic plans and its training objectives.

The training process procedures are carried out according to the following: analyzing the training needs, preparing annual training plans (internal and external training), evaluating the training process (the first level: reaction, the second level: learning, the third level: performance, the fourth level: impact).

The tasks of the Training and Capacity Building Administration are to prepare and refine the human cadre to perform the tasks distinctly and effectively. The structure[17] of the Training and Capacity Building Administration consists of the Director of Administration, besides three departments. Each section has specialized employees. The tasks and functions of the Director of Administration are to implement regulations, laws, and publications organized, to obtain training courses for employees of the company, prepare an internal training budget in Sudan and abroad, distribute work, and coordinate it between the different departments that belong to him, Besides maintaining a record of the training course for the workforce in the company separately and updates it continuously, preparing a training record for the recipients of training courses, and basic data for workers. In addition to preparing plans and programs for developing, training, and improving human resources in the company and implement them, after their approval from the highest authorities, and identify training needs with different departments, filter them and submit them to the highest authorities for ratification. We will explain the three departments of the training administration briefly as follows:

1. **The Training Needs Identification Department:** It is responsible for determining the training for the specified year, the targeted people, the type of training, and in which field. As the training needs are many, but the training takes place according to the workflow and the budget of the company. Taking into

[17] From the Training and Capacity Building Director's documents

consideration granting opportunities to those who have not trained in the previous year, unless there is an individual whose job requires annual training. The tasks of this section are to prepare the career paths for employees, evaluate the training needs and their suitability for the career path, prepare a record of the inevitable courses of jobs, prepare a record of the collective training programs implemented during each year, prepare a budget for training needs, evaluate the results of training programs based on the departments 'annual performance reports.

2. **Department for Preparing Training Plans and Programs:** It is responsible for organizing training programs according to the budget and the workflow, and it limits training to specific individuals and areas. The company calls the centers that have training programs, or sometimes the centers offer their plans for training to the company, such as Alnajm Althagib Center, Sudatel Telecom Academy (Sudakad), or Bright on center for Training, which offered training plans for 2020. Training is carried out in the form of groups (4-5) individuals to reduce the cost and achieve benefits from individuals with experience and high skills and help in creating what is called homogeneous work teams, to gain speed, accuracy, and efficiency in achievement.

The most important tasks of this section are to design training programs according to the identified needs and encourage transformative training according to capabilities, determine the axes and contents of training programs with the concerned departments, and liaising contact with training centers, to design the required programs, according to those axes and contents. Besides preparing training programs and their contents according to the levels of individuals, groups, and regions, according to what the job description requires, notifying departments and staff through their heads, with the location and date of training programs internally and externally for full-time. The department also coordinates with the trainee to transfer what has been learned to other colleagues and subordinates appropriately.

3. **The Evaluation Department:** The tasks of the evaluation department are to prepare and maintain training records for employees, to analyze the evaluation of training processes in their two parts (evaluation of the performance of workers before and after training), evaluation of employees for training centers and

programs, analysis of training process materials, and their relationship with job description, according to the structure, with a focus on professional certificates. Besides preparation, review, and improvement of measuring and evaluation document periodically, sending and receiving training outcome documents, according to the specified period (three months from the end of the year). In addition to analyzing evaluation and measuring results, and outcomes of training, monitoring development and improvement after training, participating in preparing the training budget. Then follow-up and monitoring the costs of obtaining travel tickets in coordination with the Public Relations Department and participating in a discussion of departments regarding the results of the returns from training.

Table 3: List of Trainees' Numbers for the Years 2016 – 2019

Department/ Administration	2016	2017	2018	2019
Electricity Department	5	8	3	15
Information Department	1	2	-	9
Human resources	1	2	1	4
Financial Administration	1	1	3	7
Mechanic Department	1	-	-	6
Safety Department	-	-	2	3
Operation Department	2	2	8	10
Secretary Department	-	-	1	1
Quality	-	2	-	1
Maintenance	1	-	2	2
Oil Consulting and Services	-	-	-	1
Public Relations Administration	1	1	-	2
Supplies and contracts Administration	1	-	-	2
Security Administration	-	-	-	2
Legal Administration	1	-	-	1
The Lab	-	2	1	1
Training Administration	2	2	-	1
Administrative Affairs	-	-	-	2
The Escada	-	-	5	-
The Technical Department	-	-	1	-
Planning and Follow -up	3	-	1	-
Cathodic Protection	-	-	1	-
Purchases	-	-	1	-
Network	-	-	1	-
Civil Engineering	-	3	-	-
Surface Engineering	-	1	-	-
Services	1	1	-	-
Engineering Affairs	-	1	-	-
Studies and research	1	-	-	-
Mechanics	1	-	-	-
Total	23	28	31	70

Source: From company documents

The company follows a five-year training strategy (2018-2021), which is based on training on oil pipelines transport operations, training on the latest technology to keep up with developments in oil product transport operations, training on the construction and operation of pipelines, training on working with the company's latest regulations and systems, training on the latest information and knowledge systems, training on the latest methods and systems for applying internationally recognized accounting policies that achieve the company's requirements and objectives, training on preparing modern scientific research and studies, and training on the latest scientific methods in building organizational structures, that help to achieve the company's goals. The company used the assistance of Dr. Counsellor Ahmed Naqshbandi and Noun Center for Training, Development and Consulting, to assist in the development of plans and training programs in what is called a job competency guide.

The Training Administration faces many problems, including those related to external training, which is the instability of the dollar price, and its impact on the costs of travel, housing, and subsistence of the trainees, as the external experiment plan for 2018 was not implemented for this reason, despite the existence of 200 training opportunities and the plan was saved. While the 2019 plan was implemented, but the costs were high and affected the company's budget. As for internal training, the company faces problems of the age of technicians, as most of them are close to the age of pension, and they will leave the job, carrying their experiences with them. As well as the small number of technicians and most of them work in remote areas, such as Port Sudan and other areas of the shift system and discharging them for the training purposes creates a defect in the workflow due to the lack of alternatives. The solution was in absorbing a larger number of technicians, but the absence of jobs prevented this, and therefore the company appointed engineers and technicians by contract to solve this problem.[18]

5.5. Environment, Occupational Safety and Health in the Sudanese Petroleum Pipelines Company[19]

The health of workers is one of the company's priorities, as it gives it great importance by providing multiple means to protect the health of its workers. For that, the company

[18] An Interview with Training and Capacity Building Director on 30.12.2019 at 10.00.
[19] From the Environmental and Occupational Safety and Health Director documents.

established The Environmental, Safety, and Occupational Health Administration, to ensure the best conditions so that the units' machines are in the utmost accuracy and safety to reduce the risks faced by workers during the performance of their activities, besides, train workers to work and take collective preventive measures. This leads to reducing accidents and working stops, which allows workers to work safely. On the other hand, the company is concerned with harnessing adequate means and enhance new requirements by which the company encourages its employees to concern about health care. The company also attaches the utmost importance to occupational health and safety management.

5.5.1. Environmental and Safety and Occupational Health Administration[20]

The Administration of Environment, Safety and Occupational Health is an oversight and technical unit, consisting of the director of the Administration of Environment, and Occupational Safety and Health and three sections, which are the Department of Occupational Safety and Health, the Department of Environment and the Department of Systems and Equipment. Whose role in working out to achieve the basic goals of saving lives, the safety of workers from the risk of injuries, property protection, and Safety of the natural environment We will explain the three departments briefly as follows:

1. **The Environmental Department:** The Environmental Department periodically performs some environmental measurements of fumes, drinking water and wastewater, to ensure that the environment is not affected by the activities carried out by the company and perform treatments in the case of environmental damage. The most important tasks of the company's environmental department include; preparing the environmental impact studies, ensure minimum flows of hydrocarbon liquids, rationalization of resources consumption, support recycling techniques, maintaining a safe working environment, and application of environmental standards included in the ISO 14001specification.
2. **Department of Occupational Safety and Health:**

   a) **Safety Axis**: issues related to the services provided by the company in the field of petroleum products, and how to put hedges to protect workers, and secure means

[20] An Interview with Environmental and Occupational Safety and Health Director on 19.12.2019 at 12.00.

to assist in the oil transport process (machinery, pipelines, etc.). To create an appropriate environment for the workers, to practice work in a safe environment, to prevent injuries and losses that may occur, and the negative effects on the internal and external environment.

In this context, the company's activities through the safety department include[21]; monitor dangerous activities, investigate the presence of the safety risks and take the necessary precautions, prepare emergency plans and follow up its application, besides, providing personal safety equipment and make sure of their use and monitor injuries and accidents with analysis and investigations.

There are also safety committees, consist of specialists in different stations, that conduct field trips to the stations to find out the faults and take corrective measures. The company also conducts periodic revitalization courses for safety procedures. In addition, there is emergency personnel in all the company's stations, working according to the company's emergency plans.

The achievement of the planned safety policies and goals is based on the criteria of Safety, Health and Environment Manual for the Sudanese Company for Certified Petroleum Pipelines in the year 2011, Guidance of OHSAS 18001, International Fire Protection Association NFPA, OSHA American Occupational Safety and Health Administration. Besides carrying out periodic inspection and internal audit and follow up of the modernization and renewal in the field of safety, to keep pace, and also for continuous development.[22]

b) **Occupational Health Axis:** The Company cares about the health of its employees and has contracts with some hospitals. Where the company performs checks for workers before the appointment, besides comprehensive periodic health statements for the respiratory system, blood circulation, and skin diseases. The company also performs tests for its members in the case of the spread of fever and epidemiology. The company is also in the process of adding medical examinations for retirees soon.

[21] From the Environment, Occupational Safety and Health Administration's documents
[22] From the Environmental and Occupational Safety and Health Administration's Documents

3. **Department of used systems and equipment:** The main purpose of this department is to ensure the efficiency and effectiveness of "safety systems and equipment" at all company sites, and includes the fire early warning systems, gas self –extinguishing systems, foam, and water extinguishing systems (fire-fighting pumps and networks), Mobile firefighting equipment includes fire extinguishers, mobile foam units, launchers, etc., and remote monitoring and control systems.

The company also works to organize visits to workshops to ensure the safety of workers and machinery and the physical environment to improve working conditions, in addition to improving activities that touched all jobs and related to the topics of educating workers about occupational safety and security issues, taking into account the problems related to environmental protection within the company's social responsibility, environmental emergency status, and participation in business related to the environment.

The Sudanese Petroleum Pipelines Company current projects in the field of environmental and occupational safety include; arcuate drinking water and wastewater treatment project, early warning system at the Valves Maintenance Center and the Presidency of Construction Buildings, the early warning system in the administrative offices of the Engineering Affairs Building, and Modernization of the gas self-extinguishing system at Al-Rouyan Station.

The Sudanese petroleum Pipelines Company uses a set of tools and equipment such as the Hydraulic pipeline analysis program ATMOS, stress analysis program for pipelines AUTO PIPE, Electrical load calculation program CANECO, and Total Station Survey devices. The company possesses modern assets capable of carrying out current and future projects of the company, represented by welding machines, drilling machines, cranes, suction machines, air pressure machines, pipeline monitoring, and inspection machines and equipment.[23]

5.6. Methodological Procedures of the Field Study

In this section, the researcher deals with the procedures and analysis of field study data. It includes planning for the applied study and explaining the procedures the researcher

[23] From the company’s documents

followed in designing the field study questionnaire. With a description of the study community and sample, and the statistical methods used in analyzing study data, and evaluating measurement tools, as follows:

5.6.1. Study Model

From the theoretical study, and after consulting specialized professors, we were able to develop a study model that contains two variables: the first is the independent variable, which is total quality strategy, and the second one is dependent, which is sustainable development in its three dimensions.

5.6.1.1. The Independent Variable

It is the TQM strategy, which is an integrated approach, to achieve a competitive advantage in the company's basic activities and to overcome and exceed its competitors. Thus ensure its survival and continuity in the market. It was discussed in detail in the theoretical part. This variable was identified through six partial variables, which are (Khatib, 2006; Azzawi, 2005; Slack et al, 1998; Cart Wright, 1999; Yong and Wilkinson, 2001; Krajeweski and Ritzman, 1993; Heizer and Render, 2001):

1. Continuous Quality Improvement: Quality improvement programs seek to develop processes within the company, which may include production planning, product development, purchasing, manufacturing, distribution, and so on. Through this variable, the Company's dependence on the means and techniques of continuous improvement will be measured.
2. Focus on Customers: Companies may seek to focus on customers in terms of studying their needs and requirements. Working to meet this strategy requires conducting marketing research to study customer characteristics, tools, and their current and future declared and unspoken needs, which reflects the organization's level of concern about customers.
3. Education and Training: Although total quality training starts from the top to the bottom, in the end, it includes all workers at all administrative levels of the company. Where the intensive total quality training leads everyone in the company to understand total quality activities. This indicates the company's interest in training workers and employees and spreading the culture of total

quality management. As training is a means of developing the capabilities of individuals, each within its function, to achieve optimal performance.

4. The Full Participation of Employees: Participation is the process of individuals mentally and emotionally interacting with workgroups in the organization to mobilize the efforts and energies needed to achieve the goals of the institution, which include providing high-quality products and services to beneficiaries.
5. Decision-making: These are the effective decisions that focus not only on data collection but on analyzing them and putting conclusions at the service of decision- makers.
6. Administrative Leadership: Total quality management requires an unconventional and unusual style of leadership so that it can lead others to achieve the highest levels of productivity efficiently and effectively. Leaders are no longer described as chiefs but rather as coordinators, facilitators, or trainers.

5.6.1.2. The Dependent Variable

This study is based on the strategic role that total quality plays in achieving the dimensions of sustainable development, and for this, we had to detail in the sustainable development three dimensions (Ghoneim and Zant, 2010; Dalisa, 2007; Zhonghua and Song, 2011; Reis, 1993; Nasser, 2010) as follows:

1. **Economic dimension**: This dimension relates to the role of total quality strategy in achieving the economic sustainability of the organization by relying on methods of sustainable economic quality such as six sigma.

2. **Social dimension**: It relates to aspects that work to meet the needs of society, like justice and empowerment, principles of occupational health and safety, and social responsibility.

3. **Environmental dimension**: This dimension relates to aspects that work to reduce pollution, in addition to awareness programs to protect the environment and natural resources.

The researcher designated a research model that includes both dependent and independent variables as well as sub-dimensions. The study model is shown below.

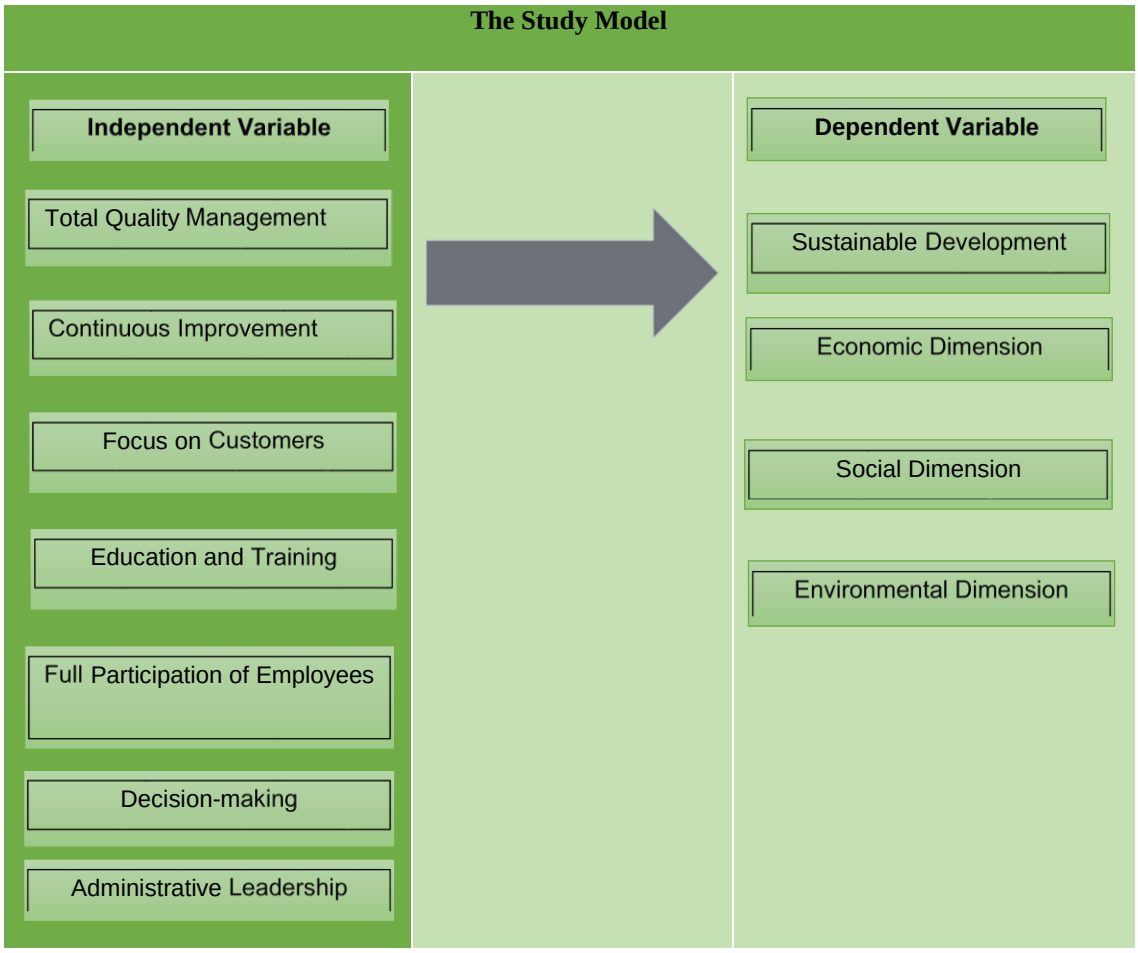

Figure 1: The Study Model

Source: The researcher's work according to the study variables

5.7. Field Study Limitations

The study included the Sudanese Oil Pipeline Company, spatially. As for the time domain, the study started on 14.11.2019 and ended on 17.3.2020. The study deals with the TQM strategy with its practices mentioned in the theoretical part and tries to measure the strategic role of TQM in embodying the dimensions of sustainable development in the company under discussion. Thus, we focused on the economic, social, and environmental dimensions.

5.8. Study Data Collection Tools

Based on the nature of the data to be collected, which related to the total quality management strategy and the role it plays in activating the dimensions of sustainable

development, and to reach an accurate result, the researcher used several types of data collection tools to help to achieve this, these tools were:

1. **Simple Observation:** As a directing to the current research paths. Through the visits to the field of study, to form ideas and collecting information related to the research phenomenon. Such as identifying the nature of the company, the directorates in it, and its organizational sections, and also to get to know the company's employees with their different ranks and the nature of their work. The researcher's reliance on simple observation was to obtain field information and data that serves the subject of the study, to understand the existing attitudes, behaviors, and relationships in the company. The researcher made ten field visits to the study area, at close intervals, during the period of the field study. Besides the times when the researcher was waiting to conduct interviews, or to hand over and receive questionnaire papers, or when the researcher comes to see the company's records. The researcher was able to know more about the nature of the daily activities in the concerned departments. As well as the level of performance and the relationships between employees and between them and the directors of the departments. In addition to dealing with the trainees, customers, and others coming from outside the company. The researcher was also able to notice the instructions lists, signs and plans, and the various equipment, such as emergency quarries, alarm devices, fire extinguishers, and others, and the employee's awareness about the importance of such tools.

2. **Interview:** This utility was used to collect important data and information to link the various dimensions of the study. Such information cannot be answered by ordinary workers but rather by the organization's senior management and head of departments. Four semi-structured interviews were conducted with managers of Training; Planning and Manpower; Total Quality; and Environment and Occupational Safety and Health Administrations. Each interview lasted 1-2 hours. During the interviews, many questions were asked to know the structures of these units, their activities, and their contribution to the development of the company's performance. Other questions were also asked during the interviews, which necessitated the need to clarify the ambiguity in some of the answers or add more details on specific points. It is worth noting that the individuals who were

interviewed have experience and knowledge of more than fifteen years, each in his field, which helped in controlling the conceptual and theoretical framework of the study.

3. **Questionnaire:** It is considered the most suitable form to achieve the goals of this study due to the lack of basic information related to the subject, such as published data or reports, in addition to the difficulty of obtaining it through personal interviews, field visits, or observations. So, the questionnaire was the most appropriate and effective tool for obtaining data and information related to the researched company and the individuals surveyed, in addition to the information that contributes to reaching the correlation and influence relationships between the research variables.

The researcher used the research integration approach using multiple research tools such as observations, interviews, records and questionnaires to ensure access to the highest degree of honesty and trust. The descriptive method expresses the phenomenon qualitatively and quantitatively, where the qualitative expression shows the phenomenon's characteristics and describes it, while the quantitative expression gives a numerical description that shows the amount of this phenomenon, its size and the degree of its connection with other phenomena.

The study mainly relied on the use of quantitative research method, and qualitative research methods were used, such as the interview as secondary methods; to support or explain the quantitative results. The researcher collected and analyzed the data and made a consensus and integration between the results and conclusions obtained from the quantitative and qualitative tools. Where qualitative approaches contribute to generating hypotheses. In contrast, quantitative approaches aim to test hypotheses, thus, the two approaches complement each other. The researcher uses her theoretical and field knowledge to generate and test hypotheses.

The integration between the two approaches is manifested through deduction (qualitative) and induction (quantitative). The deduction is known as reflective thinking, while induction means observing phenomena and collecting data about them to reach generalizations about them. The deduction begins with theories from which hypotheses are derived, then the researcher moves with them to the real world,

searching for data to test the validity of these hypotheses. If the researcher reaches a general conclusion through (quantitative) induction, it can be used as an issue in the (qualitative) deduction.

