A FRAMEWORK OF TQM AND ORGANIZATIONAL PERFORMANCE WITH ISO 9001 AND INNOVATION AS MEDIATORS IN IRAQI MANUFACTURING COMPANIES

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A thesis submitted in
fulfilment of the requirement for the award of the
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I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledged

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I would like to dedicate this work to the soul of my parents Hameed may ALLAH S.W.T. bless him and shower him with his mercy and forgiveness and my mother. I would like to express my sincere gratitude to my wife Amenah and my sons Harith, Humam, and Mohammed, and my daughter Ayesha, Imama and Fatema. As well as to all my friends.

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GOD BLESS YOU ALL

ABSTRACT

Total Quality Management (TQM) has become a crucial strategy for companies to maintain their position in the advent of globalization and market competition. At the same time, ISO9001 and innovation have been widely used by companies to gain continuous competitiveness and financial benefits. Unfortunately, limited studies have focused on the relationships between TQM, ISO9001, innovation and organizational performance (OP) in Iraqi manufacturing companies. This study aims to develop a new TQM framework towards improving organizational performance with mediating effects of ISO9001 and innovation in Iraqi manufacturing companies. To achieve this aim, the research approach adopted a quantitative method. A survey was used as the research method, and data was collected using a questionnaire. The respondents involved directors, managers, engineers and executives. One hundred eighty-three usable questionnaires were returned, yielding a 53.83% percent response rate. The findings of the survey were analysed using Partial Least Square (PLS) based on Structural Equation Modelling (SEM) software. The hypotheses were tested to establish the relationships between TQM Practices and OP as well as determine the mediating effects of innovation and ISO9001. The result indicated a significant relationship between TQM and OP (β= 0.468, $p<0.01$), TQM and ISO 9001 (β = 0.710, $p<0.01$), TQM and innovation (β =0.516, $p<0.01$), ISO9001 and innovation (β = 0.267, $p<0.01$) as well as innovation and OP (β = 0.336, $p<0.01$). While, there is no significant relationship between ISO 9001 and OP (β = -0.112, $p>0.01$). It is found that innovation gives a positive relationship between TQM practices and OP as a mediator, whilst the ISO9001 implementation was not supporting to the relationship between TQM practices and OP. The results of this study are beneficial and act as a guide for Iraqi manufacturing managers and practitioners to improve their organizational performance.

ABSTRAK

Pengurusan Kualiti Menyeluruh (TQM) telah menjadi strategi penting bagi syarikat-syarikat untuk mengekalkan posisi mereka di pasaran dengan kemunculan globalisasi dan persaingan dalam pasaran. Pada masa yang sama, ISO9001 dan inovasi telah dilaksanakan secara meluas oleh syarikat-syarikat untuk bersaing secara berterusan dan memperoleh faedah-faedah kewangan. Namun begitu, agak terhad kajian yang menumpukan kepada hubungan antara TQM, ISO9001, inovasi dan prestasi organisasi (OP) syarikat-syarikat pembuatan di Iraq. Kajian ini bertujuan untuk membangunkan kerangka kerja TQM baharu untuk meningkatkan OP dengan ISO9001 dan inovasi sebagai pengantara di syarikat-syarikat pembuatan Iraq. Untuk mencapai tujuan ini, pendekatan penyelidikan kuantitatif telah digunakan. Kaji selidik digunakan sebagai kaedah penyelidikan, di mana data dikumpulkan menggunakan soal selidik. Responden melibatkan pengarah, pengurus, jurutera dan eksekutif. Seratus lapan puluh tiga soal selidik telah dikembalikan, menghasilkan kadar respons 53.83 %. Hasil kajian dianalisa menggunakan perisian *Partial Least Square* (PLS) berasaskan *Structural Equation Modelling* (SEM). Hipotesis diuji untuk menilai hubungan antara amalan TQM dan OP serta menentukan kesan pelaksanaan inovasi dan ISO9001 sebagai pengantara. Hasil analisa menunjukkan hubungan yang signifikan antara TQM dan OP (β= 0.468, $p<0.01$), TQM dan ISO 9001 (β = 0.710, $p<0.01$), TQM dan inovasi (β = 0.516, $p<0.01$), ISO9001 dan inovasi (β = 0.267, $p<0.01$) serta inovasi dan OP (β = 0.336, $p<0.01$). Manakala, terdapat hubungan tidak signifikan antara ISO 9001 dan OP (β = -0.112, $p>0.01$). Hasil kajian mendapati bahawa inovasi memberikan hubungan positif antara amalan TQM dengan OP sebagai perantara, manakala pelaksanaan ISO9001 tidak menyokong hubungan antara amalan TQM dan OP. Hasil kajian ini bermanfaat dan boleh digunakan sebagai panduan bagi pengurus dan pengamal di sektor pembuatan Iraq untuk meningkatkan prestasi organisasi mereka.

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LIST OF SYMBOLS AND ABBREVIATIONS

TQM	Total Quality Management
OP	Organizational Performance
SPSS	Statistical Package for Social Sciences
SEM	Structural Equation Modelling
PLS	Partial Least Square
CIID	Centre for Industrial Information and Documentation
QMS	Quality Management System
ISO	International Organization for Standardization
QAS	Quality Assessment System
QM	Quality Management
USA	United States of America
BEMs	Business Excellence Models
BE	Business Excellence
EFQM	European Foundation for Quality Management
EQA	European Quality Award
MBNQA	Malcolm Baldrige National Quality Award
SMEs	Small and Medium-sized Manufacturing Enterprises
CSFs	Critical Success Factors
CVF	Competing Values Framework
IBM	International Business Machines
QIS	Quality Information System
AFTA	Asian Free Trade Agreement
EFA	Exploratory Factor Analysis
PhD	Doctor of Philosophy
KMO	Kaiser-Meyer-Olkin
CIDC	Industrial and Commercial Information and Documentation Centre

FA	Factor Analysis
DA	Discriminant Analysis
PA	Path Analysis
MRA	Multiple Regression Analysis
CFA	Confirmatory Factor Analysis
AVE	Average Variance Extracted
CB-SEM	Covariance-Based Structural Equation Modelling
PLS-SEM	Partial Least Squares -Structural Equation Modelling
$R2$	Coefficient of determination
$q2$	Cross-validated redundancy
$f2$	Effect size
VAF	Variance Accounted For

CHAPTER 1

INTRODUCTION

1.1 Introduction of the chapter

This chapter explains the research background, problem statement, research objectives, research questions, scope of study, significant of study and thesis structure.

