An-Najah National University

Faculty of Graduate Studies

THE IMPACT OF EMPLOYEES' PERFORMANCE AS A MEDIATOR VARIABLE ON THE RELATIONSHIP BETWEEN TOTAL QUALITY MANAGEMENT PRACTICES AND CONSTRUCTION PROJECTS PERFORMANCE IN PALESTINE

By

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Dedication

إلى من كان فضلهم بعد الله عظيمًا، وغرَسوا فيّ بذور الطموح، وسقوها بالحب والدعم والصبر، إلى والديَّ الكريمين، منبع عطائي ومصدر قوتي، الذين لم يبخلوا عليّ بشيء، وكانا السند الحقيقي في كل مراحل حياتي العلمية والعملية.

إلى زوجتي الحبيبة، رفيقة الدرب، التي كانت السند والمأوى في لحظات التعب والإنهاك، وتحملت معي مشقة الطريق، ووقفت بجانبي في كل لحظة، وكانت تؤمن بي حين كنت أشك في نفسي، فكانت نورًا يُضيء لي عتمة التحديات.

إلى إخوتي وأخواتي الأعزاء، سندي وعضدي، الذين شاركوني الأفراح والأحلام، وكانوا لي دومًا عزوة وذخرًا.

إلى أبنائي الأحباء، زهور عمري ونبض قلبي، من أجل مستقبلهم أعمل وأجتهد، ولهم أهدي ثمرة هذا الإنجاز.

إلى أساتذتي الكرام الذين منحوني من علمهم وفكرهم، فكانوا القدوة والموجّه، وإلى كل من وقف إلى جانبي وساندني في هذا الطريق، خالص الشكر والعرفان. أهديكم هذه الرسالة، ثمرة جهدٍ وإصرارٍ وطموح لا ينتهي.

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في هذا المقام، لا يسعني إلا أن أعبّر عن بالغ امتناني وعظيم تقديري لكل من كان له فضل بعد الله في إتمام هذا العمل العلمي.

أتقدم بخالص الشكر والامتنان إلى مشرفي الكريم الدكتور معاوية رمضان، على ما قدمه لي من دعم علمي وتوجيهات قيّمة كان لها الأثر الكبير في إنجاز هذه الرسالة.

كما أتوجه بجزيل الشكر لكل أساتذتي الكرام في هذا الصرح الأكاديمي الذين أغنوني بعلمهم وخبراتهم، ولكل من ساندني بكلمة أو نصيحة أو دعوة في طريق هذا البحث.

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Declaration

I, the undersigned, declare that I submitted the thesis entitled:

THE IMPACT OF EMPLOYEES' PERFORMANCE AS A MEDIATOR VARIABLE ON THE RELATIONSHIP BETWEEN TOTAL QUALITY MANAGEMENT PRACTICES AND CONSTRUCTION PROJECTS PERFORMANCE IN PALESTINE

I declare that the work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

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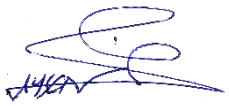
Signature: 

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THE IMPACT OF EMPLOYEES' PERFORMANCE AS A MEDIATOR VARIABLE ON THE RELATIONSHIP BETWEEN TOTAL QUALITY MANAGEMENT PRACTICES AND CONSTRUCTION PROJECTS PERFORMANCE IN PALESTINE

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Abstract

The construction sector plays a significant role in economic growth, particularly in emerging regions like Palestine. However, construction project performance often faces challenges related to quality, efficiency, and employee engagement. These issues raise concerns about how to improve outcomes for both employees and projects in a sustainable manner. This study addressed the impact of total quality management practices on the performance of construction projects in the Palestinian construction sector. It also investigated the mediating role of employee performance in the relationship between total quality management practices and project performance. Based on the literature, four hypotheses were formulated.

A descriptive analytical research method was used. Quantitative data for this study were collected in the field and online through questionnaires from 100 construction companies. The data collected from the questionnaires were analyzed using the partial least squares (PLS-SEM) method. The results showed a significant positive impact of total quality management practices on both projects and employees' performance in contracting and consulting companies. Additionally, employee performance positively influenced the performance of construction projects. The study also demonstrated the mediating role of employee performance in the relationship between total quality management practices and construction project performance.

The study contributes to closing the gap in the research literature by presenting and testing a proposed model. It also raises awareness among managers and employees in the Palestinian construction sector about the importance of integrating quality management practices into company policies with the aim of improving the performance of both

employees and projects, as it provided empirical evidence for that. The thesis recommends that companies should seek to adopt total quality management practices more comprehensively, and pay greater attention to employee development and performance, working to involve and empower them in decisions related to quality. The study also outlines key limitations and recommendations for future studies.

Keywords: Total Quality Management, Total Quality Management Practice, Employee Performance, Construction Project Performance, Palestinian Construction Sector.

Chapter One

Introduction

1.1 Overview

In this chapter, a general background about the study will be introduced, and the statement of the research problem that is the focus of the study, the research questions, the research hypotheses that will be tested in the context of the analysis, the research objectives, the importance of the study, the scope of the research, and, finally, the structure of the thesis will also be addressed.

1.2 Background

According to (ISO 9000, 2008), quality has been defined as the extent to which inherent characteristics of requirements are met. Arditi and Gunaydin and D. Ashokkumar defined it in the context of the construction sector as meeting the requirements and objectives of stakeholders (Ashokkumar, 2014; Arditi & Gunaydin, 1997). From the owner's perspective, it is meeting his needs within the required time and budget and with functional efficiency. From the supervisor's perspective, it is meeting the design requirements of specifications, time, and budget. From the contractor's perspective, it is meeting the required plans and specifications and completing them within the expected schedule and cost. From the regulatory institutions' perspective, it is meeting and complying with the applicable regulations, laws, and policies. Therefore, there is no common definition of quality, as each person views it based on their goals and expectations, but the basis of the definition is its conformity to specifications, performance, and objectives (Othman & Rashed, 2016).

Quality is considered an important issue in competitive work environments (Dahlgaard et al., 2007), as it is one of the most important means by which organizations compete and show their strength and distinction (Altayeb & Alhasanat, 2014; Lee et al., 2011), and it has gained widespread acceptance and spread (Kuo & Kuo, 2010). Some have understood and applied it successfully, while others are still trying (Hoonakker et al., 2010), in order to attract the largest possible number of customers and consumers, and to find a successful way to provide their best needs and desires for success and continuity.

This is why the concept of Total Quality Management (TQM) was adopted through the application of the concept of continuous development and improvement (Tabeeb, 2019).

TQM is the highest level of quality management and the implementation of quality principles in all aspects of the business (Dale et al., 2003). ISO 9001 defines TQM as a management approach that focuses on the participation of all members in applying quality principles to achieve long-term success through the satisfaction and benefit of all members of the organization and society (ISO, 2020). It is difficult to summarize the concept of TQM in a short definition, but it can be said that it is a series of continuous improvement processes, and ignoring it in any organization will hurt (Syaj, 2015). TQM is designed to improve quality performance at all levels of the company through a coherent and integrated effort (Yee, 2018). TQM benefits all stakeholders in the construction sector and helps in improving long-term relationships and also helps in achieving the desired goals of the project (Sui Pheng & Ke-Wei, 1996).

Construction projects are among the vital sectors in which huge funds are invested because of their important impact on supporting the economy in its various sectors, the gross domestic product, and increasing job opportunities. They are one of the important sectors It is one of the important sectors in an individual's daily life. Therefore, work and operations in this sector must be improved and developed by employing all new sciences and knowledge that help in this (Mohammed & Ibrahim, 2016).

Over time, TQM has gained great popularity among project managers because it is one of the major factors affecting project performance (Yahya & Alabdullah, 2022). It has many effects that lead to reducing the costs of completion and re-implementation, reducing errors, reducing maintenance costs, meeting customer needs and achieving their satisfaction. Therefore, in order to improve work in this sector and adopt the improvement and development of operations, it is necessary to apply the concept of TQM to raise the level of performance and quality in its implementation, through the evolution of a quality system that includes improving the design, implementation, and control of project operations, which leads to high competitiveness and ensures survival and continuity.

Construction projects are one of the most labor-intensive industries (Ayessaki & Smallwood, 2017), and this workforce is one of the main elements in the origins of this industry as it contributes significantly to the completion of the construction project and

its success in a timely manner (Zolkafli et al., 2010). It can be said that the performance of workers is an important and main source for improving productivity and thus achieving project goals in the least time, cost, and best possible quality (Ayessaki & Smallwood, 2017).

The construction sector in various countries is considered one of the economically important sectors as it is closely linked to other sectors that stimulate economic development. It is a major and essential part of the gross domestic product because of the many and varied jobs it provides (Budu, 2018). The construction sector can be considered complex because of the varied and complex operations it contains, and the diversity of the parties involved, including designers, contractors, owners, suppliers, workers and users (Mahamid, 2013).

In Palestine, the construction sector is considered a tool by which the goals of society and individuals are achieved. It has an impact on the economy and various sectors, and it also plays a major role in providing job opportunities for various workforces. However, despite the importance of this sector and its great impact, there is a clear scarcity of studies that enable Total Quality Management practices (TQMP) and demonstrate their importance and impact in improving construction projects performance (CPP). In addition, according to various UNRWA reports, the country suffers from economic and political instability, where many projects face problems, some of them fail to be completed on time, and others do not finish within the specified cost or according to the required quality. Accordingly, in this research, the impact of employee performance (EP) will be studied as a mediator variable in the relationship between TQMP and construction projects performance, as it will contribute to consolidating and clarifying the importance of TQMP and their impact on performance in construction projects, which will help in addressing these problems.