5.8.1. Research Questionnaire Design

To obtain preliminary information and data for this study, a questionnaire was designed to study the application of total quality strategies on sustainable development in the Sudanese Petroleum Pipelines Company.

The questionnaire is one of the well-known methods of collecting field information. It is characterized by the possibility of collecting information from multiple vocabularies from the study sample and is analyzed to reach the specific results.

The questionnaire was prepared in the light of the achieved vision through exploring scientific sources and understanding the requirements of both TQM and sustainable development. The phrases related to total qality requirements have been prepared based on several studies (Al-Dulaimi, 2001; Sultan and Abdul-Aali, 2007; Al-Obaidi, 2010; Skerlose, 2000; Sammuliston, 2001; Sroufeand and Landeros, 2005; Khanna et al., 2009). At the same timw, the phrases related to sustainable development were prepared according to some of studies (Romano, 2003; Mohieddine, 2006; Hassan, 2007; Nazzal, 2009; Al-Sayed, 2011; Al-Anbari, 2011; Grosskurth and Rotmans 2005 ;Lansu, et al., 2010; Beeler, 2000).

The researcher then presented the study tool in its initial draft to the professor supervising the study for evaluation and benefited from some experts and reviewers. The researcher has sought the assistance of seven specialists regarding the study tool (the questionnaire), such as Professor Adam Al-Zein Muhammad, who specializes in research methods; Professor Mirghani Hammour, who specializes in total quality, Dr. Muhammad Ahmad Abd al-Ghaffar, a specialist in sustainable development, Dr. Muhammad Othman Abu Saq, The specialist in political science, Dr. Adlan Ahmed Al-Haridlo, a specialist in area studies, Professor Ibrahim Abu Aouf, a specialist in public administration, and Professor Muhammad Ibrahim Abu Sen, a specialist in public administration.

The specialists mentioned above, besides the managers who were interviewed, also presented their comments about the questionnaire. All have been used as arbitrators, as

they were asked to express their opinions and comments on the research tool in terms of the consistency of the paragraphs with the research hypotheses. In the light of their observations, the researcher deleted some paragraphs and modified and reformulate other paragraphs, to give the intended meaning. The researcher has tried when formulating the questionnaire to consider the possible neutrality by avoiding the phrases that are difficult to understand or whose meaning is ambiguous.

The researcher also sought the assistance of a group of specialists in descriptive and inferential statistics and research methods when analyzing the questionnaire and verifying its results, including; Dr. Mohammad Nour, Dr. Ahmed Abdulmounim Mohammed, Dr. Dr.Abdelaziz Abu Salih and Dr. Mohammed Alfaki Aldaou.

Accordingly, a survey form was designed to meet the desired purpose for the study community and the chosen sample. After that, the questionnaire was prepared in its final form and included two sections (see Appendix No. 1). The first section includes the basic information of the sample individuals, namely gender, age, educational qualification, years of experience, career position. The second section contains the phrases of the study axes for the two categories distributed, as shown in Table 4.

Table 4: Questionnaire Paragraphs Distribution

NO	Study axis	No.paragraphs
Total Quality Management		
1	Continuous Improvement	4
2	Focus on Customers	4
3	Education and Training	4
4	Full Participation of Employees	3
5	Decision Making	4
6	Administrative Leadership	4
Sustainable Development		
1	Economic Dimension	7
2	Social Dimension	7
3	Environmental Dimension	6
	Total of paragraphs	43

Source: Researcher's preparation from the 2019 survey data

The study sample was asked to determine their answers, for what each phrase describes, according to the scale of the Likert five-dimensional scale, which consists of five levels (I strongly agree, I agree, neutral, I do not agree, I strongly do not agree) . These terms were distributed on the study hypotheses. This scale is considered the most expressive of the respondents ’opinions, as it accurately reflects the degree of approval of the

respondent on the presented terms. It contains five answers arranged from 5 to 1. The respondents' answers were coded to easily be entered into the computer for statistical analysis, as shown in Table 5.

Table 5: Likert Scale

Level		Classification of phrases according to the answers of individuals
Strongly agree	5	4.5-5
Agree	4	3.5-4
Neutral	3	2.5-3
Disagree	2	1.5-2
Strongly disagree	1	1.4 and below

Source: (Abdelfattah, 2017:540).

Hypothetical mean = sum of weights / their number

5 + 4 + 3 + 2 + 1/5 = 3

The goal of the hypothetical mean is to compare it with the actual arithmetic mean of the phrase. If the actual mean exceeds the hypothetical mean, this indicates the respondents' consent to the phrase and vice versa.

5.9. Evaluating the Measuring Tools

5.9.1. Tests for Validity of Scale Content

The study tool validity means the form inclusion of all the elements that must be included in the analysis on the one hand, and the clarity of its paragraphs and their vocabulary, on the other hand, so that they are understood by everyone who uses them. On this basis, the questionnaire was presented to some specialists in field studies and its methodologies to make sure of the balance between the contents of the questionnaire in its paragraphs.

The content validity test of the study tool phrases was conducted, by evaluating the validity of the concept, and its questions, in terms of formulation and clarity. This may be, either to the difference in meanings according to the society's culture or as a result of translating the standards from one language to another. The researcher presented the questionnaire to some academic arbitrators and specialists in the field of study and from various job positions and scientific disciplines to analyze the contents of the standard's phrases and to determine the extent of compatibility between the phrases of each scale,

and then accept and amend some of the phrases. After retrieving the questionnaire from the arbitrators, the amendments proposed to the researcher were made, while the other number of experts that the questionnaire with its current form, conform to the requirements of the study.

5.9.2. Internal Consistency and Stability Tests for the Measures Used (Degree of Data Reliability)

Stability of measures means the degree to which the measures are free from errors, i.e., the degree of internal consistency between the different statements that measure a variable. Stability means resistance, i.e., obtaining the same values when reusing the measuring tool. Thus, it leads to obtaining the same results or consistent results every time of rescaling. The higher the degree of stability of the tool, the more confidence in it. The (Alpha- Cronbach) reliability coefficient was calculated to test the availability of stability and internal consistency between the answers to the questions (Deluio, 2014).

The statistically acceptable value for the Alpha-Cronbach factor is 60%. The reliability test was conducted on the responses of all respondents to all the axes of the questionnaire. The results were as follows:

Table 6: Questionnaire consistency coefficients

The variable name	Total quality management strategy	Sustainable development	The questionnaire as a whole
The reliability coefficient Alpha Cronbach	0.910	0.882	0.933

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

It is noted from the table that the stability coefficients for all study variables were acceptable, reaching (0.933), which is greater than (0.60). Thus, it is a ratio of stability that can be relied upon in the applied study.

5.10. The Study Population and Determining the Sample Size

Depending on what was discussed in the theoretical chapter of the research, the researcher wanted to get closer to the field of applying these concepts in economic institutions. The Sudanese Petroleum Pipelines Company was chosen for their obtaining of some ISO

certificates and their interest in providing high-quality services, in addition to their concern in environmental, safety, and occupational health issues.

The study population includes a group of experts and employees in the Sudanese Petroleum Pipelines Company. The vocabulary of the research sample was chosen using the simple random sample method. It is one of the probable samples that the researcher chooses to obtain specific opinions or information, provided that the community's vocabulary (N) is homogeneous. This sample allows everyone in the community the possibility of an equal opportunity to choose (1/N). (Subject to probability law) The sample size can be calculated using the following formula:

$$n = \frac{n_0}{1 + {}^{n_0}/_{N}}$$

$$n_0 = (z^2 * s^2)/e^2$$

Whereas:

n_0: The random sample size returns

n: the sample size to be selected

N: The size of the total community

Z: Standard score (1.96), which corresponds to 95% confidence level.

S: standard deviation of a study from a previous study (0.097)

e: statistically permitted error (5%)

Using the above formula, the sample size can be calculated as follows:

$$n_0 = \frac{(1.96^2) * (0.097)^2}{(0.05)^2}$$

$$n = \frac{150}{1+{}^{150}/_{8000}} = 147$$

The nature of the problem and hypotheses of this study has an assessed interest among the research community. Number of (147) questionnaires were distributed to the members

of the sample, and (130) of them were answered correctly. There are about (17) returned questionnaires, i.e. the rate of non-response was (17/147 = 12%), as we note that 88% of the respondents were of a high degree in dealing with the questionnaire, which helps to analyze the results of the study accurately.

5.10.1. The Adequacy of the Sample and Determining the Relative Importance of Each Axis

The sample size is considered sufficient if the probability value calculated from the sample data for the Barttelt test is less than the statistically permissible error value. If the sample size is sufficient, the percentage explained by the study variables (the axes of the questionnaire) can be calculated using factor analysis. The idea of the factor analysis is to explain the study's results to a large number of original variables (questionnaire questions), using a few unobserved variables called factors. The ratio of variance that each factor interprets is calculated for the standard variables within the same factor (Factor here means axes). The correlation value of the variables within each axis must be large, but the correlation value between the factors (axes) should be minimal.

The following tables show the distribution of the study sample according to its independent variables (See Table 7-11)

Table 7: Distribution of the study sample according to the gender variable

Sex	Number	Percentage%
Male	59	45.4%
Female	71	54.6%
Total	130	100%

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

Table 8: Distribution of the study sample according to the age variable

Age	Number	Percentage%
30 years and under	34	26.2%
31-40	38	29.2%
41-50	38	29.2%
51 and over	20	15.4%
Total	130	100%

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

Table 9: Distribution of the study sample according to the variable of the educational qualification

Educational qualification	Number	Percentage%
Diploma or less	4	3.1%
Bachelor	93	71.5%
Master or higher diploma	33	25.4%
PhD	0	0%
Total	130	100%

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

Table 10: Distribution of the study sample according to the Occupational position variable

Occupational Position	Number	Percentage%
Senior management	29	22.3%
Middle executive management	82	63.1%
Executive management	19	14.6%
Total	130	100%

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

Table11: Distribution of the study sample according to the variable number of years of experience

Years of experience	Number	Percentage%
5 years and under	34	26.2%
6-10	38	29.2%
11-14	38	29.2%
15 and over	20	15.4%
Total	130	100%

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

After retrieving and emptying the questionnaires using the SPSS statistical program and conducting the appropriate statistical tests, we clarified the axes of the questionnaire. We will address in this section the achieved survey data. Where we will analyze and measure the level of both TQM and sustainable development in the Sudanese Petroleum Pipelines Company and highlight the correlation between the variables and the extent of the contribution of the independent variables in the dependent ones, and this is through correlation coefficients and regression models, after testing their validation.

5.11. Presenting and Analyzing the Level of both Total Quality Management Strategy and Sustainable Development

After retrieving the data from the respondents, we analyzed it to identify the level of both the comprehensive quality strategy and sustainable development by using central tendency measures. We will display each variable separately in the following sections.

5.11.1. The Level of Total Quality Strategy in the Sudanese Company for Petroleum Pipelines

Measuring the level of TQM strategy requires calculation of arithmetic averages and standard deviations and since we use the Likert scale in the questionnaire. The indicative averages are that exceed the value (1) because the scale is five-digit, starting from value (1) and ending with value (5), which means that the value (3) is the neutral value. Where the arithmetic mean and standard deviation for each sub-variable of the independent variable (TQM strategy) were measured, and the results were as follows:

5.11.1.1. The Level of Continuous Improvement in the Sudanese Petroleum Pipelines Company

In this table (Table 12), we review the mean and standard deviation of the level of continuous improvement in the researched institution.

Table 12: Continuous improvement level data

Statement	Mean	standard deviation	Relative importance	Level of practice
The company views continuous improvement and development as an integral part of total quality requirements	4.43	0.596	0.89	High
The company seeks to assume its responsibilities towards society through continuous improvement and development of the services provided	4.27	0.682	0.86	High
New services are carefully prepared for the future needs and expectations of customers and the labor market	4.23	0.742	0.85	High
Communication takes place between the various administrative departments when developing and improving the current service or the new service	3.99	0.812	0.80	High
Total	4.23		0.85	High

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

Table No (13) relating to the data of the continuous improvement level shows that there is a high level with a general average of 4.23, which is greater than the value of the hypothetical average, estimated at (3), considering that we used Likert five-dimensional scale for the level phrases. Also, the standard deviations recorded in the data were relatively low. Accordingly, the schedule data indicates a high level of continuous improvement practices in the researched institution.

Table 13: Descriptive analysis of first-axis phrases (continuous improvement level)

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
The company views continuous improvement and development as an integral part of total quality requirements	48.5	46.2	5.4	-	-	Strongly agree
The company seeks to assume its responsibilities towards society through continuous improvement and development of the services provided	39.2	50.8	8.5	1.5	-	Agree
New services are carefully prepared for the future needs and expectations of customers and the labor market	40.8	42.3	16.2	0.8	-	Agree
Communication takes place between the various administrative departments when developing and improving the current service or the new service	24.6	57.7	10.0	7.7	-	Agree
General index	87.23					Agree

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

Through the statistical analysis results in the above tables No (12) and No. (13), we note that the approval rate of the sample members in the general rate was 87.23%. Which is considered high, and the general average of the sample individuals reached (4.23), which

indicates a tendency answers of the study sample towards the phrase (I agree),except for the first phrase, which tended to strongly agree, with a general average of (4.43) and standard deviation of (.596).

Table 14: Alpha Cronbach and Chi-Square values for the first axis phrases (Continuous Improvement)

Statement	Cronbach's	Chi-Square	df	Asymp.Sig
The company views continuous improvement and development as an integral part of total quality requirements	.501	45.800[a]	2	.000
The company seeks to assume its responsibilities towards society through continuous improvement and development of the services provided	.597	87.908[b]	3	.000
New services are carefully prepared for the future needs and expectations of customers and the labor market	.361	63.108[b]	3	.000
Communication takes place between the various administrative departments when developing and improving the current service or the new service	.659	82.862[b]	3	.000
	0.609			.000

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

First: Alpha Cronbach Values for the First Axis Phrases (Continuous Improvement).

The Cronbach's values for all phrases of the first axis (continuous improvement) are greater than (60%). These values mean a very high degree of internal stability for all phrases, whether that is for each term separately or at the level of all scale statements. The value of alpha Cronbach for the scale reached (0.609), which is high stability, and then it can be said that the measures that the study relied on to measure the axes have internal stability for their phrases, which enables us to rely on these answers to achieve the study's objectives and analyze its results.

While the value of (Chi-square) calculated for the significance of the differences between the members of the study sample, for the first axis (continuous improvement), phrases ranged between (45.800^a to 87.908^b). With a significant level of (0.000), which is a value

less than the level of significance (5%). Accordingly, this indicates statistically significant differences between the responses of the sample members, in favor of those who agree about the continuous improvement practices phrases.

5.11.1.2. The Level of Focus on Customers in the Sudanese Petroleum Pipelines Company

In the following tables, we review the mean and standard deviation of the level of continuous improvement in the researched institution.

Table15: Focus on customer's data level

Statement	Mean	standard deviation	Relative importance	Level of practice
The company develops long term plans and strategies to know customers and market's needs	3.8692	0.7714	0.77	Medium
Management resort to analyzing the data collected in estimating the market needs and desires of the current and expected clients	3.6231	0.8915	0.72	Medium
The company uses the complaints and grievances of the clients to develop the services provided	3.4462	0.9809	0.69	Medium
The company follows up after providing service in order to evaluate it and know the extent of customer satisfaction with it	3.5000	0.9255	0.70	Medium
Total	3.61		0.72	Medium

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

Customer focus data showed average levels in most phrases. This was reflected in the general average of 3.61 with a value exceeding the hypothetical average, with standard deviations of a weak level (see Table 15). This means that there are no significant differences in the respondents' answers, and therefore we conclude that there is an average level of customer focus practices in the institution under consideration.

Table 16: Descriptive analysis of second-axis phrases (focus on customers' level)

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
The company develops long term plans and strategies to know customers and market's needs	20.0	50.8	25.4	3.8	-	Agree
Management resort to analyzing the data collected in estimating the market needs and desires of the current and expected clients	20.8	44.6	27.2	6.9	-	Agree
The company uses the complaints and grievances of the clients to develop the services provided	16.2	40.0	29.2	12.3	2.3	Agree
The company follows up after providing service in order to evaluate it and know the extent of customer satisfaction with it	14.6	40.8	33.8	8.5	2.3	Agree
General Index	61.95					Agree

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

Through the results of the statistical analysis in the above table No. (16), we note the following: The approval rate of the sample members in the general average was (61.95%), which is considered medium, and the general average of the sample individuals reached (3.61), which indicates the tendency of answers of the study ample towards the phrase (I agree), while the average rates of the phrases ranged between (3.50 to 3.87), and the standard deviations between (0.980 to 0.682).

Table 17: Alpha Cronbach and Chi-Square values for the second- axis phrases (focus on customers' level)

Statement	Cronbach's	Chi-Square	df	Asymp. Sig
The company develops long term plans and strategies to know customers and market's needs	.822	59.108[a]	3	.000
Management resort to analyzing the data collected in estimating the market needs and desires of the current and expected clients	.751	38.308[a]	3	.000
The company uses the complaints and grievances of the clients to develop the services provided	.752	56.692[b]	4	.000
The company follows up after providing service in order to evaluate it and know the extent of customer satisfaction with it	.788	71.385[b]	4	.000
General Index	.826			.000

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

First: Alpha Cronbach Values for the second -axis phrases (focus on customers):

The Cronbach's value for all expressions of the independent variable (the level of focus on customers in the institution) is greater than (60%). These values mean that a very high degree of internal stability for all phrases, whether that is for each phrase separately or at the level of all phrases of the scale. The value of Alpha Cronbach for the scale reached (0.826), which is high stability (see Table 17), then it can be said that the measures that the study relied on to measure the axes have internal stability for their terms. This enables the researcher to rely on these answers to achieve the study's goals and analyze its results.

While the calculated value of (Chi-square) for the significance of the differences between the members of the study sample for the second axis (focus on customers) phrases estimated between (87.908^{b} to 45.800^{a}), at the level of significance (0.000). This is a value less than the level of significance (5%). Accordingly, this indicates the presence of statistically significant differences between answers of the respondents, in the favor of those who agree with the focus on customer's practices phrases.

5.11.1.3. The level of Education and Training in the Sudanese Company for Petroleum Pipelines

Table 18 shows that there is an average level of education and training in the researched institution, where the general average was 3.89, with a value exceeding the hypothetical average.

Table 18: Education and training level data

Statement	Mean	standard deviation	Relative importance	Level of practice
The company is keen to invest all the resources available in an optimal way that achieves its strategic goals	3.853	0.9409	0.77	Medium
The company has an annual training plan to develop and improve the capabilities of employees	4.0692	0.9165	0.81	High
Officials are trained in the principles of performance evaluation appraisal, and evaluation results are discussed	3.7538	1.0715	0.75	Medium
The employees are handpicked with the utmost care to carry out their jobs and are highly qualified and trained to solve quality problems	3.9000	0.7958	0.78	Medium
Total	3.89		0.77	Medium

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

The results recorded in the standard deviations also confirmed that there are weak differences in the respondents' answers, meaning that their answers agree in their entirety. Accordingly, it can be said that there is an intermediate level of education and training practices in the institution under study.

Table 19: Descriptive analysis of third-axis phrases (education and training level)

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
The company is keen to invest all the resources available in an optimal way that achieves its strategic goals	27.7	40.0	22.3	10.0	-	Agree
The company has an annual training plan to develop and improve the capabilities of employees	39.2	34.6	20.0	6.2	-	Strongly Agree
Officials are trained in the principles of performance evaluation appraisal, and evaluation results are discussed	31.5	28.5	23.8	16.2	-	Strongly Agree
The employees are handpicked with the utmost care to carry out their jobs and are highly qualified and trained to solve quality problems	22.3	50.0	23.1	4.6	-	Agree
	68.45					Agree

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

Through the results of the statistical analysis in the above table No. (19), we observe the approval rate of the sample individuals on the general average was 68.45%, which is considered medium. The general average of the sample individuals reached (3.89), which indicates a tendency of answers of the study sample towards the phrase (I agree). At the same time, the general average of the phrases was in the range between (4.6 to 3.75) and a standard deviation of (1.071 to 0.795).

Table 20: Alpha Cronbach and Chi-Square values for the third axis phrases (education and training)

Statement	Cronbach's	Chi-Square	df	Asymp.Sig
The company is keen to invest all the resources available in an optimal way that achieves its strategic goals	.734	24.154[a]	3	.000
The company has an annual training plan to develop and improve the capabilities of employees	.692	35.108[a]	3	.000
Officials are trained in the principles of performance evaluation appraisal, and evaluation results are discussed	.592	6.985[a]	3	.000
The employees are handpicked with the utmost care to carry out their jobs and are highly qualified and trained to solve quality problems	.741	54.677[a]	3	.000
	.754			.000

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

First: Alpha-Cronbach values for the third axis phrases (Education and training):

The values of Cronbach for all expressions of the independent variable (the level of education and training in the institution) is greater than (60%). These values mean a very high degree of internal stability for all phrases, whether that is for each phrase separately or at the level of all the phrases of the scale. The Alpha Cronbach value for the scale was (.754), indicating high stability (see Table 20). Then it can be said that the measures that the study relied on to measure the axes have internal stability for their terms, which enables the researcher to rely on these answers to achieve the study's objectives and analyzing its results.

While the value of (Chi-square) calculated for the significance of the differences between the members of the study sample for the third axis (education and training) phrases ranged between (6.985[a] to 54.677[a]), with a level of significance (0.000), which is a value less than the level of significance (5%). Therefore, this indicates the presence of statistically significant differences between answers of respondents and for the benefit of the respondents who agree about the education and training practices phrases.