1.1 Research Background

Due to the increasingly competitive global market, product quality has been one of the most important considerations for evaluation in the manufacturing world regarding the company's production process. The application of quality control allows companies to offer a high-quality product, which positively affects customer satisfaction (Blanco et al., 2019). Moreover, quality control and improvement of manufacturing organizations using statistical methods are essential tools that must be implemented as part of a company's management system aiming at the quality (Blanco et al., 2019).

Feigenbaum (1983) stated that quality is the "characteristic by which the product and the services meet the customer's expectations. It also indicated that the quality department deals with the operation process and aims to achieve quality". Quality management is founded on the zero-defect principle. According to Crosby (1979) , this concept focuses on preventing unintentional errors by acknowledging the high cost of quality defects and continuously analyzing areas where errors might emerge to prevent these flaws. Furthermore, it strives to deliver high quality and quantity products and services at the lowest feasible cost. Consequently, client satisfaction may improve, and the company's reputation may be strengthened.

The changing global market conditions and the information technology revolution have forced organizations to use a skilled workforce, appropriate technological methods, and managers capable of coordinating all elements of current trade circumstances. This has resulted in companies realizing the need for quality integration and innovative strategies to satisfy customers who demand high-quality products at competitive costs (Kajalo et al., 2016). This has contributed to the development of various quality approaches that can enable managers of companies to achieve quality improvement, obtain a significant competitive advantage (Mir et al., 2016), and achieve outstanding performance results (Pantouvakis and Psomas, 2016). The most popular of which has been Total Quality Management (TQM).

TQM has a significant impact on the organizational culture of manufacturing enterprises with the implementation of quality management elements and improved quality cultures support an innovative environment. According to Shewhart and Deming (1986) TQM is "organization operations that include everyone in a firm, including managers and employees, in a comprehensive and integrated attempt to improve performance at all levels." Client satisfaction is improved as a result of these linkages, which regulate costs, quality, and product development. A total quality management approach that focuses on increasing customer satisfaction will immediately enhance organizational performance. In conjunction with that, leadership commitment is a key component in ensuring TQM techniques are implemented successfully in organizations (Al-Qahtani et al., 2015).

As a result, many researchers in the TQM discipline believe that all departments must work together to accomplish the TQM implementation system's desired outcome. It is not simply a task for one department or specific for top management; employees and management must collaborate across departments to deliver high-quality outputs and value for money (Cristina et al., 2017). As well as with the development of advanced technologies, the development of new engineering materials, and the rapid growth of scientific research, scientists and technologists face difficult problems in the field of manufacturing in addition to an increased demand for developing high-precision products or materials (Addis, 2019).

Typically, small and medium enterprises prefer to have a proper quality management system in place in obtaining ISO 9001 certification “quality assurance” not from a desire to improve quality, but from the pressure of their customers. Although, the Quality Management System is a vital step towards implementing Total

Quality Management (Majumdar et al., 2019). Nevertheless, The Iraqi economy still depends on the petroleum sector as a primary source. In addition, it is still weak in many aspects, such as low production, product quality, and operation methods. Therefore, it is important to stress the importance of implementing TQM programs and their instruments, procedures, and techniques for manufacturing companies and investing in other quality schemes, such as ISO 9001.

Moreover , most important internal benefits gets from application of ISO 9001 standard during Iraqi manufacturing are improvement of definition and standardization of work procedures, improvement in the definition the responsibilities and obligation of workers , increased company confidence in their quality, greater commitment to work and improved guidelines reducing improvisation whereas the main external benefits are a better response to customer requirements, penetration of the new market, improved customer relation, improvement in customer services and reduction of customer audits (Casadesús et al.,2001) conducted.

Several mediators that can affect TQM and organisational performance includes, innovation (Antunes et al., 2017a; M. Kim and Chai, 2017; Palm et al., 2016; Maulana, 2017), ISO9001 (Hadidi et al., 2017; Castillo et al., 2018; Murmura and Bravi, 2017; Rybski et al., 2017; Kakouris et al., 2019) organizational culture (Hilman et al., 2019; Kassem et al. 2016), Lean (Sahoo and Yadav, 2017; (Kristensen et al., 2016), People Development (Ahmed et al. 2016; Bouranta et al., 2017), and process improvement (Qasrawi et al., 2017; Jimoh et al., 2018).

Therefore, the main reasons for choosing ISO 9001 and innovation as mediators in this study is the benefits that Iraqi manufacturing companies will reap if these initiatives are implemented properly. Sampaio et al. (2009) highlighted several external benefits of ISO 9001 certification including access to new markets, improved corporate image, increased market share, marketing tool, improving customer relations, customer satisfaction, and improved customer communications. In addition, several major internal benefits including increased productivity, decreased the percentage of nonconforming products, increasing quality awareness, clarifying responsibilities and obligations, improvement in the delivery times, internal organizational improvements, reduction of non-compliance, reduction in complaints, improved internal communication, improvements in product quality, improved competitive advantages.

Additionally, a shortage of studies in the Iraqi manufacturing industry regarding the adoption and implementation of TQM. Besides, in order to be competitive against their competitors, most companies have focused on issues related to innovation. Innovation is one of the potential ways that enterprises can improve revenue growth, market share, income and ultimately affect their overall output (Singh, 2019; De Guimarães, 2016;Sternad et al., 2019). Despite the widespread acknowledgment of the important role of TQM-innovation link, to the best of our knowledge, a gap exists in the empirical body of literature that examines the moderating role of innovation on the relationships between TQM and organizational performance. In addition, the body of literature that investigates the relationship between TQM elements and innovation performance is scant (Ben and Mustafa, 2013), especially in Iraq, based on the author review for the Iraqi studies in the manufacturing field.

1.2 Problem statement

The manufacturing industry is the main driver of economic and industrial improvement through its effective role and performance in the formation of the GDP. In addition, the industrial sector plays a key role in decreasing unemployment rate and increasing the standard of living in Iraq. Overall, the Ministry of Industry and Minerals has more than 72 public industrial companies. However, most of these companies are providing limited production. Therefore, the customer will turn to the importer products who is available at a good price as well (Jeklin, 2016).