1.3 Problem Statement

Construction projects depend significantly on the performance of site workers, as they are essential to the success of projects (Prasetya et al., 2020) and they constitute up to a third to half of the project cost in some projects (Zolkafli et al., 2010; Gilleard, 1992). According to a study done by Othman about (42%) of the respondents classif;ied quality management as one of the most important factors affecting construction projects, and

about (41%) believe that TQM will benefit their organizations (Othman & Rashed, 2016). Based on that, employees are considered one of the key factors in a construction project. A review of the previous literature shows that while many studies have investigated the impact of TQMP on project performance in different countries and sectors, there is a clear scarcity of research that focused on the impact of TQMP on project performance in the construction sector, especially in Palestine. Moreover, based on our knowledge, there is no study that has addressed how EP mediates the relationship between TQMP and CPP, so this is one of a kind study. This is a critical gap that the study aims to address, as it is widely recognized that employees are the most valuable asset in the construction sector (Zolkafli et al., 2010). The absence of such studies limits the understanding of the impact of implementing TQMP on improving construction project outcomes, considering the crucial role that employees play in this process. As a result, this study examines the relationship between TQMP and CPP in Palestine, with employee performance as an intervening variable. Moreover, this is the first study in Palestine to collect these variables in this area.

1.4 Research Questions

By presenting the study problem, it can be summarized by answering the following question: How do TQMP affect CPP in light of EP as a mediator variable in Palestine?

Based on the above, the questions that will be answered after conducting the research can be summarized as follows:

The main question: How does the application of TQMP contribute to improving CPP through EP?

In order to address the main research question more thoroughly, the following sub-questions have been formulated:

Q.1:What is the impact of applying TQMP on CPP?
Q.2: What is the impact of applying TQMP on EP?
Q.3: What is the impact of EP on CPP?
Q.4: What is the impact of applying TQMP on improving CPP through EP?

1.5 Research Hypotheses

To achieve the study objectives, four hypotheses were formulated in line with the research questions, as follows:

H1: TQMP has a positive and significant effect on Construction Project Performance (CPP)**.**

H2: TQMP has a positive and significant effect on Employee Performance (EP).

H3: Employee Performance (EP) has a positive and significant effect on Construction Project Performance (CPP)**.**

H4: TQMP has a positive and significant effect on Construction Project Performance (CPP) through the Employee Performance (EP) as a mediator variable.

1.6 Research Objectives

The main objectives of this study can be summarized as follows:

1. To study the impact of TQMP on CPP.
2. To study the impact of TQMP on EP.
3. To study the impact of EP practices on CPP.
4. To study the impact of EP as a mediator of the relationship between TQMP and CPP.

1.7 Significance of the Study

The importance of this study lies in several aspects, as it will shed light on three variables that are related to each other: TQMP, CPP, and EP. It is concerned with studying the impact of TQMP as an independent variable on improving CPP as a dependent variable through EP in these projects as a mediator variable. The study derives its importance from the fact that it will contribute to spreading awareness among managers and employees in the Palestinian construction sector about the necessity of introducing and applying quality management practices in their companies' policies, with the aim of improving the performance of both employees and projects by clarifying the impact of these practices on CPP and EP and. It will also contribute to filling the gap in the research literature by presenting and testing a proposed model study of TQMP and its impact on the both EP

and CPP in Palestine. In addition, based on the results that it will be clarified from this study, will contribute to opening the way for future studies.

1.8 Research Scope

The research focused on companies specialized in executing construction projects in Palestine. These include companies specialized in designing, implementing or supervising such projects. The study focused on companies with high or good classifications in the Palestinian Contractors Union and the Palestinian Engineers Association, due to their prominent role in the Palestinian construction sector and their ability to deal with large and complex projects.

The scope of the study includes companies with distinguished experience in the field of construction, which adhere to the highest standards of quality and safety. The reason for choosing these companies is that they are expected to have good knowledge of TQMP and their applications. Therefore, studying these companies will enable us to answer the main questions of this research related to the impact of TQMP on the performance of construction projects.

1.9 Thesis Structure

This thesis consists of five chapters. The first chapter introduces the concept by discussing the problem statement, research questions, research hypotheses, research objectives, the significance, and the scope of the study. The second chapter provides a summary of the literature review on TQMP, CPP, EP and the Palestinian construction sector. The second section of this chapter explores how the basic theories of TQMP, CPP, and EP contribute to the development of the theoretical frameworks and hypotheses, and explains them, shows the relationships between variables and includes the proposed model. The third chapter outlines the methodology used in this thesis, including the research approach and design, data collection procedures, statistical tools, sampling process, and data analysis strategy. The fourth chapter presents an examination of the proposed model, and the results and conclusions derived from hypothesis testing. The final chapter discusses the overall conclusions, implications, contributions of the thesis, limitations, as well as suggestions and recommendations for future research.

1.10 Literature Review

This section provides a review of the literature related to TQM and its most important practices, CPP, and EP. It contains an analysis of evidence on the impact of these practices on project performance and employee performance. It also addresses the gap in the literature that forms the focus of the study, and finally provides a conceptual model based on previous literature to develop the study hypotheses.

1.11 Total Quality Management

TQM has many definitions, as it has been defined by researchers in different ways, although these definitions do not contradict each other, they are complementary.

The Federal Quality Institute has several definitions of TQM, including doing things right the first time, cooperation and partnership between management and workers in doing business with the aim of continuous improvement of quality and productivity. It was considered by Dahlgaard as a culture characterized by increased customer satisfaction, with the participation of all company employees in the continuous improvement of the company's activities (Dahlgaard et al., 2007). It was also defined by Zhang as a management philosophy aimed at continuously improving the performance of the enterprise's business on the basis of employee participation, leadership, education and training (Zhang et al., 2000). Oakland defined it as a method for improving effectiveness, organizational structure, and involving all departments and people in the organization (Oakland, 2014).

1.11.1 Total Quality Management Practice

Many studies have studied what constitutes TQM and its key practices that lead to its successful implementation, but the authors of the literature differ in the number and importance of the elements of TQM (Dadfar et al., 2013; Fening et al., 2013), and its necessary dimensions for successful implementation (Sila & Ebrahimpour, 2005). For example, Kou and Low identified in their study seven factors as key TQMP in the construction sector: top management leadership, management of customers, suppliers, processes and people, and systematic learning and continuous improvement (Koh & Low, 2010). According to Syaj, one of the most important factors for success in the

implementation of TQM is process management and implementation, information analysis and evaluation, continuous improvement, top management commitment, and customer focus (Syaj, 2015). In a study by Jose and Ambili, it was shown that factors such as top management support, customer focus, employee training and satisfaction, continuous improvement, leadership and management of both operations and suppliers are among the most important critical factors affecting quality performance in construction projects (Jose & Ambili, 2017). As indicated in Yasamis et al. study to evaluate the quality of the contractor's performance five attributes of the quality of the construction sector, which are leadership, continuous improvement, empowerment, focus on the client, and project management (Yasamis et al., 2002). Faeq et al. also considered in their study that leadership, training, supplier management, operations and employee relations are important factors for TQM (Faeq et al., 2021).

A study conducted by Yahya and Alabdullah found a positive relationship between the implementation of TQM and management support for apply the stages of continuous improvement and resource management in construction companies (Yahya & Alabdullah, 2022). Furthermore, the results of the study conducted by Altayeb and Alhasanat which aimed to identify the success factors necessary for the implementation of TQM in the various phases of the construction project, showed that the critical factors affecting the implementation of TQM are continuous improvement, strategy and planning, communication, customer satisfaction, training and education, operations management, and leadership. The degree of agreement between each of the contractors, the owner, and the consultant was verified at the level of factors affecting the implementation of TQM, and it was found that there was a high degree of agreement, among the results of the study was also the need for the commitment of top management and employees in construction projects to apply TQM (Altayeb & Alhasanat, 2014). In addition to that a study done by Kuo and Kou recommended adopting the concept of TQM because of its ability to maximize integration between leadership, continuous improvement efforts, processes, and human resources (Kuo & Kuo, 2010).

Hoonakker et al. also concluded from the results of their research, that leadership, customer focus, human resources, and operations management are the most important elements of quality management (Hoonakker et al., 2010). A study done by Arditi and Gunaydin discussed the concept and impact of TQM in building construction, and

concluded that the commitment and participation of top management in the process of implementing TQM and continuous improvement of quality are important. It also emphasized the importance of good training and teamwork because of their importance in enhancing total quality and competitiveness in performance (Arditi & Gunaydin, 1997). Also, Polat et al. investigated in their study the benefits and barriers to implementing TQM in the construction industry through evidence taken from Turkish contractors, the results showed that non-commitment, lack of top management support, leadership, and qualified workers are among the most important obstacles to the implementation of TQM (Polat et al., 2011). While a study done by Mwidini aimed to assess the factors that contribute to the successful implementation of TQM in construction operations in Tanzania, the results showed that the management of operations and supplies, continuous improvement, and focus on the customer are the most decisive factors in the success of the implementation of TQM in construction operations, as it contributes significantly to ensuring and improving the quality of performance, it was also found that lack of expertise and lack of support from top management are among the factors affecting the implementation of TQM (Mwidini & Ndume, 2018). Finally, a study (Vijayabanu et al., 2022) that aimed to analyze the impact of TQMP in construction projects on reducing costs and improving productivity, service, and timing, it was found that factors such as the involvement and empowerment of employees, supplier management, and the commitment of top management are beneficial to the results of the success of the project, with a rate of (79.5%).