5.11.1.4. The Level of Full Participation of Employees in the Sudanese Petroleum Pipelines Company

Table 21 summarizes the results of the full participation level of employees, where the average value was 3.76, which is greater than the hypothetical average value, and the standard deviation was recorded as a weak result, meaning that there are weak differences in the respondents' answers. Accordingly, it can be said that there is an average level of full participation of workers in the researched institution.

Table 21: Full participation of employee's Level data

Statement	Arithmetic mean	standard deviation	Relative importance	Level of practice
Management and employees work together to provide products that satisfy customers and labor market	4.0231	.68726	0.80	High
Continuous improvement is the responsibility of everyone and for various departments	3.4538	1.11447	0.69	Medium
Allow employees who have distinct ideas to present them in an official form for management	3.7385	.86762	0.75	Medium
Staff are responsible for implementing quality and for the results achieved for the service provided	3.8308	.82723	0.77	Medium
Total	3.76		0.75	Medium

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

Table 22: Descriptive analysis of fourth-axis phrases (full participation of employees)

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
Management and employees work together to provide products that satisfy customers and labor market	23.8	55.4	20.0	.8	-	Agree
Continuous improvement is the responsibility of everyone and for various departments	20.2	32.3	29.2	13.1	5.4	Agree
Allow employees who have distinct ideas to present them in an official form for management	17.7	46.9	28.5	5.4	1.5	Agree
Staff are responsible for implementing quality and for the results achieved for the service provided	24.6	36.2	36.9	2.3	-	Neutral
	64.27					Agree

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

Through the results of the statistical analysis in the above table No. (21), we observe the following: The approval rate of the sample members in the general average was (64,27%). It is considered medium, and the general average of the sample individuals reached (3.76), which indicates the tendency of the answers of the study sample towards the phrase (I agree). While the general average of the phrases was estimated between (4.02 and 3.45), and the standard deviations between (.916 to .827), with positive responses, according to the average value.

Table 23: Alpha Cronbach and Chi-Square values for the fourth axis phrases (Full participation of employees)

Statement	Cronbach's	Chi-Square	df	Asymp.Sig
Management and employees work together to provide products that satisfy customers and labor market	.760	79.908[a]	3	.000
Continuous improvement is the responsibility of everyone and for various departments	.598	32.385[b]	4	.000
Allow employees who have distinct ideas to present them in an official form for management	.640	88.154[b]	4	.000
Staff are responsible for implementing quality and for the results achieved for the service provided	.654	40.646[a]	3	.000
General Index	.734			.000

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

First: Alpha-Cronbach values for the fourth axis phrases (full participation of employees):

Table 23 shows that values of Cronbach for all expressions of the independent variable (the level of full participation of employees in the institution) is greater than (60%). These values mean that there is a very high degree of internal stability for all phrases, whether that is for each phrase separately or at the level of all the phrases of the scale, as the value of the Alpha Cronbach to the scale reached (734). Which is high stability, then it can be said that the measures that the study relied on to measure the axes have internal stability of their terms which enables the researcher to rely on these answers to achieve the study's objectives and analyzing its results.

While the calculated value of (Chi-squire) for the significance of the differences between the members of the study sample for the fourth axis phrase estimated between (32.385[b] and 88.154[b]), at the level of significance (0.000), which is a value less than the level of significance (5%). Therefore, this indicates the presence of statistically significant

differences between answers of the sample members, and in favor of the approvers about the full participation of employees' practices phrases.

5.11.1.5. The Level of Decision Making in the Sudanese Petroleum Pipelines Company

Decision-level data showed average levels in most phrases, and this was reflected in the overall average of 3.75, with a value exceeding the hypothetical average, and standard deviations of a weak level, which means that there are no significant differences in the respondents' answers. Therefore we conclude that there is an average level of decision-making practices in the institution under consideration (see Table 24).

Table 24: Decision making Level data

Statement	Mean	Standard deviation	Relative importance	Level of practice
Senior management makes decisions to establish a clear plan in which to define its goals	4.0308	0.8621	0.81	High
The administration listens to its employees and encourages them to make decisions	3.7462	0.9343	0.75	Medium
Management makes decisions for development and innovation, and all what is new in services to meet the needs of the market and customers	3.4846	1.1762	0.70	Medium
Total	3.75		0.75	Medium

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

Table 25: Descriptive analysis of fifth-axis phrases (decision-making level)

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
Senior management makes decisions to establish a clear plan in which to define its goals	30.8	49.2	12.3	7.7	-	Agree
The administration listens to its employees and encourages them to make decisions	23.8	36.9	29.2	10.0	-	Agree
Management makes decisions for development and innovation, and all what is new in services to meet the needs of the market and customers	20.8	34.6	24.6	12.3	7.7	Agree
General Index	65.03					Agree

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

Through the results of the statistical analysis in the above Table No. (25), we note the following: The approval rate of the sample members in the general average was (65.03%), which is considered medium, and the general average of the sample individuals reached (3.8), which indicates the tendency of the answers of the study sample towards the phrase

(Strongly agree), except for the first phrase, in which responses tended towards agreeing, with a general average of (4.03) and a standard deviation of (0.8621).

Table 26: Alpha Cronbach and Chi-Square values for the fifth axis phrases (Decision making)

Statement	Cronbach's	Chi-Square	df	Asymp.Sig
Senior management makes decisions to establish a clear plan in which to define its goals	.563	56.215[a]	3	.000
The administration listens to its employees and encourages them to make decisions	.486	20.092[a]	3	.000
Management makes decisions for development and innovation, and all what is new in services to meet the needs of the market and customers	.648	29.000[b]	4	.000
General index	.658			.000

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

First: Alpha-Cronbach values for the fifth axis phrases (Decision making):

Table 26 shows that values of Cronbach for all expressions of the independent variable (the level decision making in the institution) was greater than (60%). These values mean that there is a very high degree of internal stability for all phrases, whether that is for each phrase separately or at the level of all the phrases of the scale. As the value of the Alpha Cronbach for the scale reached (658), which is high stability, then it can be said that the measures that the study relied on to measure the axes have internal stability for their terms, which enables the researcher to rely on these answers to achieve the objectives of the study and analyze its results.

While the (Chi-square) calculated value for the significance of the differences between the members of the study sample for the fifth axis phrases was (56.215[a], 20.092[a], 29.000[b]), respectively, at the level of significance (0,000), which is a value less than the level of significance (5%). Therefore, this indicates statistically significant differences between answers of the sample members and in favor of the approvers about the decision-making practices phrases.

5.11.1.6. The Level of Administrative Leadership in the Sudanese Petroleum Pipelines Company

The table relating to the data of the administrative leadership level shows that there is an average level with a general average of 3.77, which is a value greater than the value of

the hypothetical average, which reached (3) considering that the researcher used Likert five-dimensional scale in the expressions of the level (see Table 27). Also, the standard deviations recorded in the data were relatively low. Accordingly, the schedule data indicate an intermediate level of administrative leadership practices in the researched institution.

Table 27: Administrative leadership Level data

Statement	Mean	Standard Deviation	Relative importance	Level of practice
Management works to verify the application of the principles of total quality and evaluate the progress made in that	3.9769	0.7822	0.80	High
The company interacts with clients and labor market by listening to their opinions and the services provided to them	3.5923	0.9292	0.72	Medium
The company provides bonuses and incentives to employees to encourage them to provide better quality	3.8308	1.0793	0.74	Medium
The company evaluates the effectiveness and efficiency of change through its application of quality principles	3.7154	0.9169	0.77	Medium
Total	3.77		0.75	Medium

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

Table 28: Descriptive analysis of six-axis phrases (Administrative leadership level)

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
Management works to verify the application of the principles of total quality and evaluate the progress made in that	23.1	57.7	13.1	6.2	-	Agree
The company interacts with clients and labor market by listening to their opinions and the services provided to them	17.7	36.9	32.3	13.1	-	Agree
The company provides bonuses and incentives to employees to encourage them to provide better quality	30.8	36.9	21.5	6.2	4.6	Agree
The company evaluates the effectiveness and efficiency of change through its application of quality principles	16.9	50.8	20.8	10.0	1.5	Agree
General Index	67.7					Agree

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

Through the results of the statistical analysis in the above table No. (28), we note the following: The approval rate of the sample members in the general average was (67.7%), which is considered medium, and the general average of the sample individuals reached (3.8), which indicates the tendency of the answers of the study sample towards the phrase (Agree). The general average of the phrases was estimated between (3.5923 and (3.8308), and the standard deviations between (1.0793 and 0.9169).

Table 29: Alpha Cronbach and Chi-Square values for the sixth axis phrases (Administrative leadership)

Statement	Cronbach's	Chi-Square	df	Asymp.Sig
Management works to verify the application of the principles of total quality and evaluate the progress made in that	.734	24.154[a]	3	.000
The company interacts with clients and labor market by listening to their opinions and the services provided to them	.692	35.108[a]	3	.000
The company provides bonuses and incentives to employees to encourage them to provide better quality	.592	6.985[a]	3	.000
The company evaluates the effectiveness and efficiency of change through its application of quality principles	.741	54.677[a]	3	.000
General index	.754			.000

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

First: Alpha-Cronbach values for the sixth axis phrases (Administrative leadership)

As seen from Table 29, the values of Cronbach for all expressions of the independent variable (the level of administrative leadership in the institution) are greater than (60%), and these values mean that there is a very high degree of internal stability for all phrases. Whether that is for each phrase separately scale or at the level of all the scale phrases. As the value of the Alpha Cronbach for the scale was (.754), which is high stability, it can be said that the measures that the study relied on to measure the axes have internal stability for their terms. This enables the researcher to rely on these answers to achieve the study's objectives and analyzing its results.

On the other hand, the calculated value of (Chi-square) for the significance of the differences between the members of the study sample for the sixth axis phrases was between (6.985[a] to 54.677[a]), with a significance level (0.000) which is a value less than the significance level (5%). Therefore, this indicates the presence of statistically significant differences between answers of members of the sample and for the benefit of the approvers with the administrative leadership practices phrases.

5.11.2. The Level of Sustainable Development in the Sudanese Petroleum Company

Using the same measures and the same significance, we measure the levels of dimensions of sustainable development based on the respondents' answers.

5.11.2.1. Economic Dimension Data Analysis

Table 30 shows the level of the economic dimension in the studied institution, and the general average reached 3.66 with a value exceeding the hypothetical average. This value contributed to raising the average of the phrases of the respondents' answers, where the averages ranged between 3.94 and 3.43. Also, looking at the standard deviations, we find that they have known average levels between 1.09 and 0.72, which means that there are differences with an average level in the respondents' answers about the economic dimension. Accordingly, there is an intermediate level for the economic dimension practices in the institution under study.

Table 30: Data on the economic dimension level in the company

Statement	Mean	Standard Deviation	Relative importance	Level of practice
The company works to achieve profits by using the fewest resources	3.4308	1.09217	0.69	Medium
The company works to provide services at the lowest costs	3.4769	1.06542	0.70	Medium
The company relies on economic models to achieve sustainability	3.4923	0.86487	0.70	Medium
The company is keen to rationalize energy consumption	3.5692	0.97200	0.71	Medium
The company depends on total quality strategies that support the functions of cleaner production and green marketing	3.6000	0.78355	0.72	Medium
The company takes into account the total quality standards in its services	3.9462	0.80993	0.79	Medium
The ISO 9000 certification provides the company with a sustainable competitive advantage	4.1385	0.72341	0.83	High
Total	3.66		0.76	Medium

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

Table 31: Descriptive analysis of the dependent variable first-axis phrases (Economic dimension)

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
The company works to achieve profits by using the fewest resources	17.7	36.6	22.3	22.3	2.3	Agree
The company works to provide services at the lowest costs	15.4	43.1	17.7	21.5	2.3	Agree
The company relies on economic models to achieve sustainability	11.5	36.9	43.1	6.2	2.3	Neutral
The company is keen to rationalize energy consumption	15.4	43.8	24.6	14.6	1.5	Agree
The company depends on total quality strategies that support the functions of cleaner production and green marketing	6.9	57.7	23.8	11.5	-	Agree
The company takes into account the total quality standards in its services	25.4	48.5	21.5	4.6	-	Agree
The ISO 9000 certification provides the company with a sustainable competitive advantage	33.1	48.5	17.7	.8	-	Agree
General Index	62.92					Agree

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

Through the results of the statistical analysis in the above tables No. (31), we note the following: The approval rate of the sample members in the general average was (62.92%), which is considered medium, and the general average of the sample individuals reached (3.66), which indicates the tendency of the answers of the study sample towards the phrase (I agree). While the general average of the phrases ranged between (3.4308 and 3.6000), with standard deviations between (1.09217 to 0.78355).

Table 32: Alpha Cronbach and Chi-Square values for the dependent variable's first axis phrases (Economic dimension)

Statement	Cronbach's	Chi-Square	df	Asymp.Sig
The company works to achieve profits by using the fewest resources	.796	35.538[a]	4	.000
The company works to provide services at the lowest costs	.824	56.846[a]	4	.000
The company relies on economic models to achieve sustainability	.811	90.692[a]	4	.000
The company is keen to rationalize energy consumption	.798	63.769[a]	4	.000
The company depends on total quality strategies that support the functions of cleaner production and green marketing	.806	82.062[b]	3	.000
The company takes into account the total quality standards in its services	.825	50.862[b]	3	.000
The ISO 9000 certification provides the company with a sustainable competitive advantage	.824	65.323[b]	3	.000
General Index	.835			.000

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

First: Alpha-Cronbach values for the dependent variable's first axis (economic dimension) phrases:

Table 32 shows that values of Cronbach's for all expressions of the dependent variable's first axes (Economic Dimension) is greater than (60%). These values mean that there is a very high degree of internal stability for all phrases, whether that is for each phrase separately, or at the level of all the phrases of the scale. As the value of the Alpha Cronbach for the scale was (.835), which is high stability, it can be said that the measures that the study relied on to measure the axes have the internal stability of their terms. This enables the researcher to rely on these answers to achieve the study's objectives and analyze its results.

While the value of (Chi-square) calculated for the significance of the differences between the members of the study sample for the first axis (economic dimension) phrases estimated between (90.692^{a} and 35.538^{a}), at the level of significance (0.000).,which is a value less than the level of significance (5%).Therefore this indicates the presence of statistically significant differences between answers of members of the sample and for the benefit of those who agree with the economic dimension practices phrases.

5.11.2.2. Social Dimension Data Analysis

A high level appears in Table 33 related to the social dimension data, where the general average value was estimated at 4.20, which is greater than the hypothetical average value. Although an average level was recorded in the second statement, we see a high level in the rest of the phrases. Also, the standard deviations were relatively low than the deviations recorded in the data of the social dimension. Therefore, the data for the table indicates the presence of a high level of the social dimension in the institution under study.

Table 33: Data on the social dimension level in the company

Statement	Mean	standard deviation	Relative importance	Level of practice
The company seeks to meet the needs of the community in which it is active	4.2077	.66701	0.84	High
The company is developing strategies to qualify employees	3.9385	.88706	0.79	Medium
The company is developing training programs to empower employees in the area of sustainable development	4.0154	.96436	0.80	High
The company consider fairness in the distribution of wages	4.0692	.77947	0.81	High
The company provides the occupational security requirements for its employees	4.2769	.72620	0.86	High
The company seeks to implement the occupational health and safety system in accordance with the standard ISO 18000	4.6615	3.5383	0.93	High
The company seeks to implement the social responsibility system in conformity with the standard ISO 26000	4.2077	0.66701	0.83	High
Total	4.20			High

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

Table 34: Descriptive analysis of the dependent variable second axis phrases (Social dimension)

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
The company seeks to meet the needs of the community in which it is active	34.6	51.5	13.8	-	-	Agree
The company is developing strategies to qualify employees	29.2	42.3	21.5	6.9	-	Agree
The company is developing training programs to empower employees in the area of sustainable development	38.5	33.1	20.0	8.5	-	Completely agree
The company consider fairness in the distribution of wages	28.5	55.4	10.8	5.4	-	Agree
The company provides the occupational security requirements for its employees	40.8	49.2	6.9	3.1	-	Agree
The company seeks to implement the occupational health and safety system in accordance with the standard ISO 18000	45.4	44.6	10.0	-	-	Completely agree
The company seeks to implement the social responsibility system in conformity with the standard ISO 26000	26.9	63.9	6.2	3.1	-	Agree
	83.41					Agree

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

Through the results of the statistical analysis in the above table No. (34), we observe the following: The approval rate of the sample members in the general average was (83.41%), which is considered high, and the general average of the sample individuals reached (4.20), which indicates the tendency of the answers of the study sample towards the phrase (I agree). While the third and the sixth phrases showed respondents tendency towards strongly agree, with a general average of (4.0154 and 4.6615) and standard deviations of (.96436 and 3.5383), respectively.

Table 35: Alpha Cronbach and Chi-Square values for the dependent variable's second axis phrases (Social dimension)

Statement	Cronbach's	Chi-Square	df	Asymp.Sig
The company seeks to meet the needs of the community in which it is active	.878	27.800[a]	4	.000
The company is developing strategies to qualify employees	.840	34.123[b]	4	.000
The company is developing training programs to empower employees in the area of sustainable development	.856	28.338[b]	4	.000
The company consider fairness in the distribution of wages	.870	79.169[b]	4	.000
The company provides the occupational security requirements for its employees	.858	85.446[b]	3	.000
The company seeks to implement the occupational health and safety system in accordance with the standard ISO 18000	.854	31.862[a]	3	.000
The company seeks to implement the social responsibility system in conformity with the standard ISO 26000	.856	122.123[b]	3	.000
General Index	0.858857			.000

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

First: Alpha-Cronbach values for the dependent variable's second axis (Social dimension) phrases

As seen from Table 35, the Cronbach's values for all expressions of the social dimension of the dependent variable (sustainable development) were greater than (60%), and these values mean that there is a very high degree of internal stability for all phrases, whether that is for each phrase separately or at the level of all terms of the scale. The value of Alpha Cronbach for the scale was (0,858857), which is high stability and then it is possible to say that the standards upon which the study relied to measure axes have internal stability for their phrases. This enables the researcher to rely on these answers to achieve the study's goals and analyze its results.

On the other side, the value of (Chi-square) calculated for the significance of the differences between the members of the study sample for the second axis (social dimension) phrase were in the range between (90.692[a] and 35.538[a]), at the level of significance (0.000). Which is a value less than the level of significance (5%). Therefore, this indicates the presence of statistically significant differences between answers of members of the sample and for the benefit of those who agree with the social dimension practices phrases.

5.11.2.3. Environmental Dimension Data Analysis

Through the results of Table 36, it is clear that the environmental dimension levels are high in most phrases. This was reflected on the level of the general average, which reached 4.16 with a value greater than the value of the hypothetical average. This means that there are no significant differences in the respondents' answers. Accordingly, we conclude that there is a high level of environmental dimension practices in the institution under study.

Table 36: Data on the environmental dimension level in the company

Statement	Mean	standard deviation	Relative importance	Level of practice
The Company relies on a total quality policy to support environmental performance	4.1462	0.66018	0.84	High
The Company takes measures that allow the control of emissions from the production process	4.1923	0.78845	0.82	High
The Company establishes special programs for activities with dangerous environmental impacts	4.1154	0.75364	0.80	High
The Company directs human resources to ensure sound environmental management	3.9923	0.84904	0.86	Medium
The Company works to reduce pollution by using clean materials	4.3077	2.8416	0.85	High
The Company is committed to an environmental management system that conforms to ISO 14000	4.2308	0.75265	0.86	High
Total	4.16		0.83	High

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

Table 37: Descriptive analysis of the dependent variable third axis phrases (Environmental dimension)

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
The Company relies on a total quality policy to support environmental performance	36.9	50.8	6.9	5.4	-	Agree
The Company takes measures that allow the control of emissions from the production process	32.3	49.2	16.2	2.3	-	Agree
The Company establishes special programs for activities with dangerous environmental impacts	30.8	42.3	22.3	4.6	-	Agree
The Company directs human resources to ensure sound environmental management	34.6	43.8	16.2	5.4	-	Agree
The Company works to reduce pollution by using clean materials	40.8	43.1	14.6	1.5	-	Agree
The Company is committed to an environmental management system that conforms to ISO 14000	41.5	46.9	10.0	.8	.8	Agree
General Index	82.17					Agree

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

Through the results of the statistical analysis in the above tables No. (37), we observe the following: The approval rate of the sample members in the general average was (82.17%), which is considered high, and the general average of the sample individuals reached (4.16), which indicates the tendency of the answers of the study sample towards the phrase (I agree). While the general average of the phrases was estimated between (3.9923 and 1.307), with standard deviations of about (2.8416 to 0.66018).

Table 38: Alpha Cronbach and Chi-Square values for the dependent variable's second axis phrases (environmental dimension)

Statement	Cronbach's	Chi-Square	df	Asymp. Sig
The Company relies on a total quality policy to support environmental performance	.828	78.923[a]	3	.000
The Company takes measures that allow the control of emissions from the production process	.840	64.154[a]	3	.000
The Company establishes special programs for activities with dangerous environmental impacts	.818	39.292[a]	3	.000
The Company directs human resources to ensure sound environmental management	.821	47.354[a]	3	.000
The Company works to reduce pollution by using clean materials	.850	64.154[a]	3	.000
The Company is committed to an environmental management system that conforms to ISO 14000	.831	131.846[b]	4	.000
General Index	.856			.000

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

First: Alpha-Cronbach values for the dependent variable's second axis (Environmental dimension) phrases

The values of Cronbach's for all expressions of the independent variable (the environmental dimension) were greater than (60%).These values mean a very high degree of internal stability for all phrases, whether this is for each term separately or at the level of all scale statements. The value Alpha Cronbach for the scale was (0.856), which is high stability, and then it can be said that the measures that the study relied on to measure the axes have the internal stability of their phrases (see Table 38). Which enables us to rely on these answers to achieve the study's goals and analyze its results.