While, D Schniederjans and M Schniederjans (2015) suggested that that quality management can be considered one of the important factors for a company's innovation. Along with Maulana (2017) who suggested that the relationship between quality management and innovation could be explained by the fact that both concepts seek to know customers' needs and preferences. It would lead to being a guide for developing or creating new products, services, or methods and competition to satisfy customer demands. It will motivate companies to provide quality products or services through innovative production and delivery processes.

Several Iraqi manufacturing firms had already acquired and begun using ISO 9001 and TQM in their processes and operations. However, the percentage of practical implementation success was far lower than predicted. The causes were mostly due to the companies' approach and bureaucratic restrictions and their expectations on these quality initiatives (Elhuni and Ahmad, 2014). In addition, there is no procedures for identifying internal and external factors affecting the company related to environmental management system, quality management, and occupational health and safety management system. As well as, no procedures for identifying the interested parties and their requirements related to these quality management systems as well (Almaliki ,2017).

Although strict laws, shortage of skilled labor, lack of access to financing, and inadequate infrastructure affect the manufacturing sector, it is believed that the manufacturing sector in Iraq needs a modernization process that will upgrade the level of its local manufacturing companies and allow them to achieve the highest possible level to compete globally (UNDP Iraq, 2018)(United Nations Development Program, 2020)(Arab World Competitiveness Report 2018).

1.3 Research objectives

The research objectives are to:

1. Analyze the interaction between TQM and organizational performance.
2. Evaluate the mediating effect of ISO 9001 implementation between TQM and organizational performance.
3. Evaluate the mediating effect of Innovation between TQM and organizational performance.
4. Develop a framework of TQM and Organizational Performance with ISO9001 and Innovation as Mediators in Iraqi Manufacturing Companies.

1.4 Research questions

The research questions are:

1. What is the nature of the relationship between TQM and Organizational Performance among manufacturing companies in Iraq?

2. Does ISO 9001 mediate the relationship between TQM and Organizational Performance among manufacturing companies in Iraq?
3. Does Innovation mediate the relationship between TQM and Organizational Performance among manufacturing companies in Iraq?
4. How to develop a framework of TQM and Organizational Performance with ISO9001 and Innovation as Mediators in Iraqi Manufacturing Companies?

1.5 Scope of study

This study focusses on developing a TQM framework towards improving organizational performance with mediating effects of ISO9001 and innovation in Iraqi manufacturing companies. This study adopted a quantitative method. A survey was used as the research method, and data was collected using a questionnaire. The respondents involved directors, managers, engineers and executives. The findings of the survey were analysed using Partial Least Square (PLS) based on Structural Equation Modelling (SEM) software.

1.6 Significance of study

This research is important from both a theoretical and a practical point of view. TQM and OP have grown prominently as a source of competitive advantage in global markets. Moreover, the Manufacturing industry playing an important role in the Iraqi industry. This research studies the extent of the commitment of industrial companies in Iraq to TQM and the relationship between TQM and company performance. Research studies that assess and analyse the effects of innovation and ISO 9001 certification on organizational performance are also needed. Especially in developing countries, in order to develop awareness and improve TQM practices.

Both internal and external consumers feel dissatisfied and disappointed. At the same time, workers are uncomfortable with current working conditions and management practices, which results in lower productivity and morale among employees. In contrast, external customers (consumers) are not satisfied with these companies' quality of products and services. As a result, this led to the invasion of the Iraqi market with similar products to foreign countries. Therefore, according to the

Republic of Iraq the Ministry of Planning (2018) that stated the Iraqi Ministry of Industry has set a number of objectives that it intends to meet. Boosting return and income through growing efficiency and quality as a means of increasing manufacturing production to a high rate by 2020 is one of these targets. All this is sufficient reason to adopt total quality management practices in Iraqi manufacturing.

Besides, there is a need for a comprehensive framework that focuses in the quality management systems available in the Iraqi manufacturing field and increases the level of maturity to integrate management systems that will lead to a higher level of performance in terms of sustainability (Poltronieri et al., 2019).

Earlier studies on quality initiatives in general and, in particular, the TQM implementation were done by various researchers in various nations. Some of these studies have been carried out in Arabic-speaking countries, but no work has been deployed in the Iraqi manufacturing area. This study would therefore have a significant impact on innovation, originality, and awareness-raising of the correct implementation of TQM practices. Through the journey of excellence, the assessment of the extent to which ISO applications have already been used in the number of Iraqi companies and creating a new awareness among managers and practitioners of the serious adoption of TQM.

This research project is likely to have a significant impact on the thinking of top Iraqi management and government decision-makers to embrace and implement TQM ideas. This is to develop a more effective management style that would allow them to compete on a local and worldwide level. As most Iraqi organization s, they need advice and guidance on how to execute TQM practice.

1.7 Thesis structure

The thesis consists of six chapters as follows:

Chapter one highlights the research background, problem statement, research objectives, research questions, scope of study and significance of the study.

Chapter two this chapter begins with an overview of the Iraqi manufacturing industries, TQM implementation in Iraq and Arabic country, TQM definition and overview, ISO9001 in Iraq and Arab countries, business Excellence Models (BEMs), TQM elements (leadership, strategy, customer, workforce, operation) and organization

performance. ISO 9001, Innovation and the relationships of TQM practices with Organization Performance, ISO 9001 and innovation, relationships of ISO 9001 and innovation with organization performance and the relationship of ISO 9001 with innovation, basis of the theoretical framework, research hypothesis and chapter summary.

Chapter three this chapter describes the research design, research procedures, questionnaire design and development, expert validation, pilot study, reliability and validity of pilot study, exploratory factor analysis (EFA)of constructs (TQM, ISO 9001, Innovation and OP, population and sampling of the study. structural equation modelling (SEM) and summary.

Chapter four after chapter introduction this chapter will addresses background of the respondents, non-response bias and common method bias (CMB), descriptive analysis of constructs (TQM, ISO 9001, Innovation and OP, goodness of measures (construct reliability, convergent validity of constructs and discriminant validity of construct, assessment of structure model (hypotheses testing), validation of structural model / framework and summary of the chapter.