By reviewing the previous literature concerned with the practices and elements of TQM in the construction sector and the international standard that specifies requirements for a quality management system ISO 9001, it was found that leadership and top management commitment, continuous improvement, supplier management, process management, employee empowerment & involvement, and customer focus are the most common practices in this sector, which were adopted in this research as shown in Table 1.

Table 1

The most well-known TQM practices

TQM Practice	Summary of Definition
Leadership and Top Management Commitment	It represents the level of commitment and interest of top management in the concept of quality and its app ication, and the extent of support and development of decisions related to it.
Continuous Improvement	It represents efforts to continually improve processes or services.
Supplier Management	It represents the management and development of the relationship with suppliers and the extent to which it is enhanced.
Process Management	It represents the extent to which the company is able to design, control, supervise and audit various processes.
Employee Empowerment & involvement	The extent to which employees are involved in quality issues, decision making and their contribution to quality improvement.
Customer Focus	It represents the extent to which customers' needs and expectations are understood and met.

1.11.1.1 Leadership and Top Management Commitment

Quality decisions are important and strategic, and therefore the commitment of top management to support and develop these decisions is considered one of the main tasks that will lead to the success of their implementation. The level of commitment and interest of leadership and top management in this concept and its application is considered one of the most important factors for success in implementing TQM, as management must first realize that quality is more important than cost and schedule and give it priority, which will lead to improved performance (Othman & Rashed, 2016), and according to what Kubr indicated in his study on the necessity of leadership support for TQM and its commitment to it by establishing a clear policy and approach regarding TQM (Kubr, 2002).

According to the reviewed studies mentioned in Appendix A, the most important tasks of management regarding TQM are as follows:

- Considering quality as a basic and important goal.
- A clear vision and policy from the company towards quality.
- Giving quality priority over cost and delivery.
- Enhancing employees' culture of quality and developing their performance.

1.11.1.2 Continuous improvement

It is the continuous efforts made by companies to improve their operations or services, as this improvement is a series of continuous steps that ultimately lead to maintaining quality and increasing profit and production (Singh & Singh, 2015; Anderson et al., 1994). This is what is reinforced by the total quality approach in companies (Spencer, 1994), as the goal of this approach is to eliminate the causes of problems, create new standards, and improve them continuously (Martin et al., 2021; Shewhart & Deming, 1986). Companies aim to improve the quality of their work, reduce their costs, and increase their productivity, continuous improvement is the right approach for this (Oprime et al., 2011; Edosomwan, 1995).

According to the reviewed studies mentioned in Appendix A, the most important efforts for continuous improvement related to TQM are as follows:

- Improving employee work methods.
- Changing and improving the quality policy.
- Evaluating and improving EP.
- Improving achievement and implementation processes.
- Researching the causes of problems and delays.

1.11.1.3 Supplier Management

Supplier quality is an important dimension of quality management, as poorly supplied materials may lead to problems in implementation and process continuity. Supplier management refers to the ability to develop and maintain long-term relationships with suppliers and the degree of coordination between them and the company (Prajogo et al., 2012; Theodorakioglou et al., 2006; Shewhart & Deming, 1986). TQM is concerned with reducing costs and improving quality. Good resource management helps in providing the necessary resources from suppliers to the company with the required quality and on time (Anil & Satish, 2016; Perols et al., 2013).

According to the reviewed studies mentioned in Appendix A, the most important supplier management processes related to TQM are as follows:

- Clear specifications and requirements for suppliers.
- Taking into account the supplier's delivery performance.

– Managing and maintaining relationships with suppliers.
– Inspecting incoming materials.

1.11.1.4 Process Management

Processes are the tasks and procedures necessary to implement projects, and process management refers to the inspection, review, supervision, and auditing of various operations before, during, and after implementation (Zehir et al., 2012). Process management according to TQM, is based on the idea that when the implementation processes are correct, the final product will also be correct and conform to specifications. Therefore, it is very important for companies to adopt this practice.

According to the reviewed studies mentioned in Appendix A, the most important of these processes related to TQM are as follows:
– Reviewing plans and specifications.
– Comprehensive supervision and continuous monitoring.
– Final inspection and auditing.

1.11.1.5 Employee Empowerment & involvement

This represents the extent of employees' participation in quality-related issues and decision-making and their contribution to improving quality (Kaynak, 2003), as improving quality requires the contribution of everyone, not just management. Involving employees in these issues and decisions encourages them to commit to them (Al-Tayeb, 2008), and this helps in achieving their maximum potential to meet the required specifications. In TQM, everyone's participation is very important, as this enhance the ability of employees to make the necessary contributions to achieve the company's goals.

According to the reviewed studies mentioned in Appendix A, the most important processes of involvement and empowerment related to TQM are as follows:
– Participation in decision-making.
– Culture of teamwork and cooperation.
– Participation in finding solutions.
– Motivation and rewards.
– Improving employee skills.

1.11.1.6 Customer Focus

The company's success is reliant on its customers, so it is very important for companies to understand the customer's requirements and needs (Syaj, 2015; Kaynak, 2003; Flynn et al., 1995). Customer focus is very important because customers have a direct impact on the quality of the project, especially in the construction sector, because they are responsible for providing the details, specifications, and design required to be implemented (Syaj, 2015). In TQM, communication with customers must be maintained on a regular basis to determine their changing requirements and needs (Kaynak, 2003; Hackman & Wageman, 1995; Shewhart & Deming, 1986), as this will lead to establishing a good relationship with them in the long term. The main goal is customer satisfaction and focus, which improves the company's performance and ensures its success (Syaj, 2015).

According to the reviewed studies mentioned in Appendix A, the most important efforts of customer focus related to TQM are as follows:

- Taking into account the customer's desire.
- Following up on customer complaints.
- Following up on customer satisfaction during implementation.
- Evaluating customer satisfaction after implementation.

1.12 Construction Project Performance

A project is defined as a temporary activity undertaken to produce a product or service (PMI, 2021). Construction projects often have several objectives, including meeting customer needs, meeting a specific delivery date, improving quality, reducing costs, and ensuring good safety (Dias, 2009). Construction companies judge a project’s success or failure differently depending on the project’s objectives (Neyestani, 2016). There is no generally agreed-upon framework for measuring project performance (Ogunlana, 2010), due to the different characteristics of each project (Westerveld, 2003).

Since the 1960s, project performance has been studied in terms of cost, Iyer and jha and Ling et al. also mentioned that there are many previous studies on time and cost as project performance indicators (Ling et al., 2009; Iyer & Jha, 2005). Completion within the specified time and budget without affecting the quality of the project is one of the most

important goals of construction projects (Femi, 2015), these performance indicators are known as the Iron/Golden Triangle Tools, and they are the most important and comprehensive measures for judging CPP (Mane & Patil 2015; Meredith & Mantel, 2011; White & Fortune, 2002). Memon et al. indicated to the most important factors for monitoring project performance at the present time, which are the completion on schedule, the specified cost, and good quality (Memon et al., 2006). Raynsford also considered these among the most important factors of key performance indicators for projects (Raynsford, 2000), in addition to what was mentioned in (PMI, 2021; Long et al., 2004; Chan & Kumaraswamy, 2002), project performance is linked to many indicators such as budget, time, scope, quality, and customer satisfaction. Kuprenas also stated that for best project performance, cost, quality, design and construction time should be optimized (Kuprenas, 2003). Tam & Le (2007) also mentioned that it is very important to adjust the scope, time, and cost in line with stakeholder requirements to reach the best project quality. Some have used indicators such as customer satisfaction (Neyestani & Juanzon, 2016; Cleland & King, 1988). In addition to customer satisfaction, Tushman used budget performance, time, and creativity as indicators to measure projects (Tushman, 1978).

In this research, the tools of the Iron/Golden triangle -time, cost, and quality- (White & Fortune, 2002) were adopted to evaluate the CPP in Palestine, as these indicators are vital and measure the efficiency and success of the project (Neyestani, 2016; Papke-Shields et al., 2010).

Figure 1

Iron/Gold Triangle

1.13 Employee Performance

Administrative officials at their various administrative levels are interested in the issue of EP and the factors that affect it, as their administrative performance is only a reflection of individual performance of their employees. The concept of EP has received extensive attention and research in both management studies and human resources studies. It is considered one of the most important means for achieving the business objectives of the institutions. Dessler defines performance as the results of what the employee achieves when he performs any work in the organization (Dessler, 2003). It is also defined by Mahasneh as the results achieved by the employee through the accomplishment of the responsibilities and tasks entrusted to him by the institution (Mahasneh, 2013). Saina defines EP as the ability to perform certain skills. EP reflects the level of satisfaction, commitment, absenteeism, tardiness, effort, and motivation (Saina et al., 2016). While employee satisfaction is related to the extent to which employees feel that their needs are being met at work (Singh & Singh, 2015; Anderson et al., 1994).

In construction projects, construction workers are among the most important dynamic elements (El-Batreek et al., 2013), as the cost of construction workers in some projects constitutes (30% to 50%) of the total cost (Kalsum Zolkafli et al., 2010; Gilleard, 1992), and since they constitute this large part, construction projects depend a lot on the EP, especially On-site workers who form the basis for the success of projects (Prasetya et al., 2020). Engineers and architects play an important role in solving problems on the job site, facilitating effective communication between workers and the company, and coordinating with other project parties such as suppliers, clients, and subcontractors (Solis et al., 2015).