While the calculated value of (Chi-square) for the significance of the differences between the members of the study sample for the third axis (environmental dimension) phrases ranged between (131.846^{b} and 39.292^{a}), at the level of significant significance (0.000). Which is a value less than the level of significance (5%). Accordingly, this indicates the presence of statistically significant differences between answers of members of the sample and for the benefit of those who agree about the economic practices phrases.

5.12. The Relationship between Total Quality Strategy and the Dimensions of Sustainable Development in the Company

After presenting and analyzing the results of the study variables, with the questionnaire presented to the respondents. We will test the relationship between total quality management strategy and sustainable development by analyzing the correlation coefficient at the approved confidence level. If there is a correlation between the dimensions of sustainable development and total quality strategy, then we will define regression models and coefficients.

5.12.1. Correlation Coefficient

To test the relationship between TQM and sustainable development dimension practices in the institution being studied, we analyze correlation coefficients at the confidence level. The following table shows this analysis:

Table 39: Correlation coefficients between total quality strategy and the dimensions of sustainable development

TQM	SD	Correlation coefficient (Pearson)	The level of significance	The results
Economic dimension		0.694**	0.00	There is a significant positive relationship
Social dimension		0.653**	0.00	There is a significant positive relationship
Environmental dimension		0.681**	0.00	There is a significant positive relationship
General Index			0.00	

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

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

Through Table No. (39), we find that the correlation coefficients in all the statements are less than 1 and greater than 0, indicating the existence of a direct relationship. As for the significance level, it is achieved at 0.05. If the value is less than 0.05, this means accepting the alternative hypothesis, which is the hypothesis of the study.

If the significance level was greater than 0.05, this means rejecting the alternative hypothesis and accepting the null hypothesis. This means refusing the hypothesis of the study. We note here that the level of significance for all phrases was less than 0.05. This means that there is a direct significance positive relationship between each axis separately, and each axis of the independent variable with the axes of the dependent variable, but it is a medium relationship, and this proves the validity of the main hypothesis and thus the other sub-hypotheses of the study.

5.12.2. Testing the Validity of the Hypotheses

After the analysis of the study data using various tools. The researcher tested the results of the study in light of the hypotheses that were put forward at the beginning of the study, as follows:

The main hypothesis: This hypothesis stated that: "There is a statistically significant role of total quality management strategy in achieving the dimensions of sustainable development in the institution under study."

Table 40: Model Summary

Model Summary[b]				
Model	R	R Square	Adjusted R. Square	Std. Error of the Estimate
1	.400[a]	.160	.147	.933
a. Predictors: (Constant): Total Quality Management				
b. Dependent Variable: Sustainable Development				

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

Table 41: Coefficients

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	1.533	.355		4.318	.000
Continuous improvement level	.022	.074	.015	.297	.766
Focus on customers level	-.041-	.066	-.037-	-.628-	.530
Education and training level	.153	.059	.149	2.604	.010
Full participation of employees' level	-.029-	.061	-.027-	-.474-	.635
Decision Making level	.204	.056	.206	3.655	.000
Administrative leadership level	.193	.063	.182	3.078	.002
Dependent Variable (Sustainable Development)					

Source: Prepared by the researcher, based on the outputs of the analysis by SPSS

According to the tables (40) and (41) that refer to the results of the simple regression analysis of the impact of total quality management in all its requirements (continuous improvement, customer focus, administrative leadership, the full participation of employees, decision-making, Education, and training) on sustainable development through the viewpoint of the study sample in the researched institution.

We find a statistically significant role for the total quality strategy in achieving the dimensions of sustainable development in the institution under study. As the value of the coefficient of determination (R square) was .160. That change in the elements of total quality management with a value of .160 leads to a change in sustainable development with the same value. While the value of the degree of impact (B) reached 1.533, meaning that a change in total quality management leads to a change in sustainable development with a value of 1.533.

The coefficient of variation (F) value confirmed the significant effect, estimated at 12.145, which is greater than its tabular value of 3, 7, with a significance level of 0,000.

This means the possibility of accepting the null hypothesis identified by the study. There is a significant role of total quality management strategies in achieving the dimension of sustainable development in the institution under study because the significance level did not exceed 0.05, which is the ratio approved in this study.

This hypothesis led us to the following sub-hypotheses that we discuss as follows:

1. **The first sub-hypothesis**: The first sub-hypothesis states that: “There is a weak level of total quality management strategy in the institution under study.” To test the validity of this sub-hypothesis, we measured the level of continuous improvement and customer focus, decision-making, training, education, the full participation of employees, and administrative leadership. It turns out that most of the elements of total quality management strategy are located in the acceptance areas. Especially (the level of continuous improvement, the level of focus on customers, the level of training and education, and the level of full participation of employees in the institution). The level of significance was greater than 0.05 which are areas of rejection (.766, .530, .635). Consequently, the hypothesis can be rejected and the alternative one can be accepted. There is a non-weak level of total quality strategy in the institution under study.
2. **The second sub-hypothesis**: This hypothesis came as follows: “There is a statistically significant role of total quality management strategy in achieving the economic dimension of sustainable development in the institution under study. ". It turns out that most of the elements of total quality management strategy are located in areas of rejection, especially (the level of customer focus, the level of training and education, the level of full participation of employees in the institution). The level of significance was less than 0.05, which are areas of rejection (0.00, 0.00, 0.00). Thus, it can be said that there is an effect, but it is weak, and the hypothesis can be accepted. There is a significant role of total quality management strategies in achieving the economic dimension of sustainable development in the institution under study.
3. **The third sub-hypothesis:** Which is that: "There is a statistically significant role of total quality management strategy in achieving the social dimension of sustainable development in the institution under study.” It turns out that most of

the elements of total quality management strategy lie in areas of rejection, especially (the level of customer focus, the level of training and education, the level of full participation of employees in the institution). The level of significance was less than 0.05, which are areas of rejection (0.00, 0.00, 0.00). Consequently, the hypothesis can be accepted. There is a significant role of total quality management strategies in the social dimension of sustainable development in the institution under study.

4. **The fourth sub-hypothesis**: This hypothesis came as follows: "There is a statistically significant role of total quality management strategy in achieving the environmental dimension of sustainable development in the institution under study." It turns out that most of the elements of total quality management strategy lie in areas of rejection, especially (the level of customer focus, the level of training and education, the level of full participation of employees in the institution). The level of significance was less than 0.05, which are areas of rejection (0.00, 0.01, 0.00). Consequently, the hypothesis can be accepted. There is a significant role of total quality management strategies in the environmental dimension of sustainable development in the institution under study.

CONCLUSION

The topic of sustainable development has recently received much attention from governments and international bodies. It also became one of the poles of the economy and the locomotive of its growth. This is confirmed by the increasing scientific forums and international conferences that discuss the topic at various international events. In addition to the economic reports and environmental studies, indicate that protecting the environment is the most essential criterion for economic growth, and its existence or not is what differentiates between the developments of different economies.

Today, economic organizations are one of the leading entities through which sustainable development is achieved by activating their economic performance and ensuring sustainability. By creating sustainable value with a constant quest for optimal use of resources and energies, increasing productivity, and raising the employee performance through training. As well as the keenness to improve its social and environmental role through continuous improvement and social and moral responsibility development. In addition to the introduction of modern technology to contribute to achieving innovation within the research and development function in the organization, especially concerning new and alternative energies and clean and environmentally friendly products.

Consequently, it became difficult for organizations to overlook their development role and sense of environmental and social responsibility within society. It became clear that Sudanese organizations should contribute to integrating the dimensions of sustainable development as the nucleus of the economy and the primary focus for its development and growth. Achieving this requires the adoption of an integrated system of both total quality management and modern management systems such as ISO 9000 Quality Management System, Environmental Management System 14000, and OHSAS 18000 specification, to qualify it to integrate into the global economy and be at the same level with international organizations. Both quality and social and environmental management systems assist senior management of organizations in the field of continuous improvement of its products, operations and activities to keep pace with what is happening in this area in most of the world organizations. At the same time, it makes the organization more responsive to customer satisfaction, and this is the essence and reality of TQM.

However, applying a total quality management approach in organizations requires creating the appropriate climate by changing the organization's culture and values, directing patterns and methods of management in a manner that suits customer's needs, and improve measurement applications by choosing the best technologies to achieve this goal. The implementation of total quality management principles is carried out using tools created by its pioneers and experts that allow discovering mistakes, analyzing causes, and taking appropriate corrective measures. It must also be emphasized that the application of this philosophy in the organization is not an easy process because it requires a careful and thoughtful methodology, and it needs a long time to complete its stages to the end, to improve the quality of the product or service that satisfies the customer.

To give a clear picture, the researcher conducted a field study for an institution that makes efforts in sustainable development, preserving the environment, and contributing to community service. The researcher also dropped in the analysis parts, the theoretical concepts acquired through the research, to show and analyze how total quality management system contributes to integrating the dimensions of sustainable development in organizations.

After examining the role of total quality strategy in achieving sustainable development in the organization, in both the theoretical and practical parts. The researcher that total quality plays a vital role in embodying the dimensions of sustainable development on the ground by improving the performance of the economic organizations, which today is one of the main entities through which sustainable development is achieved. Total quality creates sustainable added value and a constant endeavor to utilize energies, increase productivity, and improve employee performance.

As the concept of quality is no longer confined to the product provided to the customer only. Rather, it is to the organization's functions to give it the character of inclusiveness through the organization's pursuit of economic models for total quality that support sustainable economic performance. The total quality strategy also strives to improve the social and environmental role of the organization through continuous improvement of its social and environmental responsibility and interest in its employees and clients.

This is in addition to demonstrating business ethics as an analytical tool that is transparent and accountable. In addition, the relationship of both total quality and ISO is an integral

relationship. Therefore, the ISO systems (9000, 14000, 18000, 26000) are routing systems that directly assist in achieving sustainable development by supporting each dimension of the latter.

We have found, through field study at the level of the Sudanese Company for Oil Pipelines, that there is a role of total quality strategy in achieving the dimensions of sustainable development. The practices of both the dependent variable and the independent variable were average, it has also been shown that there is a role of statistical significance to total quality strategy in activating the dimensions of sustainable development. The significance includes all the investigated dimensions in the study.

It has also been shown through the field study that the application of quality strategies and ISO specifications has helped the company to set within the framework of its strategic objectives the effective contribution to achieving sustainable development through achieving added value to the national economy while preserving the environment by reducing environmental pollution and rationalizing energy and water consumption. Besides adopting the environmental management system and embodying it in its structure. The company also depends on its activities on the value of citizenship and the concept of social responsibility, and this is by achieving the goals of attracting more human resources, reducing the unemployment rate, and improving the level of life standard for workers, by increasing their wages and providing them with social services. While contributing to improving the living conditions of society as a whole by financing some charitable, sporting, cultural and environmental activities.... etc.

Accordingly, it can be concluded that total quality strategy contributes significantly to achieving the dimensions of sustainable development in the economic organization. It is an essential approach of sustainable development application at the micro-level. After discussing the various theoretical concepts, conducting the field study, and presenting, discussing, and analyzing data, the study concluded several results in this research, and we propose to light a set of recommendations as shown in the next section.

Theoretical results of the study:

The study concluded, in its theoretical part, a set of results, the most important of which are:

1. Quality is considered a strategic tool for the organization because it achieves a competitive advantage in its field of activity. It is the axis and base upon which many concepts of Total Quality Philosophy and its base point are built.
2. With the increase in the intensity of global competition, the idea of quality is no longer based on the conformity of the product to a set of specific criteria. As it is embodied in the product, the matter requires access to quality and its achievement in all tasks and activities that have a direct and indirect impact on the production process or especially the product itself, so it includes all internal and external processes in the organization, and this is called total quality.
3. Total quality tools are only executive and non-material means, which help in analyzing and organizing the various aspects of work in the field of total quality. The use of these tools leads to better decision-making, finding better solutions to problems, and improving the productivity of goods and services.
4. Any organization's achievement of a distinct level of quality in its products depends on the accuracy and appropriateness of the strategy it draws in this field so that its productive, financial, marketing, and human resources policies are directed in the direction that serves this strategy, thus reaching the level of quality that qualifies it to compete with other organizations and companies. The organizations also define the total quality strategy within the framework of their general strategies.
5. The economic organizations today are required to change the patterns of consumption and production to contribute to reducing the adverse effects of the production process. Therefore they must adopt methods and strategies by which their behavior changes to achieve economic efficiency and social and environmental justice.
6. The strategic role of total quality allows activating the function of cleaner production and improving the quality of life and society.

7. The standard specifications (ISO 9000, ISO 14000, OHSAS 18000, and ISO 26000) are considered standards upon which organizations build a total quality system to provide quality products and services acceptable at the local and international level, at the same time, achieving social responsibility and preserving the environment.

Results of the field study:

After presenting the data related to the researched institution, we concluded the following**:**

1. The study results revealed that there is an average level of practice for the total quality strategy in the company, meaning that the company works to improve its performance in an average way with regard to its focus and interest in its customers. It conducts seminars and training courses for workers to consolidate the culture of total quality and the adoption of new methods.
2. The results of the study indicate that there is an average level of dimensions of sustainable development practices in the researched company, this means that the culture of sustainable development exists at an average level, and is practised voluntarily to preserve its reputation and economic position.
3. There is a statistically significant role of total quality strategy in achieving the economic dimension of sustainable development, which indicates the creation of value through the production of goods and services and employment opportunities and sources of income. The significance is due to the company's accreditation of means and methods for improving its performance, even at a low rate.
4. The company adoption and implementation of the quality management system ISO 9001 and obtaining a certificate of conformity positively impacts the most important economic indicators. Through the observed improvement in growth indicators (business number and value-added), volume indicators (sales, market share, and production), profitability indicators (net profit and productivity indicators). In addition to meeting the needs and desires of customers and increasing their satisfaction, which contributed to activating and improving the company's economic performance, which in turn reflects positively on the general economic performance of the state.

5. There is a statistically significant role for total quality strategy in achieving the social dimension of sustainable development, which includes various aspects related to the impact of the company's operations on individuals inside and outside the company. Such as sound work relationships, health and safety, and the significance is due to the company's focus on its customers and its interest in them. The company also is keen to provide services that work to meet the desires of customers. Besides this, the organization cares for the employees and workers and maintains their occupational and health safety.
6. Likewise, the company obtaining of OHSAS 18001 specification has had a positive impact on its social performance, concerning its human resources, through the achieved improvement in the most critical indicators expressed in this, especially in the field of occupational safety and health. By decreasing the number of work accidents, while providing the necessary protective requirements and conditions. In addition to the observed improvement in the field of training, especially after the organization adopts the integrated system.
7. The company's community activities also contributed effectively to the consolidation of the principles of moral and social responsibility of the human being in the targeted areas. The company's social responsibility contributed to raising public awareness and establishing urban areas, thus framing the project for balanced rural development, and creating a strategic partnership between the citizens of the region and the company, for the mutual benefit between the two parties. The company employs and rehabilitates some individuals of the area surrounding the path of petrol lines and projects, in the cellular stations near their families. While the responsibility of citizens represents the protection of national facilities and projects and save oil pipelines from sabotage activities in a kind of intelligent partnership.
8. There is a statistically significant role for total quality strategy in achieving the environmental dimension. This role relates to the effects of the company's business and activities on the natural environment. The reason for the indication is the company's interest in preserving the environment, implementing the environmental management system, and spreading environmental awareness among the company's workers.

9. The company's adoption and implementation of the environmental management system in accordance with ISO 14001 has a positive impact on the most important environmental indicators related to the company. By reducing environmental pollution through giving great importance to managing waste, especially the industrial one, and reducing solid and liquid polluting wastes. While ensuring compliance with environmental legislation and laws and increasing interest in training in the environmental field. Thus, contributing to improving the environmental performance of the company.

Recommendations:

Based on the results reached in the theoretical and practical part, there are some recommendations that the Sudanese institutions must take to contribute to achieving sustainable development in their various dimensions, although the reform policies differ from one institution to another, including the following:

1. When allocating financial resources available by the state, give priority to projects that have an impact on the goals of sustainable development. Encouraging institutions to adopt quality as an administrative method through financial aid, training programs, quality awards, symposia, and educational forums.
2. The necessity of linking economic institutions with universities and research centers to develop research in this field. Besides adopting the total quality management strategy as a basis for adopting sustainable development.
3. The necessity of applying economic methods and models that help to improve total quality in economic and industrial institutions.
4. The necessity of paying more attention to setting the strategies related to sustainable development in the institution. Relying on linking the relationship between total quality and the general strategy of the institution, with the view of achieving sustainability.
5. The necessity of spreading the culture of sustainable development in all units of the institution, and the society as a whole, because from that, it will be generalized in all sectors.

6. The necessity of applying the economic, social and environmental standards that allow raising the institution's performance and society as a whole and enabling the institution to achieve a significant leadership position.
7. The necessity of establishing an integrated system that combines and unifies the three subsystems: the quality management system, the environmental management system and the occupational health and safety management system in one interconnected system that confirms the commitment of senior management to continuous improvement. This gives confidence to stakeholders on the one hand and provides mutual support and cooperation between the various activities in the organization to increase the degree of its adaptation to the external environment on the other hand. This requires strengthening the resources available in the organization, besides the training of human resources.
8. Implementing a strict policy of applying sustainability standards in economic organizations for recycling waste, using alternative energy and rationalize in exploiting available resources etc., to achieve sustainable development.
9. Sudanese institutions must adopt the maintenance function and precisely the comprehensive product maintenance because it is an essential element in continuing the production process and achieving quality. It also has a multiplier effect in achieving the competitive advantage by raising the product value for the customer on the one hand and controlling costs on the other hand.
10. Sudanese institutions seeking to achieve sustainable development should establish this concept in a mandatory way by codifying it in the internal systems. At the same time, urging the organization of periodic forums and imitating the leading international institutions in the field of sustainable development, especially in integrating the dimensions of sustainable development within its administrative and strategic goals.

Study prospects: This study dealt with the application of total quality management in organizations and its implications for sustainable development, and it represents a small aspect of a large part in the field of research. Therefore, the study remains open to address other important aspects in the cycle of both total quality management and sustainable development, and among the most important of these aspects that deserve research we can mention:

1. Proposing a model for environmental total quality management in Sudanese institutions
2. Evaluating some of the experiences of Sudanese institutions that have gone through the midst of organizational change by applying quality management to the efficiency of the overall performance of institutions
3. The integrated relationship between the quality management system in accordance with ISO 9001 and the ISO 26000 social responsibility specification in the Sudanese institutions.

REFERENCES

Books

Abdelaziz, Samir. (1999). *The Economics of Product Quality between Total Quality Management, ISO 9000 and 10011*.Alexandria: Al-Ish`aa Library.

Abdelfattah, Ezz. (2017). *Introduction to Descriptive and Inferential Statistics*, 5th edition. Jeddah: Al-Khwarizmi Scientific.

Abdel Khaleq, Abdullah. (1998). *Sustainable Development and the Relationship between Environment and Development*, 1st edition, Lebanon: Center for Arab Unity Studies, Lebanon.

Aboud, Najm. (2006). *Management Ethics and Business Responsibility in Business Companies*, 1st edition. Amman: Al-Warraq Publishing and Distribution Corporation.

Adoun, Nasir. (1998). *The Organization's Economy*, 2nd edition. Algeria: Muhammadiyah House for Publishing.

Aggeri, Frank et al. (2005). *Organizing sustainable development*, 1stedition. France: Vuibert editions.

Ajami, Muhsin. (2008). *Strategies for Self-Management for School and Classroom*. Amman: Maisarah House, Amman, Jordan.

Alag, Basheer. (1998). *Foundations of Modern Management*. Jordon: Yazourdi Publishing House.

Alali, Abdul Sattar. (2008). *Applications in Total Quality Management*. Amman: Al Masirah House for publishing.

Alela, Muhammed. (2004). *The Dictatorship of Globalization*,1st edition. Cairo: Madbouly library.

Alimat, Nasir. (2005). *Total Quality Management in Educational Institutions: Applications and Development Proposals*, 1st edition. Jordon: Shouruq publishing.

Allam, Abdel Rahim. (2005). *Introduction to Environmental Management Systems*, 1stedition, Cairo: Arab Organization for Administrative Development Publications.

Aqili, Omar (2005). *The Integrated Methodology for Total Quality Management*, 1st edition, Amman: Wael Publishing and Distribution House.

Asiri, Muhammad. (2007). *Social Responsibility for Administration*, 1st edition. Egypt: Al-Wafaa House for Publishing.

Azzawi, Muhammed. (2002). *Environmental Quality Management Systems: ISO 9000 and ISO 14000*, 1stedition, Amman: Wael House for Publishing.

Azzawi, Muhammad. (2005). *Total Quality Management*, 1st edition. Amman: Yazouri House for Scientific Publishing and distribution.

Bacrie, Bruno. (2006). *Communicating Effectively on the Sustainable Development of Corporate Citizenship to Sustainable Communities,* 1st edition, Paris: Demo editions.

Badohan, Musa. (2011). *The Legal System for Standardization, Legislative and Other Regulatory Texts*, 1st edition. Algeria: Houda House for Publishing.

Baker, Paul. (2005). *Financial Indicators of Sustainable Development*, 1st edition. Paris: Organizational Editions.

Bakri, Yasser. (2001). *Marketing and Social Responsibility*, 1st edition. Amman: Wael Publishing House.

Bakri, Muhammed. (2002). *Total Quality Management*, 1st edition. Alexandria: University publication House.

Bakri, Tamer and Nouri, Nizar. (2006). *Green Marketing*, 1st edition. Jordon: Yazouri Scientific Publishing and Distribution House.