Chapter five in this chapter, summary of the findings, interpret of direct and indirect effect findings of relationships of TQM practices with Organization Performance, ISO 9001 and innovation, relationships of ISO 9001 and innovation with organization performance and the relationship of ISO 9001 with innovation.

Chapter six demonstrations the conclusions are drawn based on the research findings and their implications. In addition, the chapter also highlights the study's contribution, at the end of this chapter the suggestion for the future work is proposed.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction of the chapter

The purpose of this chapter is to review, integrate, and examine the related literature on TQM adoption and its relationship with OP, specifically when ISO9001 and Innovation become the mediating variables. This constitutes the theoretical foundations for this research and leads to the formulation of its research model, hypotheses, and research questions. Therefore, this chapter begins with an overview of the Iraqi manufacturing industries. Next, it will move to the concept of quality audit and then follow the definition of Total Quality Management (TQM) and Business Excellence Models (BEMs) to provide a critical review of the literature relevant to the relationships between TQM practice, innovation, and implementation of ISO 9001 and OP. In the final part of the chapter, a theoretical framework will be constructed and hypotheses established based on the literature.

2.2 An Overview of the Iraqi Manufacturing Industry

Mesopotamia, the ancient name of Iraq, which has a deep culture spanning more than 10,000 years, has enormous potential and material and human resources to help it achieve sustainable economic development.

During the seventies, there was a renaissance in Iraqi industry (Al-Shawi and Muhammad, 2011). This was demonstrated by the industrial sector's contribution to the GDP, from 9.7% in 1968 to 11.6% in 1975 (Yusr et al., 2017) . However, a new stage began at the end of the seventies, when Iraq was exposed to four devastating wars that began with Iran (1980 - 1988), called the First Gulf War. It costed Iraq about one million dead, millions of orphans and widows, massive destruction of infrastructure, and billions of dollars. Three years later, the second Gulf War broke out. This war was also followed by economic sanctions from 1991 to 2003, which

ended with the US occupation of Iraq on April 9, 2003.Finally, Iraq entered into another serious war from 2014 to 2017 with the notorious terrorist groups called the Islamic State of Iraq and Syria (Al-Moussawi, 2013; Albalaki, 2019). Conditions of war and political and social instability slowed growth and development and destroyed economic and human potential (Musa, 2014; The Republic of Iraq The Ministry of Planning, 2018). Under the conditions of wars and the length of the economic embargo, the manufacturing industry in Iraq faced many obstacles and challenges that hindered its performance. These challenges include weak infrastructure, inflation, technological obsolescence, low levels of investment, lack of production inputs, the spread of financial and administrative corruption, and the weak role of the state in supporting the industrial sector (Mohammed, 2007; Jassim Ouzou, 2014).

The Iraqi government put in place some plans for the rehabilitation of industrial companies after 2003. During 2008 to 2011, six industrial cities were developed in different governorates (Nasuri and 2014; Al-Maimouri, 2014). In addition, more than 30% of this foreign direct investment was for the industry sector (Hama, 2017), which has pushed the Iraqi manufacturing sector on the road to recovery.

Figures 2.1 indicate the fluctuation of this sector's contribution to GDP (World Bank national accounts data, and OECD National Accounts data files). This sector was affected during different periods that can be divided as follows (Alba, 2018):

- From the seventies until the year 1990: the sector witnessed a great boom through the establishment of many factories.
- The blockade period from 1990 to 2003: Despite the economic blockade, the sector's companies managed to provide the products in the local markets. However, the lack of spare parts and the difficulty of modernising production lines affected the product quality and the lifespan of production lines.

From 2003 onwards: Many companies were rehabilitated, but the opening of the local market to global markets, high production costs, and other problems led to a limitation of the role of these companies in the labour market.

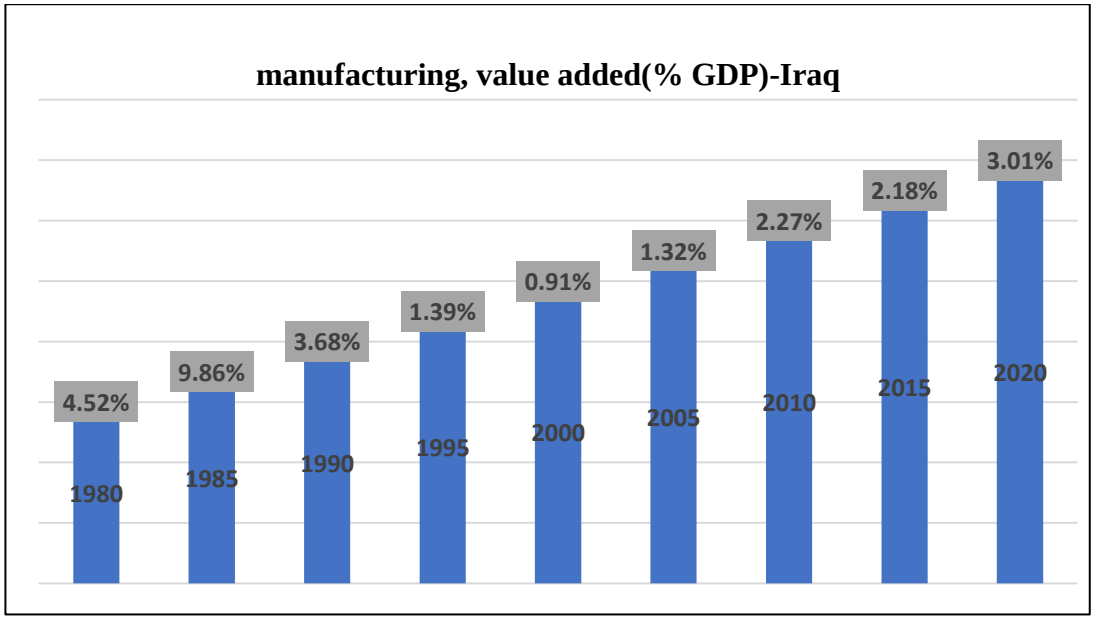

Figure 2.1: GDP contribution of the manufacturing industries sector, 1980–2020

Moreover, new investment contracts have been concluded with many foreign companies to support the development of the manufacturing industry (Al-Maimouri, 2014). Recently, the Iraqi Council of Representatives in December 2016 issued a set of decisions, executive procedures, and policies that can serve as a panacea for the manufacturing sector's challenges. It included reducing tax exemptions, fuel prices, adopting the quality system, prioritizing national products, and supporting and involving the private sector in processing government office contracts. However, due to high production costs, security instability, open import, and a high level of competition, the performance of industrial firms still did not improve significantly (Jasem and Zhou, 2014; Hashem and Mahmood, 2014).