Bacong & Encio (2017) study showed that employees prefer to feel that they are part of the company's goals, and it also showed that having a good working relationship between employees in the company helps in providing good performance quality.

Therefore, it is very important to evaluate the performance of employees, as it achieves professionalism and job justice and raises the efficiency of the administrative apparatus, in order to put the right person in the right place. According to (Siriwardana & Ruwanpura, 2012), EP appraisal was defined as the process through which employees' efforts are evaluated fairly, to work towards rewarding them according to productivity, based on the elements and rates against which they are compared (Abu Al-Nasr, 2008). It was also defined by Al-Harasheh as measuring the extent to which workers complete jobs and the objectives required of them, and the extent to which they progress at work to take advantage of promotion opportunities and salary increases (Al-Harasheh, 2010). Accordingly, there are several criteria on the basis of which EP can be compared. According to (Prasetya et al., 2020; Okoro, 2017 Siriwardana & Ruwanpura, 2012; Kalsum Zolkafli et al., 2010;Abu Al-Nasr, 2008;), these criteria are :

1- Quality of work: It represents the ability of the worker to achieve the expected results with the fewest possible number of errors.
2- Quantity of Work: The amount of work accomplished by the worker with what is required to be accomplished with a specific quality and within a specified period of time.
3- Teamwork and Cooperation: the worker's ability to work in a team spirit and establish effective working relationships with his co-workers and supervisor.
4- Initiative and Ability: The ability of the worker to think and act without detailed and precise instructions, in addition to his knowledge of work duties and his ability to accomplish them.
5- Work habits (commitment): the extent to which the worker is committed to the tasks and requirements of the job, in addition to his observance of work rules.

These are the criteria taken into consideration in this study.

1.14 Research Framework

At the present time, the culture of quality is the common concern of managers and officials, as it is one of the most important priorities to achieve a high level of performance, especially after many organizations emerged adopting the philosophy of quality. TQM is an effective tool for improving performance and raising the level of competition for organizations with their various activities (Hbal & Garrash, 2019). There are many studies that have proven the success of the TQM approach in improving project quality (Mohammed & Ibrahim, 2016), and its performance (Talib et al., 2014;Abdullah, 2010; Lewis et al., 2006;) and the organization's performance as well (Fening et al., 2013). As it contributed to improving performance in terms of reducing costs and increasing productivity (Prajogo, 2005).

The research framework for this study will explore the relationship between TQMP, CPP, and EP. This framework will be based on established theories in quality management, which suggest that implementing TQMP can significantly enhance both project outcomes and EP (Polat et al., 2011). The study hypotheses that TQMP has a direct positive effect on both CPP and EP and that EP may act as a mediating variable in this relationship.

1.15 Palestinian Construction Sector and Quality

1.15.1 Palestinian Construction Sector

The construction sector is considered one of the main pillars of the Palestinian economy, as in 2000 it contributed about (26%) of the GDP, but it is has been in continuous decline until now due to the imposed Israeli restrictions and repeated closures, falling to (11.1%) in 2010 and to (6.5%) in 2018 (PIPA, 2022; PCBS; 2011, 2018). This sector is distinguished by its ability to generate diverse job opportunities for many specializations (Sabra, 2015), as, according to the Palestinian Central Bureau of Statistics, the percentage of workers in this sector in 2001 was (10.8%) directly and (30%) indirectly from services and industries related to this sector, and in 2012 the percentage increased to reach (17.8%) and (20.9%) in 2017. It also has the highest average daily wages compared to other sectors (PCBS, 2012, 2018), which makes it an attractive sector for employment and investment. However, the construction sector faces many challenges, most notably Israeli restrictions on the import of raw materials, land confiscation, real estate speculation, and political instability (Sabra, 2015). However, the availability of local raw materials, such as high-

quality cement and stones, enhances the feasibility of investing in this sector compared to neighboring countries (PIPA, 2022). Finally, the construction sector is considered a major driver of economic development in Palestine, but it needs supportive policies to overcome the challenges it faces, ensuring its continued growth and effective contribution to the national economy.

1.15.2 Palestinian Construction Sector and Quality

As mentioned earlier, the Palestinian construction sector is a vital component of the national economy, contributing significantly to infrastructure development and job creation. Despite the many challenges facing the sector, such as limited funding, complex regulations, and weak infrastructure, the sector has made great efforts to adopt quality management practices that aim to enhance project performance, ensure customer satisfaction, and improve overall efficiency (Dmaidi et al., 2016). There is a growing awareness of the importance of quality management practices in the construction sector in Palestine to enhance project performance (Jabi et al., 2024). Although the sector still lags behind other industries in fully adopting TQM principles, Syaj conducted a study that showed the most important challenges that prevent the application of quality management in the construction sector (Syaj, 2015). Moreover, Altayeb identified in his study the most important factors for success in implementing TQM in the construction industry (Altayeb & Alhasanat, 2014), there is a great awareness of TQM principles, and the application of TQM has been identified as a key strategy to achieve these goals in a study entitled “Implementing Quality Management in Construction Projects” by (Othman & Rashed, 2016).

1.16 Research Hypotheses

The study suggests that examining the relationship between TQMP and EP will help achieve better CPP. The theoretical foundations in this research are based on established theories in previous literature that link TQMP and CPP. Based on previous literature on the impact of TQMP on CPP, the study's hypotheses were designed with EP as a mediating factor. Four hypotheses were formulated to test the relationships between these constructs.

1.16.1 TQMP and CPP

TQM is a crucial and important element for construction contracting companies in maintaining competitiveness and leading project performance with high quality (Kuo & Kuo, 2010), and according study done by Yahya and Alabdullah aimed at assessing the impact of TQM on construction projects in Jordan, the study concluded that the application of TQM on construction projects in Jordan has a positive impact on the quality of performance (Yahya & Alabdullah, 2022). Another study done by Othman and Rashed that aimed to study the implementation of quality management in construction projects in the West Bank showed that the respondents consider quality to be one of the most important factors influencing the construction project and that the application of TQM is beneficial to the institution, the study concluded that the application of quality management is beneficial in continuing to improve the performance of the project and the need for the commitment of top management to maintain acceptance and a high level of quality in the project (Othman & Rashed, 2016).

Hoonakker et al. indicate in their research, which aimed to study the usefulness of applying quality management and discuss what might hinder its implementation in the construction industry, that contractors see a clear benefit from the use of TQM to improve quality performance and see its benefit in reducing the need for re-work and thus reducing cost and improving the performance of the project schedule (Hoonakker et al., 2010). While a study done by Femi aimed to assess the usefulness of implementing TQM and the obstacles to its implementation in the Nigerian construction industry, the study confirmed that the most important objectives of the project are completion within the specified time and budget without affecting the quality of the project, and the results showed many benefits of implementing TQM in the construction industry, the most important of which are improving schedule performance, improving budget performance, providing opportunities to improve quality performance, reducing rework, and increasing productivity and customer satisfaction (Femi, 2015).

Also, Polat showed that contractors are fully aware of the benefits of implementing TQM in the construction industry, including improved performance of both the project schedule and budget and reduced rework (Polat et al., 2011). In addition to the study (Abazid & Gökçekuş, 2019), which aimed to assess the impact of the implementation of TQM on

construction projects in the Kingdom of Saudi Arabia, it was found that TQM meets the requirements of the client, improves time management, quality and lowers costs in the project, and improves the possibility of achieving safety requirements.

According to the study conducted by Din, there was a positive moderate effect on the relationship between TQMP in Malaysian companies and the success of construction projects (Din et al., 2011). Also, in the United Arab Emirates, a study conducted by Mir and Pinnington investigated the relationship between TQM and project success, showing a positive effect on project success (Mir & Pinnington, 2014). Finally, Vijayabanu et al. confirmed in their study that aimed to analyze the impact of TQMP in construction projects on reducing costs and improving service, and timing that TQMP are beneficial to project success outcomes (Vijayabanu et al., 2022).

Drawing from prior research, the first hypothesis has been proposed as follows:

H1: TQMP has a positive and significant effect on Construction Project Performance (CPP).

1.16.2 TQMP and EP

Good management in large companies cares about employees as they consider them valuable assets. In a work environment that adopts total quality, employees do not suffer from fear or anxiety about the stability of their jobs. Top management also encourages open communication with employees, supports their participation, and provides them with opportunities to empower them. This contributes to employees' sense of belonging and satisfaction with their work and enhances their sense of ownership and self-actualization, which increases their loyalty and pride in the organization (ڑGoetsch & Davis, 2006; A. H. Memon et al., 2023; Flynn et al., 1995; Shewhart & Deming, 1986).

In a TQM environment, continuous growth, learning, and development of employees are promoted and they receive training tailored to their needs to improve their skills and knowledge and enable them to perform their jobs efficiently (Goetsch & Davis, 2006). Employees will also feel more satisfied, and their absenteeism rates will be reduced when their jobs include aspects such as skill diversity, task identity, task significance, autonomy, and feedback, which form the basis of effective employee management practices in TQM companies (Mohammed & Obaid, 2016; Hackman & Wageman, 1995).

Working in a TQM environment will contribute to enhancing employees' sense of appreciation and respect, reflecting their importance in the company. Involving employees in decision-making and problem-solving, asking for their opinions on improving and developing existing and new products, services, and processes, empowering them to manage their daily tasks, and promoting teamwork will contribute to improving their acceptance of decisions and changes implemented in the workplace. It will also enhance their commitment, and quality of work, reduce turnover and absenteeism, and improve morale, job satisfaction, and overall EP (Faeq et al., 2021; Dedy et al., 2016; Rahman & Bullock, 2005 Mar Fuentes et al., 2004; Flynn et al., 1995; Mohrman et al., 1995; Shewhart & Deming, 1986). On the other hand, effective operations management practices will increase employee satisfaction (Solis et al., 2015; Anderson et al., 1994;).