Banerjee, Subhabrata. (2007). *Corporate Social Responsibility: The Good, the Bad and the Ugly*, 1st edition. Cheltenham, England: Edward Elgar Editions.

Baracchini, Paolo. (2007). *Guide to the Implementation of Environmental Management in Companies According to ISO 14001*, 3rd edition. Paris: Polytechniques Publications and University of Romandes.

Baranek, Elke, et al. (2005). *Participation and Sustainability. Reflection on Relationships and Reconciliations*. Berlin: Centre of Technology and Society.

Bari, Dora and Sabbagh, Zuhair. (2008). *Human Resources Management*, 1st edition. Amman: Wael Publishing House.

Bari Dora et al. (1994). *Modern Management: Concepts and Operations, Analytical Approach*,1st edition. Jordon: Arab Center for Students Services.

Barillot. P. (2001). *Performance Management,* 1st edition. Paris: Economica, Editions.

Beblawi, Hazem. (2006). *Political Reform and Governance, Seminar on Institutions and Economic Growth in the Arab Countries,* Arab Monetary Fund, 1st edition. Egypt: Institute for Economic Policy.

Bernard, Claude. (2000). *Management through Total Quality*, 1st edition. Paris: AFNOR Publications.

Boudali, Mohamed. (2005). *Evolution of the Consumer Protection Movement*, Algeria: Rashad Library for Printing, Publishing and Distribution

Calvert, Peter and Calvert, Susan. (2001). *Politics and Society in the Third World: An Introduction*, 2nd edition. UK: Longman editions.

Carpon, Michel and Lanoizelee, Françoise. (2007). *Corporate Social Responsibility*, 1st Edition. Paris: Discovery edition.

Chardonner, Andre and Thibandon, Dominique. (2003). *The Deming PDCA Guide: Continuous Progress and Management*, 1st edition. Paris: Organization Edition.

Cartwright, Jeff. (1999). Cultural Transformation: *Nine Factors for Continuous Business Improvement*. London: Prentice Hall.

Chantal, Bonnet. (2006). *Market and Sustainable Development*. Paris: Alpha Edition.

Chauvaeu, Alain and Rose, Jean. (2003). *The Responsible Company*, 1st edition. Paris: Organization Editions.

Ciampa, Dan. (1992). Total Quality: *A User's Guide for Implementation*, 1st edition. USA: Addison-Wesley, Reading Mass.

Clayton, Barry. (2001). *For Sustainable Development Strategies: A Resource Book*, Paris: OECD editions.

Cohen, Steven and Brand, Ronald. (1993). *Total Quality Management: A Practical Guide for the Real World*, 1st edition. San Francisco: Jossey – Bass Publisher.

Convery, Tom. (1995). *The Role of Social Indicators: Assessing Sustainability in Ireland*, 1st edition. Dublin: The Environmental Institute Publications.

Corm, George. (1999). *Sustainable Human Development and Macroeconomic State of the Arab World*, Human Development Studies Series (No. 6), 1st edition, New York: United Nations Publications.

Costa, Nathalie. (2008). *Management of Sustainable Development in Companies*, 1st edition. Paris: Ellipses Edition Marketing S.A.

Crosby, Philip. (1989). Quality is Free: *The Art of Making Quality Certain*, 1st edition. New York: Mc Craw Hill Book Company.

Damour, Hani. (2005). *Services Marketing*, 3rd edition. Jordon: Wael Publishing House.

Dararka, Mamoun. (2008). *Total Quality Management and Customer's Service*, 1st edition. Amman: Safa House for Publishing and Distribution.

Dayan, Armand. (1999). *Management Manual*, 1st edition. France: Ellipses Editions.

Delchet, Karen. (2007). *Sustainable Development: Integrating it to Succeed. 80 SMEs facing SD21000*, 1st edition. Paris: AFNOR Editions, The Plaine Saint Denis.

Deming, W. E. (1986). *Out of the Crisis: Quality, Productivity, and Competitive Position*, Cambridge, MA: Cambridge University Press.

Derbaix, Christian and Bree, Joel. (2000). *Behavior of the Consumer*, 1st edition. Paris: Economica Edition.

Dobbins, Lioyd and Crawford, Mason. (1997). *Thinking about: Quality - Progress, Wisdom and the Philosophy of Deming*, trans. Hussein Abdel Wahed. Cairo: Egyptian Association for the Dissemination of Knowledge and Global Culture.

Dolan, Shimon et al. (1995). *Human Resources Management: Trends, Issues and Current Practices*, 3rd edition. Paris: Global Village, Educational Renewals.

Drucker, Peter. (1977). *An Introductory View of Management*, 1st edition. USA: Harper's College Press.

Egelston, Anne. (2012). Sustainable Development: A History, 1stedition. New York: Springer edition.

Faucher, Solange. (2006). *Integrated Management System*. France: AFNOR Edition.

Fattah, Zinedine. (2000). *Application of Total Quality Management between Success and Risk of Failure*. Alexandria: Zagazig University Press.

Federal Quality Institute. (1990). *Total Quality Management Handbook*, 1st edition. Washington D.C, United States Office of personnel Management.

Forman, Bernard. (2001). *From the Quality Manual to the Management Manual: The Strategic Tool*. Paris: AFNOR Edition.

Froman, Bernard et al. (2002). *Quality, Safety and Environment: Build An Integrated Management System*, 1st edition. Paris: AFNOR editions.

Foster, Claude and James, Peter. (2001). *Environmental Management for Quality of Life*, translated by Ola Ahmed Salah. Cairo: Center for Technical Expertise for Management.

Gashi, Khaled and Darja Ramzi. (2018). *Marketing and Social Responsibility*. 1st edition. Jordan: Osama House for Publishing and Distribution.

Gasim Mustafa. (2006). *Environmental and Sustainable Development Management in Contemporary Globalization*. Alexandria: University House.

Gelinier, Octave et al. (2005). *Sustainable Development for A Competitive and Responsible Company*, 3rd edition. Cegos: ESF editions.

Geneviève, Ferone et al. (2004). *What Sustainable Development Means*? 1st edition. Paris, Organization Editions, Eyrolles.

Ghalibi, Taher.(2009). *Management and Strategy of Medium and Small Business Organizations*, 1st edition. Amman: Wael Publishing House.

Ghalibi, Taher and Ameri, Saleh. (2005). *Corporate Social Responsibility And Business Ethics*, 1st edition. Jordon: Wael Publishing House.

Ghalibi, Taher and Idris, Wael. (2009). *Strategic Management: An Integrated Methodological Perspective*, 2nd edition. Amman: Wael Publishing and Distribution House.

Ghoneim, Othman and Zant, Ahmed. (2010). *Sustainable Development: It's Philosophy, Methods of Planning and Measuring Tools*, 2nd edition. Amman: Safa House for Publishing and Distribution.

Gilles J. Martin. (2013). *The Legal Issues of Sustainable Development for Business, Sustainable Development and Business*, 1st edition, France: Dalloz editions.

Gillet, Florence and Batir, Goinard. (2006). *Building an Integrated Quality / Safety / Environment System for Quality in QSE*, 1st edition. Paris: Organization Editions.

Guerra, Fabienne. (2007). *Strategic Management of the Company: The Role of the Balanced Scorecard*, 1st edition. Brussels, Belgium, Boeck editions.

Gustave, James. (1989). *The Greening of Technology, Earthscan Libaray Collection, International Environmental Governance*, 1st edition. London: Greening International Institutions, Earthscan Publishing for A Sustainable Future.

Habib, Ahmed. (2000). *Economy and Management of the Organization*, 1st edition. Algeria: University Publications Bureau.

Haddad, Ibrahim. (2009). *Total Quality Management*, 1st edition. Amman: Fikr House Publications.

Hafez, Mustafa. (2012). *Sustainable Development and its Arab Challenges*. Cairo: Gharib Publishing House.

Hajjar, Salah and Saqr, Hamid. (2005). *Environmental and Technological Management System: Methodologies. Techniques and Sustainability ISO 14000*, 1st edition. Egypt: Arab Thought House.

Halawa, Jamal and Saleh, Ali. (2010). *Introduction to Development*, 1st edition. Amman: Shorouk for Publishing and Distribution.

Hamdi, Saleh. (2003). *Environmental Management*. Cairo: Arab Organization for Administrative Development Publications.

Hammoud, Khudair. (2000). *Total Quality Management*. Amman: Al-Maisara House Publications.

Hammoud, Khudaier and Nayef, Utay. (2001). *Qualification Requirements for ISO 9000 Certificate*. Amman: Al-Yakizah for Publishing and Distribution.

Hassan, Ahmed. (2007). *Environment and Sustainable Development: The Knowledge Framework and Accounting Assessment*, 1st edition. Cairo: Studies and Research Development Center.

Haythi, Nawzad and Mohannadi, Hassan. (2008). *Sustainable Development - Achievements and Challenges*, 1st edition. Qatar: Permanent Population Committee Publications.

Hegazy, Obaid. (2000). *Logistics as An Alternative to Comparative Advantage*, 1st Edition. Alexandria: Almaaref Entity editions.

Heider, Ali. (2010). *Strategic Quality Cost Management*, 1st edition, Amman: Yazurdi Scientific Publishing and Distribution House.

Heizer, Jay and Render, Barry. (2001). *Principles of Operations Management*, 5th edition. New Jersey: Prentice Hall.

Herve, Eric. (2015). *Handbook of Integrated Management System*, ETT, 1st edition. London: Energy Thermal Transfer, ETT editions.

Hegaz, Salah. (2004). *Environmental Balance and Industry Modernization*, 1st edition .Egypt: House of National Books and Archives.

Hit, Khaled and Taweel, Akram. (1999). *Industrial Organization, Principles, Operations, Entries and Experiences*, 1st edition. Jordon: Al-Hamid House for Publishing and Distributio

Howell, Ether. (2000). *Strategic Planning for New Country: Process over Product*, 1st edition. Los Angeles, CA: Eric Clearing for Community Colleges,

Hussein, Salama. (2008). *Total Quality and Educational Accreditation*, 1st edition. Alexandria: New University House.

Jablonsky, Joseph. (1996). *The Application of Total Quality Management (TQM)*, Trans, Abdel Fattah El-Sayed El-Nomani. Cairo: Center for Professional Experiences of Management, PMEC.

Jaques, Jean and Chantal, Ruben. (2002). *Strategic and Operational Marketing for the North, Management Sup Marketing Communication, The Marketing Approach in the Digital Economy*, 9th edition. Paris: Dunod edition.

Jonker, Witte. (2006). *Management Models for Corporate Social Responsibility*. Berlin: Springer editions.

Jonquieres, Michel. (2001). *The Environmental Management Manual, Improving An Environmental Management System*, 1st edition. Paris: Alpine Publications.

Josas, Jouy. (2004). *General Company Policy Strategies*, 4th edition. Paris: Dunod editions.

Joudeh, Mahfouz. (2006). *Total Quality Management: Concepts and Applications*, 3rd edition. Jordon: Wael House for Publishing and Distribution.

Jounot, Alain. (2010). *100 Questions to Understand and Act on CSR and Sustainable Development*, 1stedition, Paris: AFNOR editions.

Jubouri, Mayser. (2010). *Quality Management: Theory and Experimental Experiences*, 1st edition. Riyadh: General Administration of Printing and Publishing.

Juran Joseph. (1989). *Leadership for Quality: An Executive Hand book*, 1st edition. New York: The Free Press.

Kanji, Gopal K. (2002). *Measuring Business Excellence*, 1st edition. Routledge: Routledge Advances in Management and Business Studies.

Kasper Hans et al. (2006). *Service Marketing Management: A strategic perspective*, 2nd edition. USA, John Wiley & Sons.

Kayali, Hossam. (2006). *The Role of Modern Trends in Total Quality Management and ISO 9000*, 1st edition. Jordon: Arab Society for Management and Knowledge.

Kazem, Hammoud. (2009). *Total Quality Management: Concepts and Applications*, 1st edition. Amman: Masirah for Publishing and Distribution.

Khatib, Ahmad. (2001). *University Administration: Recent Studies*, 2nd edition. Jordon: Hammad Foundation for Publishing and Distribution.

Khatib Ahmad. (2006). *Total Quality Management - Educational Applications*, 2nd edition. Irbid: The World of Modern Books.

Kondo, Yoshio. (1997). *Quality Control in the Company*, 1st edition, Paris: Economica editions.

Kotler, Philip et al. (2005). *Principles of Marketing*, 4th edition. New Jersey: Prentice-Hall.

Kousnezoff, Nina. (2003). *Sustainable Development: What Limits to What Growth*. USA: Discovery Edition - Collection Landmarks.

Krajewseki, Lee and Ritzman, Larry. (1996). *Operations Management: Strategy and Analysis*, 2nd edition. USA: West Publishing Company.

Lascelles, David and Peacock, Roy. (1996). *Self-Assessment for Business Excellence (Quality in Action)*, 1st edition. London: McGraw-Hill Publishing.

Laszlo et al. (2005). *Expanding the Value Horizon: Stakeholders as Source of Competitive Advantage, Sustainable Value Partners*. Vienna: Island Press.

Lawzi, Moussa.(1999). *Organizational Development: Modern Fundamentals and Concepts*, 1st edition. Cairo: Wael Publishing House.

Laville, Elisabeth. (2009). *The Green Company: Sustainable Development Changes Companies to Change the World*, 3rd edition. Paris: Person Edition.

loudoyer, Guy. (2000). *ISO9000 Certification: A Driving Force for Quality*, 3rd edition, Paris: Organization editions.

Lozi, Mousa. (2002). *Organization and Work Procedures, 1st edition*. Amman: Wael Publishing.

Lyonnet, Patrick. (1991). *Tools of Total Quality: An Introduction to Statistical Process Control, Techniques and Documentation*, 2nd edition. Paris: Chapman & Hall.

Maani, Ayman. (2010). *Modern Public Administration*. Amman: Wael Publishing House.

Maani, Ahmed et al., (2011). *Contemporary Administrative Issues*, 1st edition. Amman: Wael Publishing House.

Maher, Ahmad. (2001). *Development of Organizations*. Alexandria: University publishing House.

Mahmoud, Mohi. (2001). *Research in the Arab Economy and the most Important Challenges of the Twenty-first Century*,1st edition. Egypt: Ansar Press.

Mahmoud, Khudair and Munir, Rawan. (2010). *Total Quality Management in the Outstanding Organizations*, 1st edition. Jordon: Safa for Publishing and Distributing.

Maricourt, Renaud. (1993). S*amurai Management: Production, Marketing and Finance in Japan*, 1st edition. Paris: Vuibert editions.

Martand, Telsang. (2017). *Industrial Engineering and Production Management*, 2nd edition. India: S. Chard &. B: Books Company LTD.

Masoudi, Haide. (2010). *Strategic Quality Cost Management*, 1st edition. Amman: Yazurdi Scientific Publishing and Distribution House.

Mathieu, Stéphane. (2002). *ISO 9000 Quality Standards*, Version 2000, 2nd edition. Paris: AFNOR edirions.

Mawhinney, Mark. (2002). *Sustainable Development: Understanding the Green Debates*, 1st edition. London: Wiley-Blackwell Publishing Company Edition Offices.

Martine, Maadani and Karim, Said. (2009). *Management and Performance Management*, 1st edition. Paris: Hachette publications.

Martinich, Josep. (1997). *Production and Operation Management; An Applied Modern Approach*, 1st edition. New York; John Wiley and Sons Inc.

Meissler, Craig and Thomas Mini. (1999). *Guide to ISO 14000, trans. Center for Arabization and Translation*. Beirut: Arab Science House Organization.

Mitonneau, Henri (2006). *Successful Process Audit*, 2nd edition. Paris: AFNOR Publications.

Muhammed, Ibrahim. (2009). *Quality Management from the Administrative Perspective: An Integrated Approach*. Alexandria: University House.

Mohsen, Tawfiq. (2006). *Quality Measurement and Comparative Measurement*. Egypt: Arab Thought House.

Mousawi, Kadhim et al. (2003). *Total Quality Management and ISO*, 1st edition. Amman: Al Warraq House for Publishing and Distribution.

Muhyawi, Qasim. (2006). *Quality Management in Services: Concepts, Operations and Applications*, 1st edition. Jordan: Shorouk for Publishing and Distribution.

Mullenbach, Astrid. (2002). *Corporate Social Responsibility*, 1st edition. Paris: Flanchec Editions, Sorbonne.

Muschett, Douglas. (2002). *Principles of Sustainable Development*, Translated by Bahaa Shaheen. Cairo: International House for Cultural Investments.

Mustafa, Ahmad. (2001). *Change as an Approach to Enhance the Competitiveness of Arab Organizations*, 1st edition. Cairo: Al-Kotob Publishing House.

Mustafa, Tolba. (2006). *The Arab Encyclopaedia of Knowledge for Sustainable Development*. Beirut: The Arab Science Academy.

Naro, Gerald and Florence, Nouguera. (2008). *The Integration of Sustainable Development into the Strategic Management of the Company: Review of the Responsible Organization*, 1st edition. France: ESKA editions.

Nierenberg, Danielle. (2002). *Gender Equity: Women's Welfare and the Environment*, 1st edition. Washington D.C: World Watch Institute.

Nurkse, Rangar. (1960). *Problems of Capital Formation in Underdeveloped Countries*, 1st edition. Oxford, Basi Blackwell.

Piechaud, Jean. (2009). *The Encyclopedia of Sustainable Development*, 1st edition, France: Récollets Éditions.

Qadar, Rajab. (1998). *Introduction to Total Quality Management and ISO 9000*, 1st Edition. Damascus: Al-Hasad House.

Ray, Daniel. (2001). *Measuring and Developing Customer Satisfaction*, 2nd edition. Paris: Organizational Edition

Rayburn, Letricia and Gayle, Cost. (1996). *Accounting: Using A cost Management Approach*, 6th edition. Irwin: Irwin Professional Publishing.

Ross, Joel E. (1995). *Total Quality Management*, 2nd edition. USA: St. Lucie Press.

Saad, Samia. (2005). *Integrated Environmental Management*, 1st Edition. Cairo: Arab Organization for Management Development Publications.

Sahn, Muhammad. (2002). *Readings in Marketing Management*, 1st Edition. Egypt: University House.

Saleh, Muhammad. (2009). *Human Resources Management*, 2nd edition, Amman: Al-Hamid for Publishing and Distribution.

Sayed, Mostafa. (1998). *Total Quality and ISO 9000*. Egypt: Zagazig University Press.

Sakarneh, Bilal. (2009). *Organizational and Administrative Development*, 1st edition. Amman: Maisarah House for Publishing and Distribution.

Sallis, Edward. (2002). *Total Quality Management in Education*, 3rd edition. London, Kogan edition.

Salti Mamoun and Elias, Suhail. (1999). *A Practical Guide to the Application of Quality Management Systems ISO 9000*, 1st edition. Damascus: Modern Thought House Publications.

Samarrayi, Mehdi. (2007). *Total Quality Management in the Production and Services Sector*. 1st edition. Jordon: Modern House for Publication and Distribution.

Samuelson, Paul and William, Nordhause. (2010). *Economics*, 9th edition. USA, Mcgraw Hill International Editions.

Sands, Peter. (1995). I*nternational Law in the Field of Sustainable Development: Emerging Legal Principles, Sustainable Development and International Law*. ed.Lang, W. Boston: Graham and Trotman/Martinus Nijhoff.

Saqqaf, Abdullah. (1996). *The Comprehensive and Fast Introduction to Understanding Total Quality Management*, 1st edition. ALkhoubur: Community Library.

Sebhatu, Samuel. (2009). *Sustainable Performance Measurement for Sustainable Organization*, 1st edition. Sweden: Karlstad University Press.

Segot Jaques and Christophe Gasquet. (2001). *Ensure the Transition to the ISO 9001 Standard, Version 2000*, 1st edition. Paris: French Standardization Association editions.

Schermerhorn, John. (2001). *Management*, 6th edition. London: John Wiley & Sons, Inc.

Schmidt, Darren and Jerome Vanga. (1997). *Director of Total Quality*, translated by Mahmoud Morsi and Nasser Al-Adaili. Riyadh: Al-Afaaq House.

Shaban, Abdullah. (2009). *Total Quality Management A Theoretical and Practical Approach towards Establishing a Culture of Quality and Applying Standards of Excellence*, 1st edition, Jordan: Zahran House for Publishing and Distribution.

Shabrawy, Adel. (1995). *The Scientific Guide for the Application of Total Quality Management ISO 9000 and the Benchmarking*,1st edition. Cairo: Publications of Arab Company for Scientific Media.

Shikha, Ahmed. (2010). *Human Resource Management: A Theoretical Framework and Practical Cases*. 2nd edition. Amman: Safaa House for publishing and distribution.

Slack, Nigel et al. (1998). *Operation Management*. New York: John Wiley & sons.

Stans, John and Siebel, Maarten. (2010). *Environmental Management Systems, and Basic Concepts of ISO 14001,* 1st edition. Netherland: UNESCO Publications.

Stephany. D. (2003). *Sustainable Development and Business Performance*. Paris: Liaisons Edition.

Stevenson, William. (2005). *Operational Management*, 8theditions. London: McGraw-Hill.

Suarez, Gerald. (1992). *Three Experts on Quality Management: Philip B. Crosby W. Edwards Deming Joseph M. Juran*, 1st edition. USA: Department of the Navy TQL Office Publication.

Sultan, Muhammad. (2003). *Organizational Behaviour*, 1st edition. Alexandria: The New University House.

Sumaidaie, Mahmoud and Youssef, Othman. (2010). *Marketing Services*, 1st edition. Jordon: Al Masirah for Publishing, Distribution and Printing.