The challenges, as mentioned earlier, have forced the manufacturing companies to adopt new technologies, quality initiatives, and strategies for their survival (Al-Najjar and Al-Kadhim, 2017; Al-Maimouri, 2014). In other words, the transition from a centrally planned economy to a market economy has changed the standards, policies, and strategies under which the Iraqi manufacturing industry operates (Mahmoud, 2013). Therefore, the progress of the manufacturing industry in Iraq requires an understanding of all environmental variables (internal and external) that affect the development of the performance of the industrial sector (Al-Najjar and Al-Kadhim, 2017). This is because the manufacturing sector affects the economy through diversification and employment and has a multiplier effect on the development of other sectors of the economy (Hashem and Mahmood, 2014).

2.3 Total Quality Management (TQM) Implementation in Iraq and Arabic countries.

Despite widespread recognition of the benefits of TQM and its crucial role, Iraqi companies in general, and particularly the manufacturers, are still in the early stages of TQM execution (Aletaiby et al., 2017a). This is due to the absence of robust policies and clear strategic planning that would require the company's local counterparts and foreign operators to follow defined processes and standards (Oakland, 2011). The lack of a legislative framework for TQM has also impeded the establishment of clear leadership. It also has impacted the imposition of sanctions on problematic businesses that do not function in line with the country's local environment and global viewpoint of operational excellence (Jones and Seraphim, 2008).

Moreover, to the best of the researcher's knowledge, there is no model or Framework that the Iraqi manufacturing industry may regard as the official TQM framework that successfully supports and recognizes TQM growth in such a critical industry. As a result, under the current conditions, there is an immediate need to focus on long-term sustainability, which demands a complete quality management strategy in Iraq's manufacturing companies.

This approach is based on the implementation of TQM to improve the overall quality of the performance of the Iraqi manufacturing industry (Abdulhameed and Aletaiby, 2018). Aletaiby et al. (2017a) developed a conceptual framework for improving employee performance in Iraqi oil companies, such as employee satisfaction and improving the work climate in the Iraqi oil industry. This is done by applying the key success factors of TQM (top management commitment, customer focus, continuous improvement, operations management, training and development, quality culture and employee empowerment sharing and communication). These indicated barriers match several types of barriers that hinder the application of total quality management, whether in emerging countries especially or developed countries in general because they share many economic characteristics with Iraq. Therefore, they have common barriers and motives for implementing TQM, as shown in Table 2.1. Most Arab studies in the field of quality confirmed the positive impact of quality initiatives, especially the practice of total quality management on the organization's performance through different sectors, specifically the manufacturing sector, such as

boosting employee and customers' satisfaction, improving financial performance, decreasing company's impact, and eliminating waste and defects on the environment in the context of Iraqi manufacturing (Abdulhameed and Aletaiby, 2018). These findings are in line with what has been discovered in the context of Jordanian businesses (Ali et al., 2018).

In Jordanian consulting firms, the impact of knowledge management processes (knowledge acquisition, utilization, and sharing), as well as knowledge management approaches (codification, social network, and personalization) on innovation, has been investigated by Obeidat et al. (2016). In addition to descriptive statistics, a multiple regression analysis was performed. the results showed that, knowledge management methods had a substantial and beneficial influence on innovation. Besides, all knowledge kinds of mentioned build employees' skills relevant to innovation.

The link between organizational performance overall and quality management techniques in Jordanian construction chemicals firms was examined by Andrewes et al. (2018). Ten constructs of TQM practices were utilized as independent variables, while six constructs measured organizational performance. A set of questionnaires were handed out to 28 companies. To evaluate the model's primary premise, the data were analysed using the Statistical Package for Social Sciences (SPSS) and the multiple linear regression method and analysis of variance (ANOVA). Findings: TQM techniques have been shown to have a good impact on organizational performance, with a high emphasis placed on top management commitment, supplier management, customer focus, continuous improvement, and process control.

Likewise, Kassem et al. (2016) investigated the relationship between organizational excellence and culture through Information and Communication Technology (ICT) as a mediator. Using a quantitative study, data was collected through a survey questionnaire among UAE Business Excellence Award Gold winners. The findings revealed a favourable link between organizational culture components and overall work excellence.

Aletaiby et al. (2021) provides a theoretical viewpoint on the link between the innovation activities and EFQM Excellence Model. The European Foundation for Quality Management specifies the success criteria for innovation activities and incorporates them in the EFQM Excellence Model. Furthermore, innovation activities are critical for an organization's knowledge acquisition and improvement of production efficacy and efficiency.

While Mansour and Jakka (2013) studied the attitudes of public sector employees in the United Arab Emirates towards the elements of total quality management as expressed by the "service quality triangle" established by Morgan and Muratroyd (1995). The research is based on data from a random sample of public sector employees drawn from a variety of public sector organizations in the UAE. It also employs statistical techniques to evaluate Emirati public sector personnel's views about the various parts of the service quality triangle. In general, the study found that employee attitudes are not positive, and recommends training of employees in the philosophy of total quality management.

Martin al et. (2016) investigated the level of practice on the elements of total quality management such as the system of continuous improvement, education, and training, the level of awareness of upper management, and their attitude towards the implementation of TQM activities. The author found that senior management commitment, adequate training, large flow of resources, effective measurement, and workforce participation techniques are major success components. A solid Total Quality Management programmed is one-of-a-kind, and it should inspire middle management to priorities long-term plans above short-term objectives.

Aamer al et. (2017) evaluated the level of readiness of various Yemeni organizations for comprehensive quality management. Data was gathered and examined using quantitative methods based on the TQM literature and standard TQM concepts. The findings revealed that several TQM concepts were implemented at various levels by Yemeni organizations. Customer focus was the most commonly followed principle, while continuous improvement was the least practiced. The data also revealed that the level of TQM readiness in Yemeni organizations suggests the possibility of effective quality management standards and models implementation in Yemeni organizations.