Finally, according to the investigation of the study conducted by (Sadikoglu & Zehir, 2010), it was found that there are positive effects of implementing TQMP in companies on EP and company performance. Drawing from prior research, the first hypothesis has been proposed as follows:

H2: TQMP has a positive and significant effect on Employee Performance (EP).

1.16.3 EP and CPP

The success of construction projects is greatly and directly affected by the performance of workers, as workers are the main operators of construction project implementation processes (design, implementation, and management) (Yee, 2018). For example, if an employee does not have the necessary skills and training to perform his tasks, this will lead to delays in the implementation of his tasks and exceeding the specified cost of these tasks. On the other hand, the efficiency, skills, and commitment of workers lead to increased productivity and improved work effectiveness, which in turn leads to completing projects within the specified schedule and budget and with fewer errors, which contributes to improving quality. Moreover, a study by Dainty et al. confirmed that skilled and competent workers are more committed to quality standards, which reduces errors and the need for rework, which affects the project by reducing implementation delays (Dainty et al., 2003). Chan and Chan confirm that there is a close relationship between project success factors and the experience and performance of the project team,

as employees with good skills and competence manage unexpected challenges better, which leads to smooth project implementation (Chan & Chan, 2004). According to the study conducted by Gemuenden and Lechler, high-performing teams achieved better project results as they were characterized by effective communication and mutual trust between team members (Gemuenden & Lechler, 1997). This indicates that enhancing cooperation between team members can enhance the project success rate. Moreover, factors such as poor cooperation and communication between the work team affect project schedules, leading to delays in construction projects and exceeding the specified budget (Jarkas & Bitar, 2012).

According to the study conducted by Nani and Apraku, it was found that motivating employees financially and morally led to increased job commitment and productivity, thus improving project results in terms of time and cost (Nani & Apraku, 2016). Finally, the research prepared by Chua et al. and Jose and Ambili concluded that in addition to the necessity of the availability of resources and clarity of the project scope, EP is one of the most important factors predicting project success (Jose & Ambili, 2017; Chua et al., 1999). In summary, these studies confirm the relationship between EP and construction project success and accordingly the third proposed hypothesis is:

H3: Employee Performance (EP) has a positive and significant effect on Construction Project Performance (CPP).

However, from previous studies, we find that employees are among the most important dynamic elements in construction projects (El-Batreek et al., 2013), and construction projects rely heavily on them, as they are the foundation of project success (Prasetya et al., 2020). Good management considers them valuable assets in the workplace (Goetsch & Davis, 2006), and project success is influenced by their performance, as they are the primary operators (Yee, 2018). Based on our knowledge, there is no study that has investigated the effect of EP as a mediating variable on the relationship between TQMP and CPP; this is the gap that will be the subject of our research. Accordingly, the fourth hypothesis is proposed:

H4: TQMP has a positive and significant effect on Construction Project Performance (CPP) through the Employee Performance (EP) as a mediator variable.

1.17 Conceptual Model

The conceptual model in this study consists of TQMP as an independent variable, CPP as a dependent variable, and EP as a mediator variable. Each variable has several indicators based on the literature review (Appendix A). Some indicators may be modified according to the objective analysis of the questionnaires that will be distributed. The model was designed to test the direct relationships between TQMP and both EP and CPP, as well as the mediating effect of EP.

1.17.1 Key Variables

Based on reference mentioned in Appendix A the main variables are as follows:

1.17.1.1 TQM practices (TQMP), the constructs of which are

- Leadership and top management commitment (LTM)
- Continuous improvement (CI)
- Supplier management (SM)
- Operations management (PM)
- Employee empowerment and engagement (EEI)
- Customer focus (CF)

1.17.1.2 Employee performance (EP), the constructs of which are:

- Work quality (WQL): the standard of work produced by employees.
- Work quantity (WQN): the amount of work produced by employees.
- Teamwork and collaboration (TC): the ability to work effectively as part of a team.
- Initiative and ability (IA): the proactive approach and ability of employees to take on tasks and solve problems.
- Work Habits (WH): General work habits of employees, including punctuality, organization, and commitment.

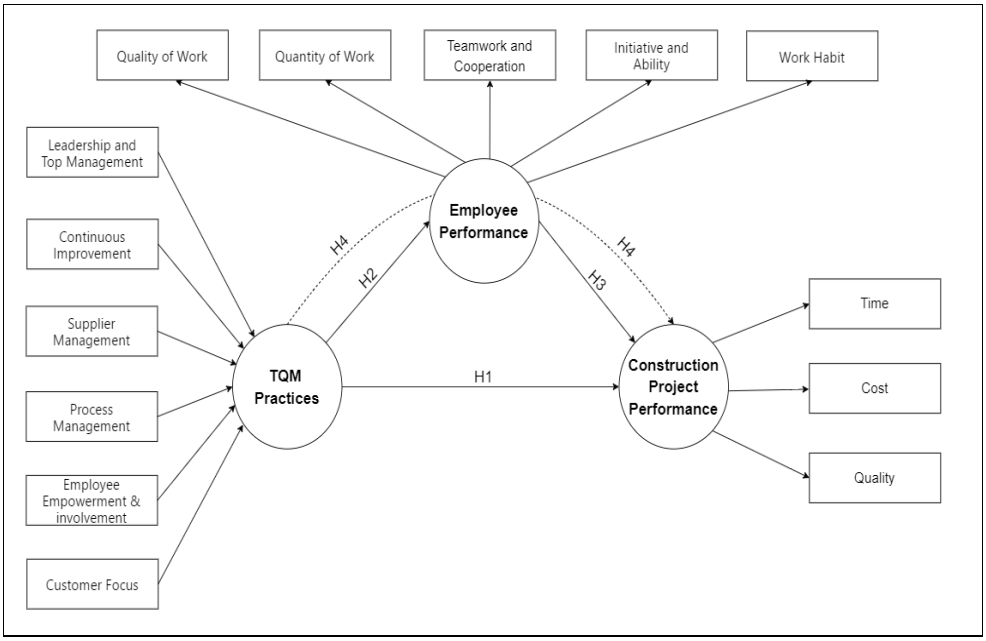
1.17.1.3 Construction Project Performance (CPP), the constructs of which are:

- Time (T): Ability to deliver the project on time.
- Cost (C): Ability to deliver the project within budget.
- Quality (Q): The extent to which the project meets the required quality standards.

Figure 2 presents the conceptual model of the study, which aims to examine the impact of TQMP on construction project and EP. With the mediating role of EP in the relationship between TQMP on CPP.

Figure 2

A conceptual model



Chapter Two

Research Methodology

2.1 Overview

This chapter first introduces the methodology used in this study, then presents the targeted research community and sample, the questionnaire design method and its sections, in addition to verifying and judging it, and finally collecting data and tools used in data analysis.

2.2 Research type and approach

This study began with a review of the literature and studies related to the concepts and dimensions of TQM, EP, and CPP, which were obtained from the Google Scholar database, the Google search engine, and scientific research publishing sites on the Internet. The current study uses the analytical research approach, where descriptive and analytical methods were combined to achieve the research objectives of identifying the impact of EP as a mediator on the relationship between TQMP and CPP. Moreover, quantitative data for this study were collected both in the field and online through questionnaires where specific companies were targeted. This data was statistically analyzed to test the validity of the hypotheses, which were built through a review of the literature and studies related to the subject of the study, which formed the theoretical framework of the study.

2.3 Pilot Study

A pilot study was conducted before starting the final data collection process to test the wording of the questions, identify ambiguities or problems in the questions, help improve them, and evaluate the time required to complete the entire questionnaire.

It was very important to ensure that the data to be collected through the questionnaire would be useful to achieve the objectives of this study. Therefore, this questionnaire was sent to a group of specialists who had extensive and sufficient experience to correct and modify any problems in the questionnaire regarding the research topic. The list of selected referees is attached in Appendix (B).

2.4 Sampling plan

2.4.1 Research population

In this study, the research population consisted of managers and engineers working in construction companies and offices in Palestinian cities. Contracting companies registered in the Palestinian Contractors Union list with a first-class classification in the field of the construction sector (construction, roads, project management, and infrastructure construction) were targeted, numbering 63 in August 2024, due to their greatest impact on project implementation in the West Bank (Shweiki et al., 2013). Engineering consulting offices classified by the Engineers Association in the West Bank as first-class consultants in the field of the construction sector (construction, roads, project management, infrastructure construction, and design) were also targeted, numbering 145 in August 2024, due to their extensive practical and administrative experience in the basic success factors for implementing TQM.

2.4.2 Research sample size

A group of individuals or elements is selected from the large population group to determine the study sample (Hair et al., 2014). The study community consists of 208 contracting companies and engineering offices working in various construction fields in Palestine (construction, roads, project management, infrastructure construction, and design).

The survey included company managers, project managers, quality and site managers, site engineers, supervision engineers, and design engineers in the targeted construction sector. The targeted participants are involved in designing, implementing, controlling, or monitoring construction project operations and company strategies, and these individuals are considered the most appropriate sources for obtaining the necessary information.