Supizet, Jean. (2002). *The Management of Sustainable Performance*, 1st edition. Paris: Organization Editions.

Sweiden Nizam, Shafiq, Haddad. (2006). *Marketing Contemporary Concepts*, 1st edition. Jordon: Hamed Publishing and Distribution House.

Taie, Yousuf et al. (2009). *Quality Management Systems in Production and Services Organizations*, 1st edition. Amman: Yazourdi Publishing House.

Tahoun, Zakaria. (2006). *Environmental Management Towards Cleaner Production*, 1st edition. Cairo: Arab Office for Research and Environment.

Tanne, Steven and Porter Leslie. (2004). *Assessing Business Excellence*, 2nd edition. Oxford: Elsevier Butterworth-Heinemann.

Talbia, A. (2011). *Integration of Application Business Functions with Production and Maintenance Functions*, 1st edition, France: European University edition.

Tardieu, Jean et al. (2005). *Contribution of Entrepreneurs and Business to Sustainable Development*, 1st edition, France: EPE publication.

Tardieu, Jean et al. (2005). *Organizing the Contribution and the Company to Sustainable Development*, 1st edition. France: EPE publication.

Tatu, Stephane et al. (2014). *Integrated Management System*, 1st edition. Giens: OPTA Editions for a Sustainable and United Performance.

Tawfiq, Mohsen. (2004). *Integrated Teaching Curricula, Total Quality Management Curriculum*, 2nd edition. Egypt: Professional Management Expertise Center.

Volsk, Nicolas. (2009). *Lean Six Sigma Deployment and Operation*, 1st edition. Paris: Organization Editions.

Wackerman. Gabriel. (2008). *Sustainable Development*, 1st edition. Paris: Elllipses Editions.

Wardum, Bater. (2003). *The World is not for Sale, the Risks of Globalization for sustainable Development*, 1st edition. Jordon: Al-Ahlia Publishing and Distribution House.

Weil. Michel. (1994). *Management, Thought, Concepts, Facts*. Paris: Armand Colin.

Woodward, Williams et al. (2004). *Managing Change Successfully Using Theory, and Experience in Implementing Change*, translation - Surur Ali Ibrahim Surur. Saudi Arabia: Al Marrekh Publishing House.

Woot, Philippe. (2005). *Corporate Social Responsibility*. 1st edition. Paris: Economica editions.

Zakaria, Fouad. (2005). *Quality Control and Consumer Protection*. Amman: Osama House for Publishing and Distribution.

Journals

Abbadi, Muhammad. (2007). The Ten Principles of the Global Solidarity Initiative, *Economic Policy Dialogue Journal*, 2.1, 1-30.

Abid Shareet. (2006). The current Economic Transformations and the Future of Arab Economic Integration, *Journal of the Human Sciences*, 1.30, 15-37.

Ahmadi Freyedon and Bidarpoor F. (2011). Measuring Service Quality in Islamic Azad University-Sunanda Branch, Iran. *Interdisciplinary Journal of Contemporary Research in Business*, 3.5, 741-764.

Ali, Moussa. (2018). The Role of Occupational Safety and Health Management according to OHSAS 18001 in Reducing Work Accidents, *Journal of Human Sciences*, 1.49, 223-280

Alfi, Hani. (2012). The European Model of Excellence and the Requirements for Meeting its Standards at the University of Hail, *The Future of Arab Education*, 23.104, 1-128.

Amer, Habiba and Abbas, Farhat. (2017). The Role of Continuous Improvement Operations in Achieving Comprehensive Quality Management in the Economic Corporation. *Economic Visions Journal*, 7.2, 165-183.

Amrita, Lieu and Cheng, Cans. (2007). The Relationship of Organizational Culture and the Implementation of Total Quality Management in Construction Firms, *Surveying and Built Environment*, 18.1, 7-16.

Antony Kevin et al. (2002). Critical Success Factors of TQM Implementation in Hong Kong Industries. *International Journal of Quality & Reliability Management*, 19.5, 551-566.

Anzi, Saad and Obaid, Aisha. (2009). The Philosophy of Comprehensive Environmental Quality Management, *Journal of Economic and Administrative Sciences*, 15.53, 1-19.

Arifi, Mansour. (2003). The Social Responsibility of Private İndustrial Organizations from the Point of View of Managers: An Applied Study in the Private İndustrial Sector in Yemen, *Al-Azhar University Journal*, 1.21, 1-30.

Attia, Said. (2017). A Proposal for the Management of Organizational Excellence in Private Schools in Alexandria Governorate, according to the European model of Excellence, *Journal of Educational Administration Journal*, 14.3, 389-581.

Azharshami, Masoud and Samuel, Ho. (1999). Archieving Service Exellence: A New Japanese Approach versus the European Framework, *Managing Service Quality: An International Journal*, 9.1, 40-46.

Babakus, Emin and Mangold, W Glen. (1992). Adapting the SERVQUAL Scale to Hospital Services: An Empirical Investigation. *Health service Research*, 26.6, 767-786

Banna, Zainab Makki and Ameir, Nour. (2019). Green Finance and its Role in Improving the Performance of Iraqi Banks: An Exploratory and Analytical Study of the Views of a Sample of Bank Managers, *The Iraqi Journal of Management Sciences*, 15.60, 141-183.

Battat, Kazem .(2007).Sustainable Development is a New Path among Modern Development Theories, *Iraqi Journal of Administrative Sciences*, 1.18, 80-103.

Beder, Sharon. (1994). The Role of Technology in Sustainable Development, *Journal of Technology and Society*, 13.4, 14-19.

Berkel, Rene. (2011). Evaluation of the Global Implementation of the UNIDO-UNEP National Cleaner Production Centres (NCPC) Programme, *Clean Technologies and Environmental Policy*, 13.1, 161-175.

Besseba, Abdelkadir et al. (2018). Environmental Sustainability in Industrial Enterprise, *Journal of Economic Growth and Entrepreneurship*, 1.1, 29-42.

Boiral, Oliver and Jean, Marie. (1998). Environmental Management: Should Industry Adopt ISO 14000, *Buisness Horizon*, 41.1, 57-64.

Borcosi, Corina and Brancusi, Constantin. (2017). The Advantages of Implementation of Total Quality Management in Enterprises, Annals of the Constantin Brancusi, University of Targu Jiu, Romania, *Engineering Series*, 1, 56-59.

Boulhol, Hervé et al. (2008). The Contribution of Economic Geography to GDP per Capita, *OECD Journal of Economic Studies*, 1.1, 1-37.

Boumediene, Youssef. (2007). Total Quality Management and Distinguished Performance, *Researcher Journal*, 5. 5, 20-37.

Brochado, Ana. (2009). Comparing Alternative Instruments to Measure Service Quality in Higher Education, *Quality Assurance in Education*, 17.2, 174-190.

Caroll, Archie. (1991). The Pyramid of Corporate Social Responsibility: Toward the Moral Management of Organizational Stakeholders, *Business Horizons*, 34.4, 39-48.

Carrillat, Fran et al. (2007). The Validity of The SERVQUAL and SERVPERF Scales: A Meta-Analytic View of 17 Years of Research A cross Five Continents, *International Journal of Service Industry Management*, 18.5, 472-490.

Cavaness, Joseph and Manoochehri, G. (1993). Building quality into services, *SAM Advanced Management Journal*. 58.1, 4-8.

Chi Cui, Charles et al. (2003). Service Quality Measurement in the Banking Sector in South Korea, *International Journal of Bank Marketing*. 21.4, 37-45.

Chin, Kwai and Pun, Kit. (2002). A Proposed Framework for Implementing TQM in Chinese Organizations, *International Journal of Quality & Reliability Management*, 19.3, 272-294.

Ciegis, Remigijus and Ciegis, Raimondas. (2008). Laws of Thermodynamics and Sustainability of Economics, *Economics of Engineering Descisions*, 57.2, 15-22.

Cronin, J., and Taylor, S. (1992). Measuring Service Quality: A Reexamination and Extension Models. *International Journal of Quality and Reliability Management*. 11.9, 61-69.

Davis, Keith. (1973). The Case for and against Business Assumption of Responsibilities, *The Academy of Management Journal*, 16.2, 312:322.

Davies, J. (2008). Integration: Is it the Key to Effective Implementation of the (EFQM) Excellence Model? *International Journal of Quality & Reliability Management*, 25.4, 383 399.

Dempsey, Nicola, Bramley Glen Power, Sinead and Brown, Caroline. (2011). The Social Dimension of Sustainable Development: Defining Urban Social Sustainability, *Sustainable Development*, 19.5,289 – 300.

Dhanalakshmi, Rajini and Kanimozhi, S. (2013). Developing Service Quality Using Gap Model –Acrtitical Study, *IOSR Journal of Business and Management*, 1.1,46-51.

Doane, Deborah. (2005).The Myth of CSR. *Stanford Social innovation Review*, 1.1, 23-29.

Dong, Yan and Hauschild, Micheal. (2017).Indicators for Environmental Sustainability, *Procedia CIRP*, 61.1, 697-702

Dritsakis, Nikolaos et al. (2006). The Main Determinants of Economic Growth: An Empirical Investigation with Granger Causality Analysis for Greece, *European Research Studies*, 93.4, 47-58.

Dudin, Mihail et al. (2014). The Deming Cycle (PDCA) Concept as an Efficient Tool for Continuous Quality Improvement in the Agribusiness, *Asian Social Science*, 11.1, 239-246.

Duran Dan et al. (2015). The Objectives of Sustainable Development: Ways to Achieve Welfare, *Procedia Economic and Finance Journal*, 1.26, 812-818.

Elhuni, Redha, and Ahmad, Munir. (2014). A Framework for Successful TQM Implementation and Its Effect on the Organizational Sustainability Development, *International Journal of Industrial and Manufacturing Engineering*, 8.1, 130-138.

Erauskin Tolosa et al. (2019). ISO 14001, EMAS and environmental Performance: A Meta-analysis. *Business Strategy and the Environment*, 29.3, 1145-1159.

Ernult, Joel and Ashta, Arvind. (2007). Sustainable Development, Corporate Social Responsibility, Stakeholder Theory: Evolution and Perspectives; ESC Dijon Bourgogne Group, *Notebooks CEREN*, 1.21, 4-31

Fellaq, Mohamed. (2013). Social Responsibility of Arab Oil Companies, Algeria's Sonatrach and Saudi Aramco, *Al-Bahed Journal*, 12.12,29-38.

Fayhan, Aithar and Bayati, Suzan. (2008). Assessing the Level of the Implementation of ISO 41001 Environmental Management System Requirements, *Administration and Economic Journal*, 1.70, 109-150.

Figge, Frank et al. (2002). The Sustainability Balanced Scorecard – Linking Sustainability Management to Business Strategy, *Business Strategy and the Environment*, 11.5, 269-284.

Garouf, Salih and Rafig, Yousufi. (2020). Impact of the Application of Integrated Management System Quality, Environment and Health On Human Performance in Economic Institutions- Case study of Fertiel Annaba Corporation, *The new Economic Journal*, 11.2, 243-262.

Gavronski, Iuri et al. (2008). ISO 14001 Certification in Brazil: Motivations and Benefits, *Journal of Cleaner Production*, 16.1, 87-94.

Ghamdi, Jaman. (2009). Sustainable Development between the Right to Use Natural Resources and Responsibility to Protect the Environment, King Abdul-Aziz *Journal of Economic and Management*, 32.1, 177-226.

Goodland, Reber and Ledec, George. (1987). Neoclassical Economic and Principles of Sustainable Development, *Ecological Modelling*, 38.1, 19-46.

Grosskurth, Jasper and Rotmans, Jan. (2005). The Scene Model: Getting Grip on Sustainable Development in Policy Making. *Environment, Development and Sustainability*, 7.1, 135-151.

Grouf, Saleh and Rafiq, Yousufi. (2020). Impact of the Application of İntegrated Management System on Human Performance in Economic İnstitutions- Case Study of Fertiel Annaba Corporation, *New Economy Journal*, 11.1, 243-262.

Hansal, Saadeh, et al. (2020). ISO 9000 Quality Management System and Total Quality: Two Complementary or Contrasting Concepts, *Mina Journal for Economic Studies*, 3. 5, 31-44.

Hansen, E, and Schaltegger. (2016). The Sustainability Balanced Scorecard: A Systematic Review of Architectures, *Journal of Business Ethics*, 133.2, 193–221.

Hart, Stuart and Milstein, Mark. (2003). Creating Sustainable Value, *Academy of management Executive*, 7.2. 56-89.

Hashem, Hanan. (2011). The Reality and Requirements of Sustainable Development in Iraq: The Legacy of the Past and the Necessities of the Future, *Kufa Studies Center Journal*, 1.21, 241-286.

Haslinda, Abdullah and Chan Chin, Fuong. (2010). The Implementation of ISO 14001 Environmental Management, *Asian Social Science*, 6.3, 100-107.

Haythi, Nawzad Abdul Rahmant. (2002). Environment and Development in the GCC Countries - Achievement and Challenges, *Economic Horizons Journal*, Federation of Chambers of Commerce and Industry in the United Arab Emirates, 23/91, 127-145

Hegan, Abdul Rahman. (1994). A Scientific Approach to the Implementation of Total Quality Management, *Public Administration Journal*, 34.3, 405-440.

Henderson, David. (2005). The Role of Business in the Modern: Progress, Pressures, and Prospects for the Market Economy, *Journal of Corporate Citizenship*, 17.1, 1-13.

Hilali, Sherbiny and Ghabbour, Amani. (2013). Entrances to Excellence Management and the Requirements for Its Application at Mansoura University, *The Future of Arabic Education*, 20. 83, 11-142.

Hillary Ruth. (2004). Environmental Management Systems and the Smaller Enterprise, *Journal of Cleaner Production*, 12.6, 561-569.

Holmes, Sundra. (2017). Corporate Social: Performance and Present Areas of Commitment, *Academy of Management Journal*, 20.3, 420-443.

Hormuz, Noureddine. (2007). Growth, Employment and Poverty in Developing Countries, *Tchrian University Journal of Studies and Research*, 29.1, 1-27.

Ibrahim, Abdullah. (2010). The Role of Senior Management in the Application of Quality Management, *Al-Ghari Journal of Economic and Administrative Sciences*, 3.16, 229-258.

Idris, Thabet. (1996). Measuring Service Quality Using the Gap Scale between Perceptions and Expectations: A Systematic Study of Application to the Health Service of the State of Kuwait, *Arab Journal of Administrative Sciences*, 4.1, 9-41.

Imran, Muhammad et al. (2017). Total Quality Management, Export Market Orientation and Firm Export Performance: A Conceptual Framework, *International Journal of Academic Research in Business and Social Sciences*, 7. 9- 291-601.

Ismail, Maimunah. (2009). Corporate Social Responsibility and its Role in Community Development: an International Perspective, *Journal of International Social Research*, 2.9, 202-230.

Ismail, Omar. (2014). Comprehensive Environmental Quality Management and Its Impact on Cleaner Production Technology Practices: An Exploratory Study, *University of Mosul Journal*, 36.115, 280-291.

Ismail, Murad and Abddous, Abdel Aziz. (2017). Measuring the level of quality of mobile phone services using the (servperf) model, a case study of the Mobilis Corporation, *Al-Bashaer Economic Journal*, 3.1, 1-15

Iynes Jennifer and Andrachuk Mark. (2008). Motivations for corporate social and environmental responsibility: A case study of Scandinavian airlines, *Journal of international management*, 14. 4, 377-390.

Ivanauskienė Laima and Urbonavičius, Sigitas. (2003). Motivations and benefits of ISO system implementation in transportation-related companies: Marketing aspect of ISO, *Transport*, 18.6, 241-247.

Jamal, Dalal. (2011). Cleaner Production: The Cornerstone of the Environmental Economics System, *Environment Journal*, 1.127, 30-4

Jagadeesh, Rajashekharaiah, (2014). Quality Leaders: Learning From the Deming Prize Winners in India, *International Journal for Quality Research*, 8.3, 431-446.

Johnson, William and Anuchit, Sirikit. (2002). Service quality in Thai telecommunication industry: A tool for achieving a sustainable competitive advantage. *Management Decision*, 40.7, 693-701.

Jreisat, Jamil. (1992) .Organizational Management Exploration to Western Fronterier, *Management Research*, 1.2, 6-35.

Kadhim, Fathawi and Hussein, Ali. (2018). The Role Of Internal Auditing And Internal Control System On The Financial Performance Quality In Banking Sector, *Opcion*, 34.86, 3045-3056

Kaufmann, Malte and Şerban, Viorica. (2011). The new EFQM 2010 model for business excellence and its fundamental concepts in the economic crises, *The Romanian Economic Journal*, 14.40, 105-113.

Kim, Y. Jin., Eom, M., Ahn, J. H. (2005). Measuring service quality in the context of the service Quality-user satisfaction relationship. *Information Technology Theory and Application*, 7.2, 42-54.

Knutsson, Hans et al. (2012). Benchmarking impact through Municipal Benchmarking Networks, *Public Performance and Management Review*, 36.1, 102-123.

Krüger, Volker. (2001). Main Schools of TQM: The Big Five, *TQM Journal*, 13. 3,146-157.

Labella, Rocio et al. (2020). Motives, Barriers, and Expected Benefits of ISO 14001 in the Agri-Food Sector, *Sustainability Journal*, 12.2,1-19.

Lakhe, Renold and Mohanty, Robert. (1994). Total Quality Management Concepts, Evolution and acceptability in Developing Economies, *International Journal of Quality & Reliability Management*, 11.9, 9-33.

Lewis, Barbara et al. (1994). Service quality: Students assessment of banks and building societies, *The International Journal of Bank Marketing*, 2.4, 3-12.

Madsen, Dag and Steinhem, Tonny. (2015). The Balanced Scorecard: A Review of Five Research Areas, *American Journal of Management*, 15.2, 24-41.

Mahmoud, Ali and Khalifa, Bayan. (2015). A Confirmatory Factor Analysis for SERVPERF Instrument Based on A Sample of Students from Syrian Universities, *Education and Training*, 57 .3, 343 – 359.

Majid, Nizar and Sifa, Ali. (2018). Techniques for Continuous Improvement and Organizational Performance - Conceptual Framework and Applicable Indicators in Industrial Organizations, *Journal of Administrative and Economic Sciences*, 1.1, 10-47

Mamouni, Fatima. (2020). The reality of corporate social responsibility and the extent of its commitment to the international standard ISO 26000 in Algeria, *Journal of Labor and Employment Law*, 5.4,21-46.

Mariana, Vadastreanu et al. (2015). Quality, environment and health integrated Management Systems: A literature review, *Journal of Investment and Management*, 4.6, 348-356.

Markandya, Anil, Pearce, David. (2012). Natural environments and social rate of discount, *Project Appraisal*, 3.1, 2-12.

Mayouf, Hoda et al. (2018). The Impact of Total Quality Management on the Social Dimension of the Organization, *Journal of Economics and Law*, 1.1, 171-193.

Mazhouda, Malek. (2001). Performance between Efficiency and Effectiveness: Concept and Evaluation, *Journal of Human Sciences*, 1.1, 85-100.

Meligy, Osama, (2009). Corporate Responsibility and International Standard ISO 26000, *Journal of the Egyptian Center for Corporate Responsibility*, 1.1, 1-42.

Miller, Brain. (2008). New ways to achieve quality and improvement, *Quality Corner*, *modern steel construction*, 1.1, 1-20.

Minhajul, Islam. (2016). The Impact of Employees Empowerment on Employees Satisfaction and Serives Quality: Empirical Evidence from Financial Enterprises in Bangladesh, *Verslas Teorija ir Praktika*, 17.2, 178–189.

Moradzadeh,V. (2015). Foundation for Quality Management EFQM Model Feasibility Europen (EFQM) in Education Institutions, *Journal of Quality in Higher Education*, 2.1, 1-22.

Mounir, Nouri (2008). Development Media and its Role in Environmental Protection and Support for Sustainable Development, *Journal of Research and Scientific Studies*, 1.6, 1-23.

Mualla, Naji. (1998). Measuring the Quality of Banking Services Provided by Commercial Banks in Jordan, *Journal of Administrative Sciences*, 25.2, 350-367.

Mukhtar, Hussein. (2002). A Proposed Concept for the Implementation of Strategic Planning in the Egyptian University Education, *Journal of Education*, 1.6, 145-165.

Murphy, Kevin. (2012). The social pillar of sustainable development: a literature review and framework for policy analysis, *Sustainability: Science, Practice, and Policy*, 8.1, 15-29.

Nemec, Juraj et al. (2008). Introducing benchmarking in the Czech Republic and Slovakia: Processes, problems and lessons, *Public Management Review*, 10.5, 673-684.

Neyestani, Behnam. (2017). Principles and contributions of total quality management (TQM) Gurus on Business Quality Improvement, *Munich Personal RePEe Archive (MPRA)*, 1.1, 1-19.

Nguyen, Q.Anh- Hens. (2015). Environmental Performance of the Cement Industry in Vietnam. The Influence of ISO14001 Certification, *Journal of Cleaner Production*, 96:1, 362-378.

Nguyen, VI et Al. (2020). Practical Application of Plan–Do–Check–Act Cycle for Quality Improvement of Sustainable Packaging: A Case Study, *Applied Sciences*, 10.1, 1-15.

Naush, Sabah. (2002). The Arab World and the World Trade Organization, *Arab Future Journal*, Center for Arab Unity Studies 5.282, 113-143.

Omoogun, Ajayi et al. (2016). From environmental awareness to environmental responsibility: Towards a stewardship curriculum, *Journal of Educational Issues*, 2.2, 60-72.

Parasuraman, Zeithaml et al. (1985). A Conceptual model of service quality and its implications for future research, *Journal of Marketing*, 4.4, 41-50.