This research helps to a deeper comprehension of TQM application in LDCs. Haffar et al. (2019) investigated the mediating role of an employee's emotional commitment to change (EACC) between Individual Preparedness for Change (IRFC) and Total Quality Management. The research provides empirical evidence about the direct and indirect effects of IRFC components on TQM implementation in Algerian manufacturing organization s. This study shows support for the mediating role of the IACC in the relationship between Individual Readiness for Change (IRFC) and TQM

implementation investigated the influence of individual readiness of change (IRFC) as a multidimensional construct on effect on the TQM implementation.

The previous studies in Table 2.1 represent the most important research published in the Arab countries in the past five years, which focused on the direct and indirect impact of TQM applications on performance in manufacturing organizations s as it was found that there is no research focusing on the Iraqi manufacturing industry. There is no comprehensive model or Framework that deals with the mediating effect of ISO 9001 implementation standards and innovation. Moreover, the level of implementation differs between these countries. due to environmental and cultural levels. This encourages us to formulate a comprehensive model that combines two quality systems known in the industry, namely Total Quality Management practices, ISO 9001, innovation, and their impact on organizational performance.

The significance of national culture on TQM adoption is becoming more widely recognized; as a result, numerous studies have examined the impact of TQM practices on organizational performance as well as the impact of various cultural, social, and economic contexts. Nevertheless, studies concerned with the importance of implementing TQM have been very few compared to developed countries in the manufacturing sector except the United Arab Emirates and Jordan, while most of these studies have focused on organizational and employee culture.

However, important factors of TQM vary from one country to another and sectors to other sectors and the level of readiness for TQM implementation. Furthermore, these researches revealed that implementing TQM might be challenging due to inadequate planning, a lack of leadership, and top-level management. Meanwhile, proper training and resources, workforce participation, and efficient measurement techniques are some of the critical benchmarks for top management commitment. Nevertheless, these studies give very limited information about the level of TQM adoption and their relationship with organizational performance. In addition, it's unable to provide a comprehensive model of the relationship between TQM practices and organizational performance.

Therefore, this study has attempted to bridge the gap in the existing TQM literature by providing empirical evidence about the relationship of TQM with an organizational performance from an under-researched developing country’s manufacturing industries. This study will help practitioners and policymakers in extending their knowledge base of effective applications of TQM. represent the most

important research published in the Arab countries in the past five years, which focused on the direct and indirect impact of TQM applications on performance in manufacturing organizations s as it was found that there is no research focusing on the Iraqi manufacturing industry. There is no comprehensive model or Framework that deals with the mediating effect of ISO 9001 implementation standards and innovation. Moreover, the level of implementation differs between these countries. due to environmental and cultural levels. This encourages us to formulate a comprehensive model that combines two quality systems known in the industry, namely Total Quality Management practices, ISO 9001, innovation, and their impact on organizational performance.

The following Table 2.1 shows some literature reviews of the relevant Arab countries, which aim to show the extent to which TQM is applied in an environment close to the culture of Iraqi manufacturing.

Table 2.1: The most recent studies related to Total Quality Management (TQM) in Iraq and the Arab countries during industry sector

Author	Country	Findings
(Haffar, Al-Karaghouli, Irani, Djebarni, and Gbadamosi, 2019)	Algerian manufacturing organizations (AMOs)	Affective commitment to change among employees (IACC). In the relationship between IRFCs and TQM implementation, IACC is a significant mediating variable.
(Altamony, 2017)	United Arab Emirates	Production efficacy and efficiency may be improved via innovation. EFQM model practices, on the other hand, are linked to learning, technological abilities, and innovation.
(Aamer, Al-Awlaqi, and Alkibsi, 2017)	Yemen	Customer focus has been the most widely accepted principle, and continuous improvement was the least practiced principle throughout Yemeni organizations.
(Kassem, Ajmal, and Khan, 2016)	United Arab Emirates	here is a positive relationship between business excellence and organizational culture.
(Aladwan and Forrester, 2016)	Jordan	Inadequate strategic planning, a lack of employee empowerment, flaws in benchmarking performance, a lack of financial resources, and poor integration and coordination were identified as the main issues affecting the execution of leadership criteria in Jordan's public sector.
(Way, Aichouni, Badawi, and Boujelbene, 2016)	Kingdom of Saudi Arabia	When it came to implementing TQM, the firms noted certain challenges, which are lack of top-level management, poor planning, and lack of leadership qualities
(Mansour and Jakka, 2013)	United Arab Emirates	Employees' attitudes are not favorable; thus, training in TQM philosophy is recommended.
(Amal ,2019)	Egypt	six entrepreneurship variables significantly affect TQM implementation. Entrepreneur's skills sub-variable has the highest effect while product characteristics had the lowest effect.

Author	Country	Findings
(Nair and Choudhary, 2016)	Qatar	The results have indicated that top management leadership, organizational learning, quality information management, and supplier management have significant influence on the endogenous variables
(Kassem et al., 2016) (Abu Salim, Sundarakani, and Lasrado, 2019)	United Arab Emirates United Arab Emirates	The results showed that there is a positive relationship between organizational culture components and business excellence in general. factors such as continuous improvement (CI), human resource management (HRM) and information measurement (IM) were positively linked to innovation.

2.4 Total Quality Management (TQM) definition and overview

It is critical to comprehend and examine the concept of quality before addressing TQM. Bilich and Neto (2000) argue that quality must be included in all aspects of an organization's processes, from policy development and decision-making to resource allocation, staffing, and providing a product or service that fulfils customer expectations. TQM tools and techniques can even be used in a wide range of organizations of all types and sizes, such as construction, healthcare, manufacturing, services, education, government, military, not-for-profit entities, and small businesses. There are several assumptions regarding quality, ranging from simple definitions to complex ones. Feigenbaum (1991) quality is defined as the whole composite product and service characteristics of marketing, engineering, and maintenance, ensuring that the product and service in use satisfy the customer's expectations.

- Quality is conformance to requirements (Crosby, 1980)
- Quality is fitness for use (Juran, 1989).
- Quality should be aimed at the consumer's needs, present, and future(Deming, 1986)
- A product's or service's quality is defined as the sum of its features and qualities that influence its capability to exceed stated or implied demands (ISO 9000).
- According to the American National Standards Institute, quality is the combination of a product's or service's features and characteristics that influence its ability to meet certain demands (American Society for Quality Control (ASQC) 1978 and the (ANSI).