To ensure sufficient statistical power of the sample and make the model generalizable, a minimum sample size should be determined (Hair et al., 2014). The general rule of thumb "10 times rule" was used to determine the minimum sample size in PLS-SEM, where the sample size should be 10 times the number of internal or external links of a latent variable in the model (Hair et al., 2011). According to this rule, the minimum sample size required

in this study is 60, which is appropriate when using structural equation modeling, as it falls in the range of 50 to 100 (Churchill & Iacobucci, 2006).

In cooperation with the Palestinian Engineers Association and the Palestinian Contractors Union, 165 questionnaires were distributed, including an explanatory letter for the study objectives and ensuring data confidentiality. The questionnaires were distributed to company managers, project managers, quality managers, site managers, site engineers, supervision engineers, and design engineers randomly. The questionnaire filling process was followed up by reminders through personal visits to companies, phone calls, and emails. This helped increase the number of respondents. The response rate was 81.21%, equivalent to 134 questionnaires. 34 questionnaires were excluded during the data screening process, some of which were not fully completed and some did not meet the study criteria. As a result, 100 valid questionnaires were collected for the study, and therefore the sample size of our study (n=100) is considered sufficient. This is due to the fact that the target population is relatively limited in size, comprising 208 units.

2.5 Development of the Questionnaire Measurement

2.5.1 Questionnaire Design and Procedure

The questionnaire was designed based on a review the literature and studies related to the practices and applications of TQM, EP, and CPP. The main purpose was to collect data from participants to verify the validity of the hypotheses in this study. An electronic questionnaire was created to be filled out electronically using Google Forms and sent to respondents via email and messaging platforms, and also in paper form, where it was distributed directly by hand. The Arabic and English languages were used in writing the questionnaire, and the Arabic language questionnaire was adopted as it is the mother language of the respondents. It included an introductory letter about the topic and the purpose of the research. The questionnaire consisted of five sections:

– The first section collects personal and job information about the respondents, in order to assess the credibility of the collected data. It included seven questions related to the respondent's age, academic or professional qualification, specialization, company location, position, years of experience, company activity areas, and number of employees in the company.

- The second section measures the extent of respondents' knowledge and awareness of quality and TQM applications in their companies. It included five questions for this purpose, including their definition of quality, the principles they adopt, the most important considerations they care about, the project quality standards in effect, and the person responsible for solving quality-related problems.
- The third section measures the extent to which the respondents' companies apply TQMP. It included the best six practices of TQM extracted from the literature review, namely: leadership and top management, continuous improvement, supplier management, operations management, employee empowerment and involvement, and customer focus. The extent of application of these practices was measured by directing 48 questions to the respondents based on previous literature.
- Section four evaluates the performance of employees and workers in the respondents' companies. It included 41 questions based on previous literature to evaluate the company's employees through five aspects extracted from the literature review, which are: quality of work, quantity of work, teamwork and cooperation, initiative and ability, and work habits.
- Section five evaluates the CPP in the respondents' companies. It included 13 questions based on previous literature to evaluate the company's employees through three aspects extracted from the literature review, which are: time, cost, and quality.

2.5.1.1 Measurement indicators

Several scales were used in the questionnaire to measure the lower level variables LTM, CI, SM, PM, EEI, CF, WQL, WQN, TC, IA, WH, C, T, and Q. For the TQMP construct, the LTM variable was measured using twelve indicators, the CI variable using seven indicators, the SM variable using six indicators, the PM variable using seven indicators, the EEI variable using ten indicators, and the CF variable using six indicators, taken from the studies (Vijayabanu et al., 2022; Tabeeb, 2019; Yee, 2018; Mwidini & Ndume, 2018; Jose & Ambili, 2017; Othman & Rashed, 2016; Syaj, 2015; Koh & Low, 2010). In addition to the EP construct, the measuring elements of its variables were taken from (Prasetya et al., 2020; Okoro, 2017; Siriwardana & Ruwanpura, 2012; Kalsum Zolkafli et al., 2010; Abu Al-Nasr, 2008) where the WQL variable was measured using eight indicators, the WQN variable was measured using four indicators, the TC variable was measured using seven indicators, the IA variable was measured using ten indicators, and

the WH variable was measured using twelve indicators. The CPP construct was measured using indicators from (Femi, 2015; Ling et al., 2009; Memon et al., 2006; Iyer & Jha, 2005; Long et al., 2004; Kuprenas, 2003; White & Fortune, 2002; Chan & Kumaraswamy, 2002), where the C variable was measured using three indicators, the Q variable using five indicators, and the T variable using five indicators as well. The source of the indicators for measuring each variable is mentioned in Appendix A.

The study used a five-point Likert scale to assess the questionnaire indicators, with one point indicating very low, two points indicating low, three point indicating moderate, four point indicating high, and five point indicating very high.

2.6 Data Collection

165 questionnaires were distributed in paper and electronic form to the targeted individuals or elements, namely company managers, project managers, quality and site managers, site engineers, supervision engineers, and design engineers, due to their high ability to provide accurate data and their clear effectiveness in construction project operations and company strategies. These questionnaires included an explanatory letter for the study objectives and ensuring data confidentiality. Participants were reminded several times to fill out the questionnaire through personal visits to companies, phone calls, and emails, which helped increase the number of respondents. 100 valid questionnaires for the study were collected over two full months from the end of August 2024 to the end of October 2024.

2.7 Content validation

Nine academics and experienced managers (see Appendix B) validated the questionnaire content before distribution to the targeted respondents. They were asked to judge and review the questionnaire and its quality in terms of consistency, order, clarity, specificity, arrangement, language, and time. All their comments and guidance were taken into consideration when creating the final version of the questionnaire.

2.8 Data Analysis

The data gathered from the questionnaires will be examined using partial least squares (PLS-SEM) approach, which is a widely used statistical method that supports the estimation and evaluation of complex conceptual modeling in business and engineering

research. It has the ability to highly evaluate the proposed structural model even if the sample size is small (Hair et al., 2014). The reliability of the data will also be analyzed to determine the consistency and reliability of the collected scale using reliability analysis test (Cronbach's alpha, composite reliability, and average variance extracted) through Smart PLS software.

Chapter Three

Data Analysis and Results

3.1 Overview

This chapter includes an analysis and examination of the data collected from the questionnaires and a discussion of these analyses. It includes an analytical description of the personal and functional information of the respondents, an examination of the collected data to ensure the reliability and validity of the model measurements, and also contains the results of the structural model and hypothesis testing.

3.2 Descriptive statistics

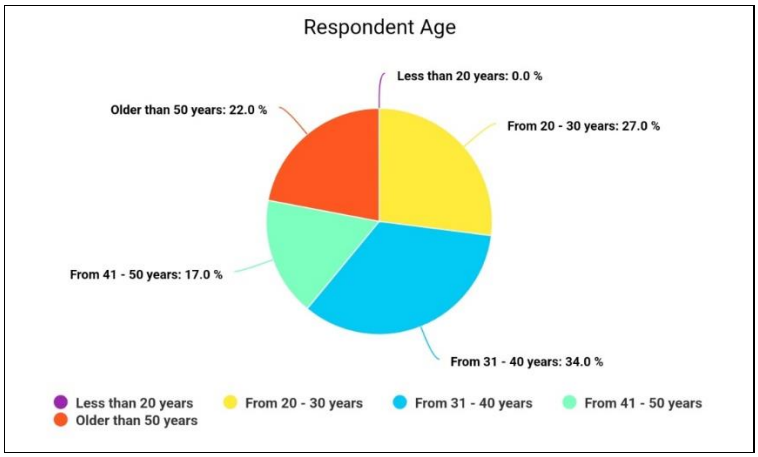
In this section, data on the personal and job characteristics of the questionnaire participants and the characteristics of the companies in which they work were analyzed, in addition to analyzing the extent of their knowledge and awareness of quality and the applications of TQM. Personal and job characteristics consist of age, educational qualification, academic specialization, job title, and years of experience, and company characteristics consist of the company's field of activity and company size (number of employees). The quality awareness measurement part consists of the quality definition, quality management principles, company considerations, company quality standards, and quality problems responsibility.

3.2.1 Age of respondents.

Figure 3 below shows the distribution of the age groups of the respondents, where (34%) of the respondents are between the ages of 31 and 40, which represents the largest percentage, and this category may consist of individuals with significant professional experience, followed by (27%) between the ages of 20 and 30, then (22%) are over 50 years old, which indicates that a large portion of the respondents may have significant experience and wisdom, and finally (17%) are between the ages of 41 and 50. Based on this age distribution, it can be inferred that most of the respondents have administrative and practical experience and skills and are good people to provide reliable and correct data.