Patanjali, Mishra and Asha, Pandey. (2013). The Role of Leadership in Implementing Total Quality Management (TQM) in Higher Education: A Review, *European Academic Research*, I.8, 2149-2166.

Perumal, A., et al. (2012). Integration model of ISO 14001 with lean principles, *American Journal of Applied Sciences*, 9.12, 1974-1978, 1-6.

Petrič, A, and Gomišček, B. (2011). Upgrading of the Management Review on the Basis of the (EFQM) Excellence Model, *Organizacija*, 44.4, 109-119.

Porral, Calco et al. (2013). Perceived Quality in Higher Education: An Empirical Study, *Marketing Intelligence and Planning*, 31.8, 601-619.

Pun, Kit Fai. (2001). Cultural Influences on Total Quality Management Adoption in Chinese Enterprises. An Empirical Study, *Total Quality Management*, 12.3, 323-342.

Qahtani, Salem. (1993). Total Quality Management and the Possibility of Its Application in the Governmental Sector, *Journal of Public Administration*, 32.78, 07-39.

Rago, W. V. (1994), Adapting Total Quality Management (TQM) to Government: Another Point of View, *Public Administration Review*, 54.1, 61-64.

Reiner, Kollon. (1993). Ecological Approach to Sustainable Development, *Journal of Finance and Development*, 1.4, 1-22.

Reis, Colón. (1993). The Ecological Approach of Sustainable Development, *Journal of Economic and Development*, 2.4, 1-23.

Richard, Nsiah and Joseph, Ohene. (2013). The Impact of Internal Audit on Public Service Organisation. *SSRN Electronic Journal,* 2.1, 1-63.

Robbins, Franklin. (1979). The Business Managers Dilemma, Identifying Social Responsibility, *Journal of General Management*, 2.1, 127-153.

Saadi, Nawal. (2016). ISO 9000 Applications, and Total Quality Management between Integration and Difference, *Journal of Human and Social Sciences*, 1.23, 105-116.

Said, Fatima and Muash, Dany. (2017). Quality Systems Integration Strategies ISO 9000, 14000 and OHSAS 18000, with a case study of international economic companies, Journal of Law and Human Sciences, *Economic Studies*, 26.2, 278-294

Salah, Nasreen. (2016). Evaluating the quality of university services using the actual performance model (SERVPERF): a case study of the College of Education, Ain Shams University, *Journal of Scientific Research in Education*, 17.4, 55-100.

Saleh, Sattam. Jouani, Saad and Hadidi, Hisham. (2008). The role of value engineering concepts in balancing the two dimensions of quality and its assignment in order to improve the performance of companies, *Tikrit Journal of Administrative and Economic Sciences*, 4.10, 103-117.

Sarayra Leila and Assaf, Khaled. (2008). Total Quality Management in Institutions of Higher Education between Theory and Practice, *Arab Journal for Quality Assurance in Higher Education*, 1.1, 1-46.

Sardinha, Dias et al. (2007). Developing Sustainability Balanced Scorecards for Environmental Services: A Study of Three Large Portuguese Companies, *Environmental Quality Management* 1.4, 13-34.

Sarran, Raad. (2004). Developing the Gap Model in Measuring the Quality of Banking Services to the Global Level, A Theoretical Study, *Journal of Human Sciences*, 4.6, 9-30.

Sayegh, Youssef. (1990). The Future of Arab Development and the Role of the Public and Private Sectors in It, *The Arab Future Journal*, 12.142, 101-117.

Seid, Sanaa and Bawi, Nasser. (2010). Strategic Role of Comprehensive Social Responsibility in Achieving Sustainable Competitive Advantage: A Case Study in the Southern Fertilizer Industry General Company, *Journal of Administration and Economics*, 1. 83, 203-248.

Selkhine, Ahmed and Djillali, Bouzkri. (2020). Obstacles to the adoption of environmental management ISO 14001 by economic institutions: a field study on the active institutions in the industrial zone of Ainwasarah, *Studies and Research*, 12.4, 91-105.

Siva, Vanajah, et al. (2016). The Support of Quality Management to sustainable management: Aliterature Review, *Journal of Cleaner Production*, 1.2, 6-7,

Shoutry, Amel. (2008). Good Governance: Another Face of Globalization, *Journal of Economic Management and Commercial Sciences*, 1.1, 1-17.

Shutrawy, Amal. Mahadi, Othman and Baghraish, Saeed. (2020). The integrated use of ISO 14001 in the economic organization, as an approach to achieve sustainable development: experiences of some organizations implementing ISO 14001, *Economic Notebooks Journal*, 11.2, 149-161.

Stringham, Shand. (2004). Does Quality Management Work in the Public Sector?, *Public Administration and Management Journal*, 9.3, 182-201.

Sultan, Parves and Wong, Ho. (2010). Performance-based service quality model: An empirical study on Japanese universities, *Quality Assurance in Education: An International Perspective*, 18.2, 126-143.

Suror, Manal and Mohammed, Shaima. (2021). Integration between cleaner production costs and quality costs to improve product quality, *Al-Muthanna Journal of Administrative and Economic Sciences*, 10.4, 234-246.

Tarí, Juan et al. (2013). Benefits of the ISO 9001 and ISO 14001 standards: A literature review, *Journal of Industrial Engineering and Management*, 5.2, 297-322.

Tavana, Madjid, Mohebbi, Barbara and Kennedy, Dennis T. (2003). Total Quality İndex: A Benchmarking Tool for Total Quality Management. *Benchmarking: An International Journal*, 10. 6, 507-527.

Teas, Kenneth (1993). Expectations, Performance Evaluation and Consumers Perceptions of Quality. *Journal of Marketing*, 57.4, 18-34.

Temri, Leila. (2011). Environmental technological Innovation in Small Businesses: Proposal for An Analysis Model, *Innovations Review*, 1.34, 11-36.

Todorut, Amalia. (2012). Sustainable Development of Organizations through Total Quality Management, *Social and Behavioral Sciences*, 62.1, 927-931.

Trivellas, Panagiotis and Santouridis, Ilias. (2009) .TQM and Innovation Performance in Manufacturing SMEs: The Mediating Effect of Job Satisfaction, *IEET Engineering Management*, 1.1, 663-684.

Ugboro, I and Obeng,K. (2000). Top Management Leadership, Employee Empowerment, Job Satisfaction, and Customer Satisfaction in RQM Organizations and Customer Satisfaction in TQM Organizations: An Empirical Study, *Journal of Quality Management*, 1.5, 247-272.

Ukwuoma, Akpan and Omere, Amade. (2014). Total Quality Management for Sustainable Development: A Case of the Nigerian Environment, *International Journal of Management Sciences and Business Research*, 3.5, 1-17.

Urban, Woods. (2009). Service Quality Gabs and Their Role in Service Enterprises Development, *Baltic Journal on Sustainability*, 15.4, 631-645.

Wan Jan and Wan, Saiful. (2006). Defining Corporate Social Responsibility, *Journal of Public Affairs*, 6.4, 176-184.

Yahyaoui, Elham. (2010). The Role of Quality in Improving the Performance of Industrial Institutions, *Economic Sciences Journal*, 1.9, 99-120.

Yong, Josephine and Wilkinson, Adrian. (2001). In search of Quality: The Quality Management Experience in Singapore, *International Journal of Quality & Reliability Management*, 18.8, 1-25.

Youssef, Boumediene. (2007). Total Quality Management and Distinguished Performance, *Researcher Journal*, 1.5, 20-37.

Vloeberghs, D, and Bellens, J. (1996). Implementing the ISO Standards, *Quality Progress Journal*, 29. 6, 8-43.

Zainura, Noor. (2012). Introduction to cleaner production, University of Technology *Malaysia Journal*, 1.1, 1-170.

Zairi, Idris and Ashari, M. (2006).Achieving Sustainable Performance through TQM and Market Orientation: A Proposed Framework for Empirical Investigations, *International Journal of Applied Strategic Management*, 2.2, 1-32

Zermann, Karim. (2010). Sustainable Development, *Journal of Economic and Administrative Research*, 1.7, 180-189.

Zhonghua, Cai and Song, Yu. (2011). Environmental Protection Investment and Sustainable Development-Policy Simulation Based on Nonlinear Dynamics, *Elsevier, Energy Procedia*, 5.1, 467-471.

Zhou, Lianxi. (2004). A Dimension Specific Analysis of Performance-only Measurement of Service Quality and Satisfaction in China's Retail Banking. *The Journal of Services Marketing*. 18.7, 543-546.

Ziada, Zaki. (2011). The Impact of Applying the Concept of Total Quality Management on Organizational Performance, *An-Najah University Journal for Research*, 25.4, 1-54.

Other Publications

Abbas, Amin. (2017). The International Standards Applied by Economic Institutions to Achieve Sustainable Development, The National Forum on the Problem of Sustainability of Small and Medium Enterprises in Algeria, Organized on 6/7 December, Algeria: University of Martyr Hamma Lakhdar El Wadi.

Abbas, Shamia. (2015). The Application of Total Quality Management in Organizations and Its Implications for Sustainable Development - A Case Study of Algeria, Master Thesis, Abdelhamid Mehri University.

Abboud, Ahmed. (2003). Total Quality Management: An Integrated Approach to the Development of Performance in the Local Departments of the Government of Dubai, Ph.D Theis, and Ain Shams University.

Abdelal, Zaki. (2010). Quality Management and its Role in Building Companies, Ph.D Thesis, Virtual International University in the United Kingdom.

Abdel Rahim Mohamed. (2007). Human Development and the Ingredients for Achieving Sustainable Development, The Sixth Arab Conference on Environmental Management Human Development and its Implications for Sustainable Development ,27-31 May., Sharm El Sheikh, Arab Organization of Administrative Sciences.

Abdelsamad, Najwi and Batabis, Magdi. (2005). Environmental Management of Industrial Establishments as a Modern Entrance to Competitive Excellence, International Scientific Conference on the Distinguished Performance of Governmental Organizations, March 8-9, 2005, University of Wargla.

Abdulrahman, Ayeb. (2011). Controlling the overall performance of the economic institution in Algeria in light of the challenges of sustainable development. PhD Thesis, Farhat Abbas University.

Abdul Razzaq, Adel. (2005). Environmental Management System and Standards ISO 14001 and its Applications in the Arab World, Intervention in a Seminar on the Role of Legislation and Laws in the Protection of the Arab Environment, Sharjah, Publications of the Arab Organization for Administrative Development.

Adikhari Bisha. (2011). Integration of ISO9001 and ISO14001, A study of elements, Master Thesis University of Wisconsin.

AFNOR Group. (2008). Sustainable Development and Companies: A Challenge for Managers, Paris: French Standardization Association.

Aichawi, Ahmed. (2008). Total Quality Management of TQM in the Hotel Establishments in Algeria, PhD Thesis. Faculty of Economics, University of Algeria.

Ajabi, Ilyas. (2009). The Effectiveness of Sustainable Development as an Alternative Model for Other Economic Models, The International Forum on: The Performance and Effectiveness of the Organization in the Context of Sustainable Development, November 10 and 11, University of Messila, Algeria.

Aleid, Khatim. (2009).Total Quality Management and Enterprise Strategy. Masters thesis, Mohammed Boudiaf University.

Alsaid, Saleh and Abbas and Shamia. (2018). Implementation of Total Environmental Quality Management in accordance with ISO 14001 in the Economic Institution to Improve Its Environmental Performance and Competitiveness, A Case Study of the Cement Corporation of Ain Tota, Batna State, Journal of Business and Trade Economics, 6.1, 251-271.

Anati, Radwan. (2008). Building a Model to Measure and Evaluate the Performance of Jordanian Contracting Companies Using the Balanced Score Card, Ph.D. Thesis, Amman Arab University for Graduate Studies.

Ani, Haris. (2005). The Role of Accounting Information in Measuring and Evaluating the Social Performance of Industrial Enterprises, The Fourth Scientific Conference on Entrepreneurship and Innovation, March 15-16, Philadelphia University.

ARADO, Arab Organization for Administrative Development. (2007). Sustainable Development and Community Management: The Future Roles of Central and Local Governments, the Private Sector and Civil Society, Working Papers of the Fourth Arab Conference on Environmental Management, Manama, Bahrain, Published by Arab Organization for Management Development Publications, Cairo.

Attarca, Mourad and Thierry, Jacquot. (2005). Representation of corporate social responsibility: a confrontation between theoretical approaches and managerial visions, 14th international conference on International strategic management Program, Angers: Pays de la Loire, AIMS Publications.

Atarji Majeed. (2002). Requirements for establishing a benchmarking program: an applied study in the nationalization and gas companies for the production of construction material. Master Thesis, University of Mosul. Atargji

Attar, Muhammad and Rahman, Anisur, (2009). Implementation of TQM in Manufacturing Industries in the Kingdom of Saudi Arabia, 22nd International Congress on Condition Monitoring and Diagnostic Engineering Management.

Aziz, Fawzi. (2000). The Role of the State in the Light of Contemporary International Changes, With Reference to Egypt, Master Thesis, Ain Shams University.

Baldrige National Quality Program. (2010). Criteria for Performance Excellence, Competitiveness: Performance Excellence and Innovation. United Kingdom: The National Institute of Standards and Technology.

Bashioh, Abdullah and Albarwari, Nizar. (2007). Contemporary educational management models between total quality requirements and global transfers, a comparative study, A research paper presented to the symposium on Arab University Education Strategy and challenges of the 21st Century, and the Workshop on Developing the Roles of Faculties Deans as Administrative Leaders, October 21-25, Manama.

Baumgartner Julia. (2014). Benefits of Employee Empowerment for Service Quality and Job Satisfaction in the Hospitality Industry, Master Thesis, Modulo Vienna University.

Bellini, Béatrice, and Parry, Marianne. (2010). Integrated Management System: Towards a Baseline for Evaluating Practices, the 10th Meeting on Business Foresight: What Management Tomorrow?. France: Higher School of Economic and Commercial Sciences ESSEC.

Bieker, Thomas et al. (2001). Management of Entrepreneurial Sustainability with a Sustainability Balanced Scorecard: Research Methodical Basics and First Concepts, IWOe Discussion Article 94, Germany: Institute for Economics and Ecology at the University of St.Gallen.

Boiral, Olivier. (2007). From ISO 14001 Certification to Improving Environmental Performance, 17th AIMS conference, June 6-8, Montreal.

Bolboli, S., & Reiche, M. (2014). Culture-based Design and Implementation of Business Excellence. The TQM Journal, 26.4, 329-347.

Boukhrouba, El-Ghali and Mousa, Hijab. (2019). Social responsibility and its role in achieving sustainable development, National Forum on Social Responsibility and Opportunities for Achieving Sustainable Development, April 9 - 10, Muhammed Bugarrah Bumerdas University, Algeria.

Bouzid, Sayeh. (2010). The Role of Good Governance in Achieving Sustainable Development in the Arab Countries: Case Study of Algeria, Economics, Development Economics, Ph.D., University of Abu Bakr Belkaid, Tlemcen.

Brodhag, Christain. (2004). Sustainable Development - Corporate Social Responsibility, International Congress with Exhibition of Innovations Sustainable Management in Action, Switzerland: University of Geneva.

Brunelle, Eric. (2005). The development of an integrated management system: quality and environment, Master Thesis, University of Sherbrook.

BSI. (1999). The SIGMA Guide Lines: Putting Sustainable Development into Practice: A Guide for Organizations, Sigma Project. Crossroads Global Hand, United Kingdom: British Standardization Institute.

Buzian, Hajer and Sanusi, Zoulikha. (2008). The Environmental Dimension of a Sustainable Development Strategy, Intervention within the International Scientific Conference on Sustainable Development and Efficiency of Use of Available Resources, April 7-8, University of Setif.

Carpon, Michel and Françoise, Quairel. (2003). Societal reporting: Limits and Challenges of the International Standardization Proposal, Global Reporting International Congress, French-Speaking Accounting Association, Louvain Neuve, France

Chater, Youness et al. (2011). A Methodology for integrating Quality, Safety and Environment concepts in maintenance, 7th international conference: Integrated Design and Production Morroco: Oujda National School of Applied Science.

Chikuku, Tauyanashe et al. (2011). The Role of Green Manufacturing/Cleaner Production in Obtaining ISO 14001 Certification for Tobacco Processing Companies in Zimbabwe". Proceedings of the ISEM Conference, Stellenbosch, South Africa, International Society for Ecological Modeling, September 21-23.

Cabinet, Paul. (1999). The Economic Impact and Environmental Efficiency of ISO14000 Certification for Industrial Companies, Economy Department, France: French Agency for Environmental and Energy Management. ADEME Publications.

Coelho Mashado, (2005). Sustainability for performance education, Ph.D Thesis, Central University of Queensland.

Cohen, Steven and Eimicke, William. (1996). Understanding and Applying Innovation Strategies in the Public Sector, The 57thAnnual National Conference of the American Society for Public Administration, (Columbia University, Atlanta Georgia, June 29-July 3.

Dalisa, Giacomo. (2007). Dimensions of Sustainable Development: A Proposal of Systematization of Sustainable Approaches, Department of Economics, Mathematics and Statistics, Italy: University of Foggia.

Dokki, Ayman. (2006). The Reality of Total Quality Management in the Ministries of the Palestinian National Authority in the Gaza Strip, Master Thesis, The Islamic University.

Dontenwill, Emmanuelle. (2004). How can stakeholder theory make it possible to operationalize the concept of sustainable development for companies? ESDES conference on the challenges of responsible management, ESDES Business School, Lyon, France.

Dulaimi, Raghad. (2001). Total Environmental Quality Management Using the International Standard ISO 14000, A Case Study of Iraqi Central Refineries, PhD Thesis, University of Baghdad.

Economic Commission of Africa. (2001). Clarify and use of applicable indicators in relation to food security and sustainable development, 16th Meeting of the Intergovernmental Committee of Experts, Tangier, Morocco, Regional Development Center for North Africa 19-23.

Errabou, Abulgasim. (2013).Total Quality Management as A Mechanism to Enhance Quality in Higher Education in Libya, PhD Thesis, Coventry University.

ESCWA. (2001). Economic and social commission for western Asia, Application of sustainable development indicators in the ESCWA member countries –Analysis of results, New York: United Nations Publications.

Fakeir, Faisal. (2018). The Impact of Implementing the Integrated Management System on Improving the Overall Performance in the Economic Institution, Field Study, PhD Thesis, Al-Blida University.

Freidman, Milton. (1970). The Social Responsibility of Business is to Increase its Profits, The New York Times Magazine, The New York Times Company, September 13, Section SM.

Green, J P. (2007). Determining the reliability and validity of service quality scores in a public library context: A confirmatory approach, Ph.D Thesis, Capella University.

Haiba, Abd Allah. (2014). Occupational Health and Safety Management System 18001 and Social Accountability, Third National Forum on Human Resources Management, February 10-11, University of Mohamed Khair, Biskra.

Hamid, Mazen. (2004). The Impact of Health Human Resources Development on Achieving Total Quality: An Analytical and Applied Field Study on Private Jordanian Hospitals during the Period from 1995 to 2003, PhD Thesis, Sudan University of Science and Technology.

Hamza, Nabila, Sustainable Human Development and the Role of Governmental Organizations, The Case of Arab Countries, 1999, Human Development Studies Series, (New York: United Nations Publications, 1999; No. 12, 1-79).

Hanson, Jonas. (2003). Total quality management-aspects of implementation and performance, investigation with a focus on small organizations, Ph.D Thesis, lulea University of Technology.

Hansen, Ivar, et al. (2000). Cleaner Production Assessment in Meat Processing. UNEP DTIE, DEPA, COWI Consulting Engineers and Planners AS, Denmark. United Nations Environment Programme. Department of Technology, Industry and Economics and Danish Environmental Protection Agency, New York: United Nations Publications.

Harbi, Mohammed. (2008). Requirements for the Implementation of Total Quality Management in Higher Education, Master Thesis, King Saud University.

Harries, Jonathan. (2000). Basic Principles of Sustainable Development, Master Thesis, Tufts University.

Hassan, M. (2002). Arab organization's guide for the implementation of quality management systems: international standards ISO 9001:2000, Cairo: Arab organization for management and development publications.

Henni, Saïda. (2004). Poverty of capacity and sustainable development in Algeria, The 4th International Conference on the Capability Approach, Enhancing Human security, 4-7 September, University of Pavia, Italy.

Hillali, Walid. (2009). General Foundations for Building Competitive Advantages and Their Role in Creating Value, Case Study of the Algerian Mobile Phone Company Mobilis, Master Thesis, University of Al-Messila.

Hussein, Rahim and Rashid, Manasreih. (2008). ISO specifications as a standard for measuring the efficiency of the use of economic and environmental resources in an economic institution: an intervention within the International Conference on Sustainable Development and the Efficiency of the Use of Available Resources, 7-8 April, Setif University, Algeria.

Hussein, Rahim and Rasheed, Manasreih. (2011). The impact of the application of total quality management and environmental management systems ISO 14000 on improving the environmental performance of economic institutions, the Second International Forum on the Outstanding Performance of Organizations and Governments, November 22-23, Kasdri Merbah University.

Hopkins, Michael. (2004). Corporate Social Responsibility: An Issues Paper. Working Paper No 27, Policy Integration Department, World Commission on the Social Dimension of Globalization, the International Labour Office, Geneva: International Labour Organization Publications.

Hydro-Québec. (2010). Sustainable Development: Highlights, Sustainable development Report, Canada: Hydro-Québec Company.

Idris Wael and Nisour,Jasser. (2005). Strategic Direction and Organizational Performance: An Analytical Study, Intervention within the Fifth Annual International Scientific Conference on: Knowledge Economy and Economic Development, April 25-27, Al-Zaytoonah University, Jordon.