- Meet the needs and expectations of the customers, personnel, financial stakeholders, and society according to of European Foundation for Quality Management (EFQM).

According to the above definitions, quality is centred on customer satisfaction and must meet and exceed customer demands and expectations. Suman et al. (2012) mentioned that product quality is a key factor in developing a sustainable competitive advantage. While Garvin identified eight dimensions of product development to help management better understand how to achieve features, quality, performance, durability, reliability, compatibility, aesthetics, perceived quality, and serviceability (Garvin, 1987). As a quality hierarchy in the quality journey towards TQM, the stages of product inspection and then quality control was the first step, where defects are detected. Inspection plays a critical role in the manufacturing system in providing the requirements information on the quality of the product examined (Bożek et al., 2017).

The control stage concept is used to maintain the required level of quality, remarks on product/service characteristics, and corrective actions if these attributes vary from a set of standards (Mitra, 2016) . Japanese industry leaders realized the need for this concept in the 1940s. Therefore, they enlisted a few quality professionals, such as Deming, Juran, and Feigenbaum, to help them figure out how to tackle the issues that led to the concept's rapid development. So, to prevent or reduce the opportunities that may cause defects in the product through a range of activities before manufacturing or planning for products and services, created the concept of quality assurance (Besterfield, 2003).

According to American National Standards (ANS, 1994), planning and systematic preventive activities are designed to provide confidence in the organization's output (products/services) to ensure that customer satisfaction is met. This means that “the product is suitable for use based on its functionality” and that “the quality is zero defects and 100 percent complies with the requirements (Yang, 2017). TQM philosophy suggested process control inspection along the production line rather than final inspection (Kurniati et al., 2015).

Manufacturers have traditionally evaluated their performance using measurable metrics such as sales and productivity. In the past few decades, companies have been increasingly aware of the necessity to focus on quality-related performance features in market goals and performance appraisal. As a result, TQM's leading

approach was the most effective way to increase the company's performance and achieve excellence. Then, organizations that have effectively adopted TQM indicate that it has resulted in increased productivity, lower operating costs, higher profitability, and more market share.

The origins of TQM may be traced back to the ideas of production quality control in the early 1920s, particularly the concepts established in Japan by the Americans Feigenbaum, Goran, and Deming in the late 1940s and 1950s.while, the term TQM was established by the US Navy Air System Command in the late 1970s (Evans and Lindsay, 2008) .However, according to the American Society for Quality, the term TQM was first used in 1980 to describe Japanese technical management used by American organizations at the time (Talha, 2004). Quality management has become essential in the leadership and management of all firms and organizations as a result of global competitiveness and globalization. As a result, prominent quality experts such as Deming (1986); Juran (1979); Crosby (1979) and Feigenbaum (1983) who was the first to adopt the phrase and also pointed out the need for senior management involvement. Ishikawa (1986) and Taguchi (1986) supported the TQM idea. These educators have made important contributions to the TQM movement as a management technique focused on developing quality awareness in all organizational processes. whereas, Deming Prize was first promoted in Japan. It was then taken and modified in the United States as the Malcolm Baldrige National Quality Award and Europe as the European Foundation for Quality Management award. According to Deming (1986), TQM can be defined as “the organizational activities in which every individual in the company’s managers and employees participates in a systematic and fully integrated effort towards improving performance at all levels. Deming and Edwards (1982) suggested 14 points and came up with the PDCA (Plan - Do - Check - Act). Besides, he was one of the pioneers in specific causes, chance, and use of statistical methods for quality improvement was emphasized, and so was the need for senior management involvement and purpose consistency. Furthermore, Juran (1979), who emphasized the need for top management participation and established the quality triplet (planning, control, and improvement), introduced the Pareto technique and measured quality costs. Moreover, Crosby (1979) raised the need for cost measurement of quality and involvement of top management. Finally Ishikawa (1985), popularised the cause-and-effect diagram and promoted quality control at all levels of the organization and the idea of the internal customer. TQM is defined by Flynn et al. (1994) as a strategy to

accomplish and maintain high-quality outputs, emphasizing process maintenance and continuous improvement, as well as preventing disruption at all levels and in all functions of the organization.

Customer expectations must be met or exceeded. TQM, according to Choudhury, is not a management technique or a collection of procedures, but rather a philosophy based on the application of quality concepts to all departments or functional areas in an organization's workplace (Chowdhury, 2014). Therefore, researchers and academics in the quality field have essentially succeeded with top management by focusing on the steps they must take for the success of their organization. Although the majority of academics generally agree that there is no consensus on the definition of TQM. But today, most of them support TQM as a scientific and correct approach.

According to Powell (1995), Total quality management (TQM) is a concept and set of practices centred on continual improvement and satisfying customer demands. TQM, according to Powell, may be a strategic resource that adds value and gives a company a long-term competitive advantage. The main objective of implementing TQM is to achieve customer loyalty (D. I. Prajogo and Cooper, 2017) . In turn, this enhances financial business results. Along with that, reducing cost, increasing market share, and improving competitiveness (Rinoop et al., 2017). It also includes ongoing activities in which everyone in the company contributes to a completely integrated effort to improve performance at all levels (Panuwatwanich and Nguyen, 2017). TQM is a management concept that emphasizes high-quality management in all aspects of an organization's structure. Its goal is to reduce waste, save time, and cut costs while boosting profits and expanding market share.

To attain these goals, the management of the concerned organization must guarantee that it can fulfil the demands of both external and internal customers by implementing effective strategic planning in all of the company's or industry's functional departments. Therefore, the ability to manage quality should be an important part of all manufacturing operations. As a result, it should contain a continuous improvement process, proper execution of activities, elimination of all wastes, and quantitative analysis to discover any deviations from the intended quality standards (Khawka.Z, 2015). This will aid in the achievement of the main goal and purpose of lowering costs and boosting profits while also meeting the demands of both

external and internal customers. This is because TQM will allow these industries to generate high-quality goods and services that fulfil the needs of their customers.