Figure 3

Respondent Age



3.2.2 Educational qualification of respondents

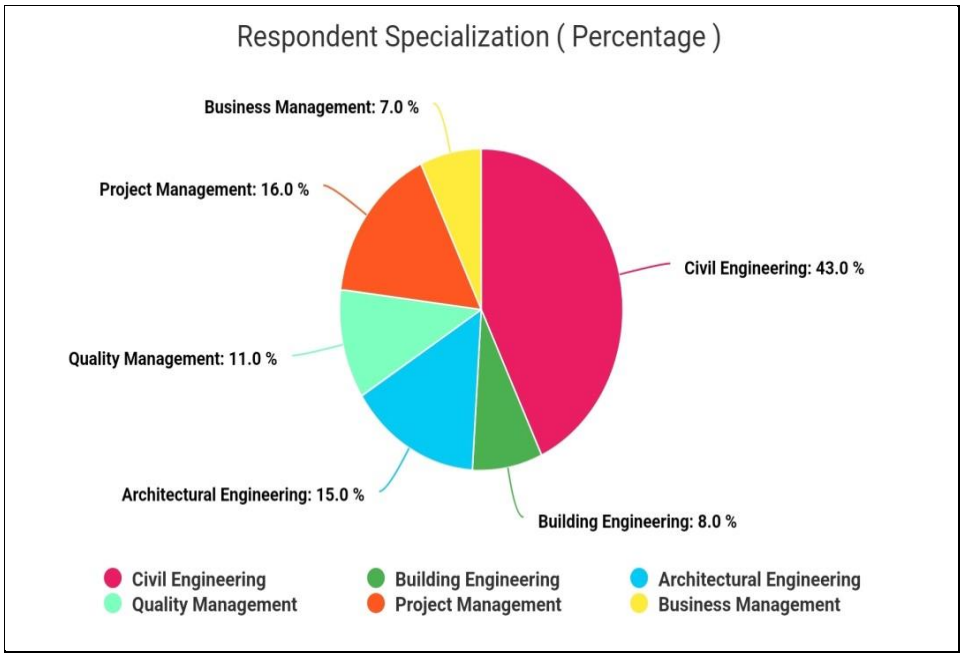
Appendix D shows the distribution of the educational level of the respondents, where (61%) of the respondents have a bachelor's degree, followed by (34%) with a master's degree, and finally (5%) of those who have a doctorate degree. Therefore, it can be inferred that most of the respondents have an excellent level of education and are very good people to provide reliable and correct data.

3.2.3 The academic specialization of the respondents

Figure 4 below shows the distribution of the educational specialization of the respondents, where (43%) of the respondents specialized in civil engineering, followed by (16%) with the specialization in project management, (15%) in architectural engineering, (11%) in quality management, (8%) in building engineering, and finally (7%) in business management. Therefore, it can be inferred that most of the respondents have experience in the field of construction and also have knowledge in project management and quality, and they are people with excellent education to provide correct and reliable data.

Figure 4

Respondents Specialization



3.2.4 Job position of respondents

Figure 5

Company Location

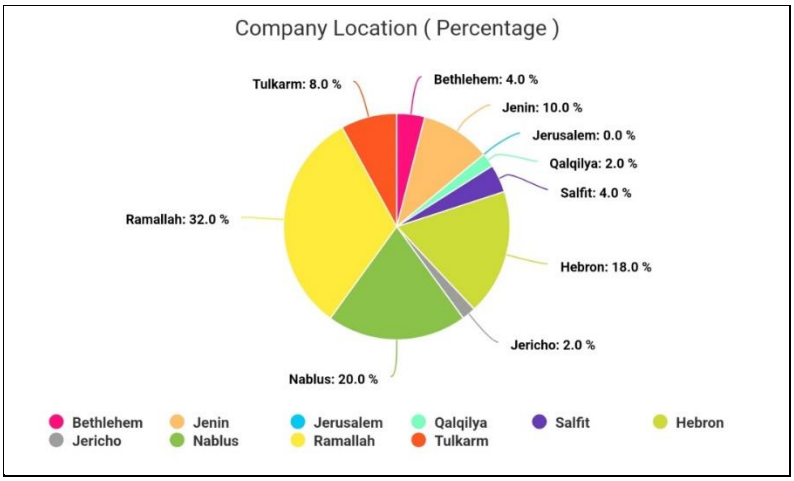


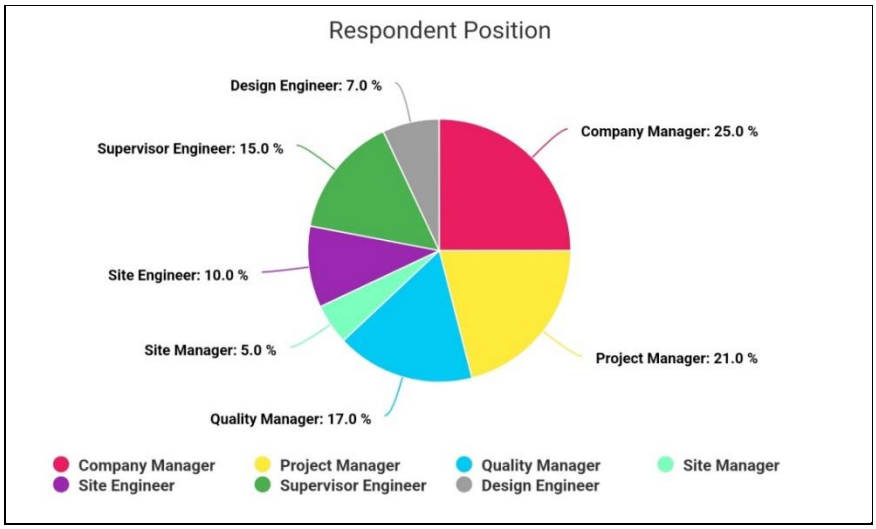
Figure 5 above shows the distribution of the locations of the respondents' companies, where (32%) of the companies are located in Ramallah, followed by (20%) in Nablus, (18%) in Hebron, (10%) in Jenin, (8%) in Tulkarm, (4%) each in Bethlehem and Salfit, and finally (2%) each in Qalqilya and Jericho.

3.2.5 Job position of respondents.

Figure 6 below shows the distribution of the job position of the respondents, where (25%) of the respondents were company managers, followed by (21%) project managers, (17%) quality managers, (15%) supervisory engineers, (10%) site engineers, and (7%) are design engineers, and finally (5%) are site managers. So, it can be inferred that most of the respondents are key people in their companies, and this gives more reliable and valid data. Based on this distribution, we conclude that the majority of the respondents hold key positions within their companies, which indicates that they have extensive knowledge and experience, thus ensuring reliable data and suitable for study.

Figure 6

Respondents Position

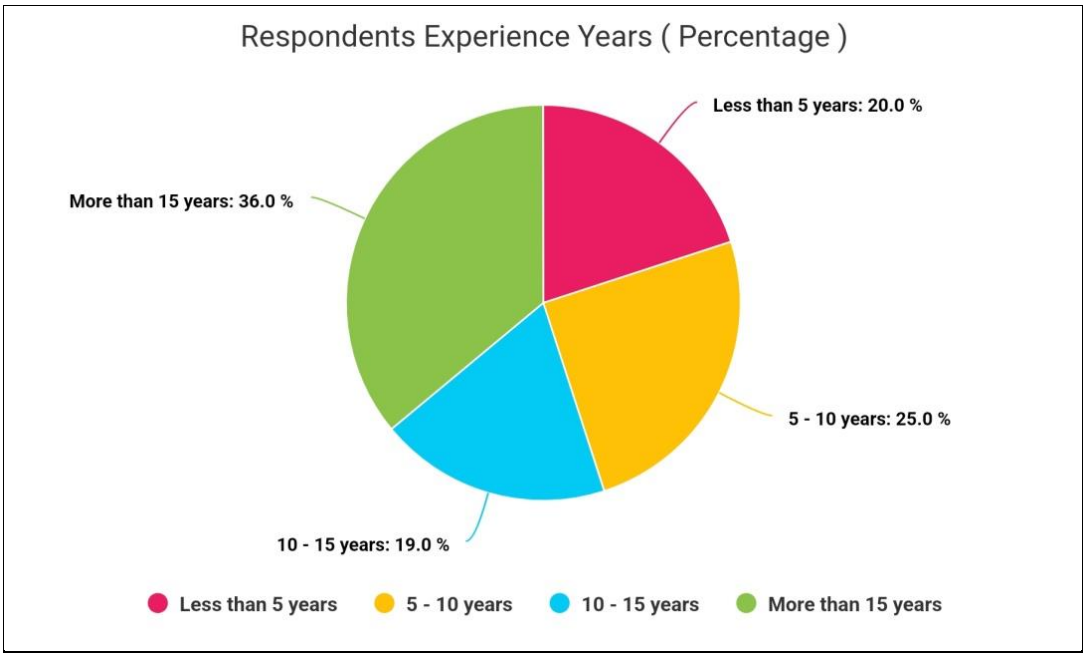


3.2.6 Years of experience of respondents

Figure 7 below shows the distribution of the respondents' job experience, where (36%) of the respondents had more than 15 years of experience, indicating that a large portion of the participants have extensive knowledge and skills, followed by (25%) with 5-10 years of experience, which is considered good experience, (20%) who had less than 5 years of experience, and finally (19%) with 10-15 years of experience, which is a great experience. Therefore, it can be inferred that most of the respondents have extensive experience in their field of work, which is logical, as the targeted companies were highly rated companies, which provides reliable and valid data.