Idrisi, Ali. (2018). The role of total quality management in promoting sustainable development for the environment of Yemeni educational organizations, Master Thesis, Al-Andalus University of Science and Technology, Yemen.

International Trade Commission. (2003). For the company to be the engine of sustainable development, Report adopted by the General Assembly on March 13, After Opinion of the Labor and Social Affairs Committee, Paris: Chamber of Commerce and Industry.

Issawi, Wahiba. (2012). The Impact of Organizational Culture on Job Satisfaction, Study of the Case of Paramedic Persons in the General Hospitaling Institution of Trabi Bjamma Bachar ,Master Thesis, Abu Bakr Belkaid University.

ISO. (2004). Observatory of Corporate Social Responsibility, Sustainable Development: A Challenge for Managers, Canada: International Organization of Standardization Publications.

ISO. (2014). GRI G4 Guidelines and ISO 26000:2010: How to use the GRI G4 Guidelines and ISO 26000 in conjunction, Geneva, International Standardization Organization and Global Reporting Initatives GRI Publications.

Jadi, Sherifa and Attia, Arabi. (2013). The Social Responsibility of Economic Institutions in the Light of Corporate Governance, The International Scientific Forum on: Mechanisms of Corporate Governance and the Requirements for Achieving Sustainable Development (College of Economic, Business and Management Sciences, Ouargla: Qasidi Merbah University, November 25- 26).

Jubouri, Salih. (2004). The Strategic Financial Performance of Banking Institutions: An Empirical Comparison Study between governmental and private banks for the years 1997 and 2001, Master Thesis, Al-Qadisiyah University.

Kawamura, Masahiko. (2005). The Evolution of corporate Social Responsibility in Japan (Part 2): How CSRS wells Have Impacted corporate Values, Social Development Research Group, Japan: NLI Research Institute Publication.

Khaldi, Hawas. (2018). Social Responsibility and its Impact on Employment Exploitation for Primary School Principals, PhD Thesis, University of Muhammad Boudiaf .

Khalil, Atallah. (2008). The Role of Process Engineering in Supporting Cost Reduction Decisions in Light of the Philosophy of Change Management, The Eighth Annual International Scientific Conference on Change Management and the Knowledge Society, April 21-24, Al-Zaytoonah University, Jordan.

Khamra, Tahir, (2007). Environmental and Social Responsibility: An Introduction to the Contribution of the Economic Policy to the Achievement of Sustainable Development - Case Study: The Case of Sonatrach, Master Thesis, University of Qasdi.

Khan, Mohammed. (1995). Concepts, definitions, and key issues in sustainable development: the outlook for the future, Proceedings of the International Sustainable Development Research Conference, Manchester, England, March 27/28: Keynote Paper.

Khasheida, Habiba. (2005). Customer Satisfaction Strategies, Master Thesis, Saad Dahlab University

Kiatkulthorn, Kulrada and Sundstedt, Fei. (2016). The effect of ISO 14001 implementation on SME innovation improvement and performance, A case study of FEAL AB, Master Thesis, University of Gävle.

Labaronne, Daniel and Emna, Oueslati. (2008). Comparative analysis of the institutional framework of CSR in Morocco and Tunisia, Conference on the Millennium Development Goals, Progress and Perspectives: the case of Maghreb countries, Tunisia, June 18 - 20, UN Publications.

Lebeer, Chris. (2007). Cleaner production excellence model, EFQM, Sustainable Business Association, in collaboration with University of Applied Sciences Northwestern reports, Switzerland.

Magawrah, Fathia and Saliha, Hafifi. (2010). Environmental performance as a competitive strategy for industrial enterprises: A case study of the cement and its derivatives enterprise in Chlef. Algeria, The Fourth International Forum: Competition and Competitive Strategies for the Industrial Establishment Outside the Hydrocarbons Sector in the Arab Countries, 8/9 November, Hassiba Ben Bouali University, Chlef.

Mahjoub, Basman. (2005). Reinventing the University: A Prospective Introduction, Working Paper to the 1st Conference on Higher Education Future Foresight, Sharm El-Sheikh, April 17-21,The League of Arab States, Arab Organization for Administrative Development.

Manasir, Ali. (1994). Total Quality Management: A Field Study on the Jordanian Electricity Authority, Master Thesis, University of Jordan.

Mazreig, Achour and Nafla, Kaddour. (2011). Sustainable development in the industrial milieu between mandatory environmental legislation and institutional commitment, The First National Forum on: Prospects for Sustainable Development in Algeria and the Environmental Qualification Requirements for the Economic Corporation, November 22-23, Guelma University, Algeria.

MEDEF. (2003). Movement of French companies, Sustainable Development and SMEs, Booklet Drawn up within the Framework of the Sustainable Development Committee, Paris, MEDEF Editions.

MEDEF. (2006). Movement of French Enterprises, Vadémécum Enterprises and Sustainable Development: Follow the Guide, Paris: Movement of French Enterprises.

Mishnan, Baraka. (2016). The Role of Organizational Culture in the Application of Total Quality Management in Higher Education Institutions, Ph.D Thesis, Lakhdar University.

Mounir Nuri and Abraham, Jalat. (2012). The reality and prospects of Toyota's direction towards producing environmentally friendly products. A Paper Presented to the Third International Forum on Business Organizations and Social Responsibility, February 14-15, Bashar University.

Mounir, Nouri. (2006). Analysis of the Human Dimensions of Sustainable Development, The National Conference on Environment and Sustainable Development, Algeria: University Center of Media, 6/7 June.

Mounjid, Mohsen. (2013). The Role of Latin American Regional Mergers in Achieving Development: Mercosur as a Model, PhD Thesis, Agdal University.

Moussa, Basheer. (2010). The Role of Implementing Total Quality Management in Raising Administrative Efficiency in Service Institutions, A Case Study of the Sudanese Customs Authority, Master Thesis, Sudan University of Science and Technology.

Mrani, Ghizlane. (2009). Research contribution: societal marketing and sustainable development, How to translate the societal commitment of the company into its marketing? How to implement sustainable marketing and communication? ESC group, Toulouse Business School.

MSSD. (2005). Mediterranean Strategy for Sustainable development: A Framework for Environmental Sustainability and Shared Prosperity as Approved by the Mediterranean Commission on Sustainable Development, Athens, Greece.

Mughrabel, Nihal and Fouad, Yasmin. (2008). The Social Responsibility of Capital in Egypt: Some International Experiences, Egyptian Center for Economic Studies, Working Paper No. 138.

Muhammad, Abdul Karim. (2012). The Impact of Implementing Total Quality Management on Improving the Efficiency of External Audit Performance, A Field Study on Accounting and Auditing Companies and Offices in the Republic of Yemen, Ph.D Thesis, Sudan University of Science and Technology.

Mugata, Hamza. (2011). The Role of Integrated Sustainable Development in Improving the Overall Performance of the Industrial Establishment, A Comparative Study of Two Institutions, Master Thesis, Farhat Abbas University.

Musa, Ahmad. (2006). The Impact of Implementing Total Quality Management on the Performance of Organizations in the Business Sector in Sudan, Study of the Bunyan Company Model from 1995-2004, Ph.D. Thesis, Sudan University of Science and Technology.

Naseib, Arafa. (2006). The effect of implementing quality management systems on raising production efficiency in Sudanese industrial establishments, Ph.D Thesis, Sudan University of Science and Technology.

Nazer, Rola. (2004). Extent of Implementation of Total Quality Management in Governmental Agencies in Jordan, Master Thesis, University of Jordan.

Nguyen, Leon. (2006). Improving performance it and TQM in Vietnamese Organizations, Ph.D Thesis, University of Fribourg Switzerland.

Norton, David. (2004). Measuring value creation with the balanced scorecard, Balanced Scorecard Report: USA: Harvard Business School Publishing, Value Engineering Inc.

Notat, Nicole. (2007). Economy Performance: At What Price, 6th Interviews of Valpré, Valpré Lyon Congress and Seminars Center, Lyon Press, October 15.

OECD. (2012). Economic Policy Reform, Reducing Income Inequality while Boosting Economic Growth, 2012. Part 2, Organization for Economic Co-operation and Development.

Ogit, Noureddine. (2013). Reflections of Management Engineering on the Competitiveness of the Enterprise, Master Thesis, University of Akli Mohand.

Ong, Djajadikerta. (2017). Impact of Corporate Governance on Sustainability Reporting: Empirical Study in the Australian Resources Industry, Master Thesis, Edith Cowan University.

Otaibi, Saad and Hamal, Rashid. (2004). Re-engineering of administrative processes (engineering) in the public sector: Critical success factors, First National Conference on Quality, May 15-17, Riyadh, King Saud University.

Othman, Hassan. (2008). The Role of Environmental Management in Improving the Environmental Performance of the Economic Corporation, International Conference on Sustainable Development and Efficiency Usage of Available Resources, April 7-8, University of Setif,

Perroud, Virginie. (2006). Sustainable Urban Development and Local Agenda 21: Analysis of the Timber Industry in Lausanne, Master Thesis, University of Lausanne.

Qasim, Ismail. (2009). Improving Service Quality in Palestinian Universities through Re-engineering Administrative Processes, Master Thesis, Islamic University.

Qudmani, Nazah. (1993). The role of Total quality management in developing business enterprises, research presented to the Sixth Conference on Management Training and Development on total quality management, Arab Experts in Engineering and Management, April 19-21, Cairo, Arab Center for Administrative Development.

Raddad, Abdel Rahman. (2009). Environmental indicators as part of sustainable development indicators, Arab Institute for Training and Statistical Research, Libya: Public Information Authority, The Second Arab Statistical Conference, No Development Without Statistics, 2-4 November.

Rashi, Tariq. (2011). The Integrated Use of International Standards (ISO) in the Economic Establishment to Achieve Sustainable Development, A Case Study of Phosphate Mines Company of Tebessa, Master Thesis, Farhat Abbas University.

Rashid, Aljalahma. (2012). Impact of Organization Culture on TQM Implementation barriers, Ph.D Thesis, Brunel University.

Raslan, Khaddour. (2011). Social Responsibility for the Business Sector, Tuesday Economic Seminar on Economic and Social Development in Syria, April 26, Damascus

Reynaud, Emmanuelle. (2003). Sustainable Development and Business: Towards A Symbiotic Relationship, AIMS Day, Sustainable Development Workshop, ESSCA, Angers.

Rice, Wafaa. (2011). The role of organizational education in improving the competitive performance of business organizations, an intervention to an international forum on intellectual capital in Arab business organizations in modern economies, Algeria, University of Chlef.

Rondinelli, Dennis. (2008). Can Public Enterprises Contribute to Development? A Critical Assessment and Alternatives for Management Improvement, Expert Group Meeting on Re-inventing Public Enterprise and their Management, Public Enterprises: Unresolved Challenges and New Opportunities, New York, United Nation's Publications, October 27-28.

Rifai, Kadouri. (2006). Sustainable development with a special focus on environmental management, The Fifth Arab Conference on Environmental Management, Economic Perspective of Sustainable Development, Foreign Trade and its Effect in Sustainable Development, Tunis, Arab Organization of Administrative Development, September 25-26.

Sadovska V. (2018). Sustainable Value Creation in the Agricultural Sector. A Literature Review, 5th International Conference of Agricultural Economists, (Vancouver, International Association of Agricultural Economists, July 28-Agust 2).

Sahamoud, Ihab. (2013). The Reality of Excellence at Al-Aqsa University, and Ways to Develop it in Light of the European Model of Excellence, Master Thesis, Al-Aqsa University.

Salami, Ali. (2003). Contemporary Management Concepts, Higher Management Forum, October 18, Riyadh, Chamber of Commerce, and Industry.

Saudi, Ehab. (2008). Comparing the Most Important Models of Excellence, Research Paper of the Ninth Annual Conference, Towards a System for Arab Administrative Excellence, April 9-11, Cataract Resort, Al Haram, Egypt.

Schwable, Robert. (1993). Total Quality Management: Statistics and Graphics Experimental Design and Taguchi Methods. Paper Presented at the Third Annual Forum of the Association for Institutional Research, Chicago, IL, May 16-19.

Shagawi, Abdul Rahman. (2002). Towards a better performance in the government sector in the Kingdom of Saudi Arabia, a seminar on the future vision of the Saudi economy until 1440 AH, the axis of partnership between the public and private sectors, Ministry of Planning, Saudi Arabia.

Sherif, Buka and Abdel-Rahman, El-Ayeb. (2008). Sustainable Development and the Challenges before Economic Institutions, with Reference to the Current Situation in Algeria, Interventions presented at the International Conference on Sustainable Development and Efficiency in the Use of Available Resources, University of Setif, Algeria.

Shelly, Elham. (2014). The role of the total quality strategy in achieving sustainable development in the economic institution - a field study in the port institution of Skikda, Master Thesis, Farhat Abbas University.

Stamou T. (2003). Integrated Management System in Small Medium Sized Enterprises: Theory and Practice, Master Thesis, University of East Anglia.

Suzuki, Kenji and Tanimoto, Kanji. (2005). Corporate Social Responsibility in Japan: Analyzing the Participating Companies in Global Reporting Initiative, EIJS Working Paper, Stockholm School of Economics, The European Institute of Japanese Studies.

Tamimi,Raad. (2006). Globalization and Sustainable Human Development in the Arab World, PhD Thesis, Nahrain University.

Tamimi, Hashem. (2002). Social Control and its Role in Evaluating the Performance of Economic Units, A Field Study in the Office of Financial Supervision, Ph.D Thesis, Al-Mustansiriya University.

Thunis, Xavier. (2004). Sustainable Development: Second Nature, Series of Conferences Organized by the Saint Louis University Faculties of Brussels in Partnership with the Foundation for Future Generations, USA, Saint Louis University.

UNDP. (1990). Concept and Measurement of Human Development, United Nations Development Program, Human Development Report. New York: Oxford, Oxford University Press.

United Nations. (1989). Action for the Environment - The role of the United Nations, United Nations Environmental Program (UNEP), New York, United Nations Publications.

United Nations. (1992). The United Nations Conference on Environment and Development, Rio Declaration on Environment and Development, Rio De Caniro, United Nations Publications.

United Nations. (1997). Governance for Sustainable Human Development, New York: United Nations Development Program Publications

United Nations. (2001). Indicators of Sustainable Development Framework and Methodologies, New York: UN Commission on Sustainable Development.

United Nations. (2007). Indicators of Sustainable Development: Guidelines and Methodologies, United Nations Department of Economic and Social Affairs, New York: United Nations Publications.

United Nations. (2008). United Nations Environmental Program, An Overview of our Changing Environment, New York: Publications of the United Nations Environment Program's Yearbook.

United Nations. (2013). An Action Agenda for Sustainable Development, Report for the UN Secretary General, Sustainable Development Solution Network, A global Initiative for the United Nations.

Wahiba, Mugaddam. (2014). The Extent of the Response of Business Organizations in Algeria to Social Responsibility, Ph.Thesis, Oran University.

Weil, Mathieu and Pascal, Robert. (2007). Foundations of Quality, International Seminar: Quality in Research and Higher Education, Hassan II Institute of Agriculture and Veterinary (IAV), Rabat, Morocco

WCED, (World Commission on Environment and Development). (1987). Our Common Future, 1st edition, Oxford; New York: Oxford University Press Eagleton.

World Bank. (1995). Expanding the Measure of Wealth: Indicators of Environmentally Sustainable Development, Environmentally Sustainable Development Studies and Monographs, ESSD Environmentally and Socially Sustainable Development Report, Washington, D.C: World Bank Group, series; no. 17.

Yahdiah, Smalley. (2003). Total Quality Management as an Input to Develop the Competitive Advantage in the Economic Institution, Intervention in the First National Forum on the Economic Institution and the Challenges of the New Economic Climate, Algeria, University of Ouargla, April 22/23.

Yakhoush, Madiha and Geneina, Omar. (2010). Social responsibility of the economic institution in the framework of sustainable development, First National Forum on prospects for sustainable development and the requirements of environmental rehabilitation and economic institution, Algeria, University of Ouargla, November 22/23.

Zaid, Sayed. (2013). The Role of Good Governance in Achieving Sustainable Development in Arab Countries, Case Study of Algeria, Development Economics, Ph.D Thesis, Abu Bakr Belkaid University.

Zenat, Said. (2016). The Role of Environmental Taxes and Fees in Directing the Environmental Behavior of the Economic Institution in Algeria, Master Thesis, University of Messila.

Zingales, Francesco and Hockerts, Kai. (2003). Balanced Scorecard and Sustainability: Examples from Literature and Practice, Working Paper Series. Fontainebleau: INSEAD Centre for the Management of Environmental Resources.

Zorelli, Amokrane. (2006). The Endogenous Factors of Competitiveness of SMEs, SMIs, International Conference, April 17-18, Chelf University.

APPENDIXES

APPENDIX 1: Questionnaire

We are conducting a study about implementation of total quality management in industrial sector institutions and their impact on sustainable development with the aim of identifying the perception of employees in the industrial sector about the concept of total quality and its requirements and its impact on achieving sustainable development.

We hope that you read the attached questionnaire well and answer objectively to obtain accurate results for the benefit of scientific research only. We thank your cooperation in advance and accept our sincere appreciation.

Researcher

The first axis: Demographic characteristics:

1 / Age: 30 years and under ☐ 31-40 ☐ 41-50 ☐ 50 and over ☐

2 / Gender: Male ☐ Female ☐

3 / Educational level: Diploma or less ☐ Bache☐ Master or Higher Diploma ☐ PhD ☐ ☐

4 / Administrative job position: Senior manageme☐ Middle executive management ☐ Executive management ☐

5/ Years of experience: 5 years and under ☐ 5-10 ☐ 10-15 ☐ 15 and over ☐

The second axis: the reality of total quality strategy in the company:

The following statements relate to the total quality management requirements of an organization:

Please put a sign (✓) in the box that matches your options:

NO	Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Continuous Improvement						
1	The company views continuous improvement and development as an integral part of total quality requirements					
2	The company seeks to assume its responsibilities towards society through continuous					

	improvement and development of the services provided					
3	New services are carefully prepared for the future needs and expectations of customers and the labour market					
4	Communication takes place between the various administrative departments when developing and improving the current service or the new service					
Focus on Customers						
5	The company develops long term plans and strategies to know customers and market's needs					
6	Management resort to analyzing the data collected in estimating the market needs and desires of the current and expected clients					
7	The company uses the complaints and grievances of the clients to develop the services provided					
8	The company follows up after providing service in order to evaluate it and know the extent of customer satisfaction with it					
Education and Training						
9	The company is keen to invest all the resources available in an optimal way that achieves its strategic goals					
10	The company has an annual training plan to develop and improve the capabilities of employees					
11	Officials are trained in the principles of performance evaluation appraisal, and evaluation results are discussed					
12	The employees are handpicked with the utmost care to carry out their jobs and are highly qualified and trained to solve quality problems					

Full participation of Employees						
13	Management and employees work together to provide products that satisfy customers and labour market					
14	Continuous improvement is the responsibility of everyone and for various departments					
15	Allow employees who have distinct ideas to present them in an official form for management					
16	Staff are responsible for implementing quality and for the results achieved for the service provided					
Decision Making						
17	Senior management makes decisions to establish a clear plan in which to define its goals					
18	The administration listens to its employees and encourages them to make decisions					
19	Management makes decisions for development and innovation, and all what is new in services to meet the needs of the market and customers					
Administrative Leadership						
20	Management works to verify the application of the principles of total quality and evaluate the progress made in that					
21	The company interacts with clients and labour market by listening to their opinions and the services provided to them					
22	The company provides bonuses and incentives to employees to encourage them to provide better quality					
23	The company evaluates the effectiveness and efficiency of change through its application of quality principles					

The third axis / the reality of sustainable development in the company:

The following statements relate to the requirements of sustainable development in the company:

NO	Statement	Strongly agree	Agree	Neural	Disagree	Strongly disagree
Economic dimension						
1	The company works to achieve profits by using the fewest resources					
2	The company works to provide services at the lowest costs					
3	The company relies on economic models to achieve sustainability					
4	The company is keen to rationalize energy consumption					
5	The company depends on total quality strategies that support the functions of cleaner production and green marketing					
6	The company takes into account the total quality standards in its services					
7	The ISO 9000 certification provides the company with a sustainable competitive advantage					
Social dimension						
8	The company seeks to meet the needs of the community in which it is active					
9	The company is developing strategies to qualify employees					
10	The company is developing training programs to empower employees in the area of sustainable development					
11	The company consider fairness in the distribution of wages					

12	The company provides the occupational security requirements for its employees					
13	The company seeks to implement the occupational health and safety system in accordance with the standard ISO 18000					
14	The company seeks to implement the social responsibility system in conformity with the standard ISO 26000					
Environmental dimension						
15	The Company relies on a total quality policy to support environmental performance					
16	The Company takes measures that allow the control of emissions from the production process					
17	The Company establishes special programs for activities with dangerous environmental impacts					
18	The Company directs human resources to ensure sound environmental management					
19	The Company works to reduce pollution by using clean materials					
20	The Company is committed to an environmental management system that conforms to ISO 14000					

BIOGRAPHY

Name Sur name: Dalia malik	
Education Information	
Bachelor	
University	Khartoum University
Faculty	Faculty of Economic
Section	Public Administration
Master	
University	Khartoum University
Institute Name	Institute of Public Administration
Department	Public Administration
Program	Public Administration
Articles and Papers	
1. Chinese Foreign Policy Strategies' shift towards Africa (Goals and Perspectives),Academic Journal Academic Journal of Research and Scientific Publishing (AJRSP), 2.23,16-56. 2. Chinese Attitudes towards Africa and the Geopolitical Conflicts with the United States: Oil Case, Arab Journal of Scientific Publishing (AJSP), 2.29, 24-39.	