To be successful in this initiative, the Iraqi manufacturing industry's strategic management levels must completely support TQM techniques. Furthermore, they must make this program really supportive and apply it in a nice manner. This can be accomplished in a variety of ways. To begin, the company's strategic level of management can decide to adopt TQM in a way that fits the present culture of the involved organization. This entails integrating quality techniques and concepts to assure the organization's ongoing improvement (Rahman et al., 2011). Employees, on the other hand, will be pleased with the new management systems. Second, it may be accomplished by regular processes and activities of training and educating workers. Moreover, they can modify their behaviours and attitudes to align with the new TQM approaches included in its goals and objectives. As a result, managers should influence all employees to contribute to TQM's goals and objectives. Hence, this will contribute to the establishment of a strong, quality-oriented organizational culture. Another advantage of applying TQM in Iraqi businesses is the decrease in production costs.

2.4.1 ISO 9001 in Iraq and Arab countries

With regard to the application of quality management systems and numerous researches on this concept and its obstacles, most of the experimental studies were carried out by different authors in developed countries. So, this is a review of the literature of the most important articles focusing on the application of the ISO 9001 Quality Management System in Arab countries.

A quality management system based on ISO 9001 is a method of doing things that guarantees your products or services fulfil your consumers' demands (ISO, 2017). In other words, it is the process for achieving quality(Knowles, 2011) . Hence, ISO 9001 certification is among the most popular quality management systems in Iraq that companies seek to obtain. However, most Iraqi companies still suffer from large gaps between the requirements of the International Standard and the actual application. Arab countries have some similarities that distinguish them from other countries. Therefore, it is important to take advantage of the strengths and weaknesses of implementing ISO 9001. Moreover, implementing ISO 9001 in these countries may

be particularly difficult due to the initial cost of implementation and accreditation, in addition to the lack of human resources and finance (Anne et al., 2017).

One of the few Iraqi studies in ISO 9001 implementation is Almaliki (2017) to assess the current quality management systems in contracting companies in Iraq and explore the reality of implementing an integrated quality management system in the construction sector. Results indicated no procedures for identifying internal and external factors affecting the company related to environmental management system, quality management, and occupational health and safety management system. There are no procedures for identifying the interested parties and their requirements related to these quality management systems as well.

Bounabri et al. (2018) carried out an empirical study that aims to shed light on the obstacles to implementing ISO 9001: 2008 through 200 organization s operating in different sectors in Morocco. According to the findings, the firms surveyed are mostly pursuing ISO 9001 certification for marketing purposes. Meanwhile, reluctance to change, bureaucracy, and a lack of interdependence between departments in organization s, as well as a lack of communication, senior management commitment, and training, are all challenges to adopting the quality management system.

Hamadameen and Wali (2019) studied the current status of the implementation of the Quality Management System (QMS) according to ISO 9001 in the construction sectors (private and public) in the city of Erbil (Northern Iraq). The result found that the most important (five) factors driving the ISO 9001 certification were enhancing the company's image and reputation, increasing the quality of building processes and procedures, fulfilling customer requests, demands, and expectations, and achieving efficiency for the international construction market. Other than that, the most significant advantages of ISO 9001 certification were increased knowledge of the company's objectives and policies, as well as enhanced image and reputation.

Magd (2016) evaluated the results of a survey of 175 manufacturing companies in Saudi Arabia that are ISO 9000 certified. The result of this study indicated that the certified companies in the Kingdom of Saudi Arabia have performed well in the registration process and have gained advantages from the application of ISO. Besides, it is recommended that organization s carefully plan, measure internal and external factors, and perform a cost-benefit analysis of the implementation process. They should also utilize gap analysis to compare their existing performance to ISO requirements.

Hadidi et al. (2017) explored reasons for obtaining certification and barriers to ISO 9001 implementation. The study provided a technique of assessment based on customer satisfaction measured across five parameters (assurance, reliability, empathy, tangible, and responsiveness) before and after three years of getting QMS certified. Still, there is a gap between the standards of application and documentation of quality management systems based on (ISO 9000:2001) requirements and applied quality systems at the Arab companies. However, evaluating some of industries' organizations' performance after applying (ISO 9001) standards by comparing it with the organizations' performance before applying these standards revealed a clear improvement in its performance after applying ISO standards.

The studies mentioned above focused on the most important motives and constraints in applying the quality management system based on ISO 9001 in Arab countries with a manufacturing environment close to the Iraqi manufacturing field. There are no studies on the best practices of Total Quality Management and the implementation of ISO 9001 in the context of Iraqi manufacturing that can be used to advise and support Iraqi companies on their road to excellence. As a result, the research gap motivates us to explore what is connected with it in depth.

2.5 Business Excellence Models (BEMs)

Business Excellence Models (BEMs) are one way to achieve and maintain a competitive advantage in the desire of business success and assess the performance of the organization (Dahlgaard and Dahlgaard, 2013). BEMs were first called Total Quality Management Frameworks (Mann et al., 2012). Main purposes of BEMs are for guidance towards business excellence as well as organisational assessment and award. EFQM excellence model and Baldrige excellence framework is the two most widely used BEMs worldwide (Mohammad, 2019). Figure 2.2 shows the 2019-2020 Baldrige Excellence Framework. Baldrige Excellence Framework consists of seven main categories: (1) Leadership, (2) Strategy, (3) Customers, (4) Measurement, Analysis and Knowledge Management, (5) Workforce, (6) Operations and (7) Results, as shown in Figure 2.2.

Figure 2.2: 2019-2020 Baldrige Excellence Framework (BPEP, 2019)

The Baldrige Criteria assist organizations in connecting the strategy, human capital process, leadership development process, and all the core activities and focusing them on what the customers truly desire (BPEP, 2019). In 1987, the US government established its own quality achievement award program, the Malcolm Baldrige National Quality Award (MBNQA), which is given annually for excellence in quality achievement. According to BPEP (2019) the Baldrige framework helps organizations achieve their objectives, enhance their performance, and become more competitive. The criteria that comprise the framework contain the organizational profile and seven related categories, namely vision leadership and how good governance is ensured. In addition, the strategy by preparing the organization for the future, listen to, satisfy, and participating of enterprise customers, knowledge management, measurements and analysis of reliable data, which lead to decision making, Involving and empowering the workforce, managing customer value by ensuring effective and efficient operations are provided to them and results, performance against criteria items is assessed on two assessment dimensions: process and outcomes, fundamental values and concepts, which constitute the foundation of the criteria, and ingrained beliefs and behaviours.

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