Figure 7

Respondents Experience

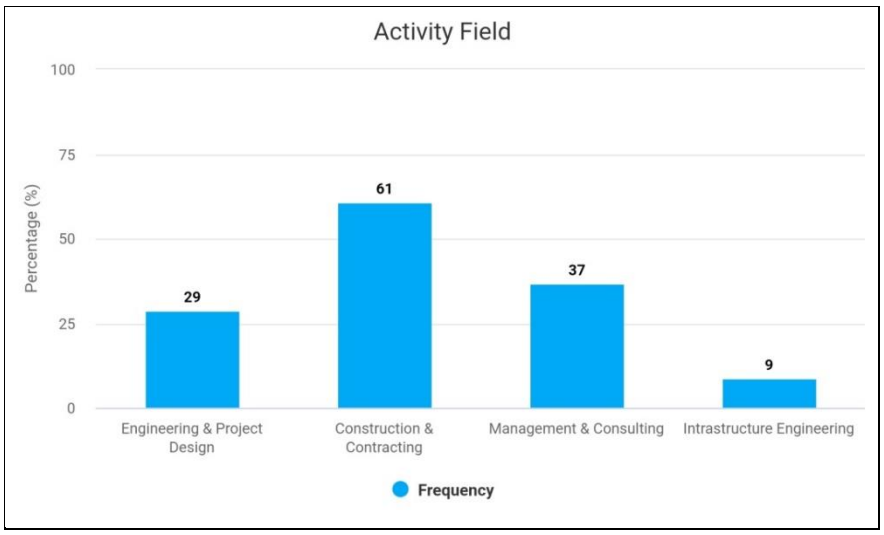


3.2.7 Field of activity of the surveyed company

Figure 8 below shows the distribution of the fields in which the respondents' companies are active, where 61 of respondents indicated that their companies active in the field of construction and contracting, followed by 37 in the field of management and consulting, 29 in the field of engineering and project design, and finally 9 in the field of infrastructure engineering.

Figure 8

Activity Field



3.2.8 Size of the surveyed company (Number of employees)

Appendix E shows the distribution of the size of the respondents' companies in terms of number of employees, where (67%) of the companies had 10-49 employees, followed by (23%) that had less than 10 employees, and (10%) that had more than 50 employees. This also makes sense since the targeted companies were highly rated companies.

3.2.9 Best definition of quality according to respondents

Appendix F shows the distribution of the definition of quality according to the respondents, as they indicated more than one definition. The respondents' definition of quality was as follows: 76 respondents' as improvement of service/product, 70 as customer satisfaction, 68 as absence of errors, 54 as company reputation, 47 as increased profits, 45 as time savings, 25 as teamwork, 4 as additional costs, 2 as wasted time. It can be concluded from these percentages that respondents have a good understanding of quality.

3.2.10 Quality management principles adopted in the surveyed companies.

Appendix G shows the distribution of the principles adopted by the surveyed companies in quality. The numbers below reflect the frequency of respondents as follows: 81 respondents reported applying operations management, 75 customer focus, 69 employee involvement in decision-making, 65 continuous improvement, 56 performance evaluation, 51 employee training, 31 supplier management. It can be concluded from these percentages that the surveyed companies may achieve the desired goal of this research because its percentages of practicing some quality principles are good. These results indicate that the companies included in the survey follow sound quality management practices, which puts them in a good position to achieve the research objectives.

3.2.11 Important considerations for companies surveyed

Appendix H shows a distribution of the most important considerations for the surveyed companies, which are as follows: 95 respondents prioritized profit, 90 work accuracy, 82 employee satisfaction, 81 finishing work on time, 81 customer satisfaction, 77 cost reduction, 62 occupational health and safety. These considerations reflect the great importance of financial efficiency, time and employee satisfaction.

3.2.12 Project quality standards approved in the surveyed companies.

Appendix I shows the distribution of the most important project quality standards in the surveyed companies. The numbers represent the frequency of respondents who reported adherence to each standard. with 75 respondents indicated adherence to local standards, ensuring compliance with the regulations and requirements of the region, 68 to international standards, indicating adherence to the best internationally recognized standards, 52 to company-specific standards, and 40 to customer requirements, indicating the importance of meeting customer expectations.

3.2.13 Responsible for solving quality problems in the surveyed companies.

Appendix J shows the distribution of who responsible for solving quality-related problems according to the respondents in their companies. as follows: 77 respondents indicated the project manager, which reflects the role of project management in ensuring quality, 69 indicated the company manager, which indicates the involvement of top management in maintaining quality, 58 indicated the site manager, 51 indicated the quality manager, and finally 40 indicated the employees/workers. It can be noted that these frequencies suggest that quality assurance is a shared responsibility among everyone within the company and includes several levels, as it is distributed and not limited to management only.

3.3 Smart PLS Results

In this section, the results of the analysis of study data extracted from Smart-PLS 4 are analyzed and presented. The data extracted from the questionnaire was input into the program, and then the structural model was built to test the relationships between the independent and a dependent variables, according to the hypotheses and relationships established in the study. This process includes classification of measurement indicators into reflective or formative indicators, as this is very important for evaluating the model (Lowry & Gaskin, 2014; Hair et al., 2013). The program was used to evaluate and examine the reliability and validity of the model's measurements (outer model - indicators) and then evaluate the structural model (inner model).

According to the study hypotheses, the model consists of three higher-order constructs: TQM as an independent variable, EP as a mediator variable, and CPP as an dependent

variable. It also consists of fourteen lower-order constructs linked to the higher-order constructs through reflective or formative relationships. Six lower-order constructs, namely LTM, CI, SM, PM, EEI, and CF, are linked to a formative relationship with the higher-order construct TQM, and five lower-order constructs, WQL, WQN, TC, IA, and WH, are linked to a reflective relationship with the higher-order construct EP, and also three lower-order constructs, T, C, and Q, linked in a reflective relationship with the higher-order construct CPP. In addition, the model consists of 82 indicators linked to the lower-order constructs in a reflective relationship.

3.3.1 The Measurement Model

The measurement model is known as the part that studies the relationship between the latent variables and their measures (Hair et al., 2020). One of the most important criteria for evaluating the measurement model is its validity and reliability (Hair et al., 2014), as these adds quality to the research (Kimberlin & Winterstein, 2008). According to (Sekaran, 2016), validity is defined as performance assessment that it actually measures the concept it should measure, and reliability as that the tool measures consistently for the purpose for which it was designed.

In this research, there are two levels of constructs: lower-order constructs, which are represented by LTM, CI, SM, PM, EEI, CF, WQL, WQN, TC, IA, WHT, C, T, and Q, and higher-order constructs, which are represented by TQMP, EP, and CPP. The Smart PLS software automatically calculates the values of the Outer Loadings of the indicators and the Average Variance Extracted (AVE) related to the lower-order constructs, (Shown in Figure 10), but for the higher-order constructs, evaluating the quality of measuring these constructs is considered difficult (Sarstedt et al., 2019). Researchers have proposed several methods to evaluate the quality of higher-order constructs in PLS-SEM, the most important of which is the Two-stage approach (Hair et al., 2017; Ringle et al., 2012) There are two methods for this approach, which are the embedded approach (Ringle et al., 2012) and the disjoint approach (Becker et al., 2012; Agarwal & Karahanna, 2008). Both approaches produce similar results (Cheah et al., 2019), and the disjoint two-stage approach was used in this research. Therefore, in the case of evaluating the measurement model for higher-order constructs, an additional step was needed, which is to convert the lower-order variables into latent variables used to measure the higher-order variables

(Sarstedt et al., 2019), and building a new model that is limited to higher-order constructs, their relationships with each other, and the relationships between them and their latent variables, (Shown in Figure 9).

Figure 9 represents the final result of the second stage of the two-stage approach to assessing higher-order constructs in the measurement model, where lower-order constructs were transformed into latent variables to measure higher-order constructs. Figure 9 contains the values of the outer loadings of the indicators which represents how strongly an indicator is related to the construct, the average variance extracted of the variables which is one of the statistical measures used in structural equation modeling to assess the validity and reliability of the measurement model constructs, and the values of the path coefficients of the relationships between the variables which represents the strength of the relationship between latent constructs (Sarstedt et al., 2019), all these aspects will be better explained in the subsequent sections.

Figure 10 represents the final result of the first stage of the two-stage approach to assessing the lower-order constructs in the measurement model, where the figure contains the values of the outer loadings of the indicators, the average variance extracted of the variables, and the values of the path coefficients for the relationships between the variables, which will be better explained in the subsequent sections.

Figure 9

Final result of second stage of the two-stage approach to assessing the higher-order constructs (outer loadings & inner loading shown on arrows, average variance extracted shown in circle)

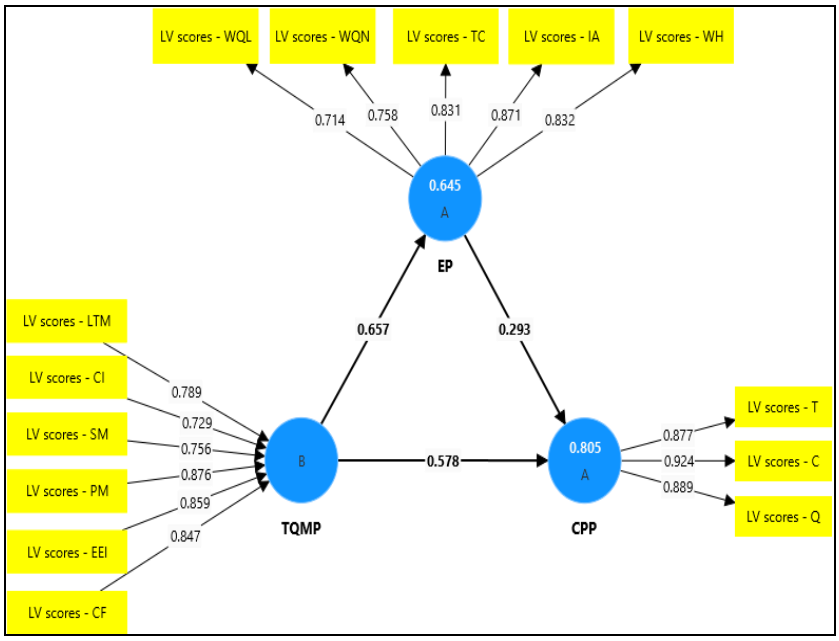
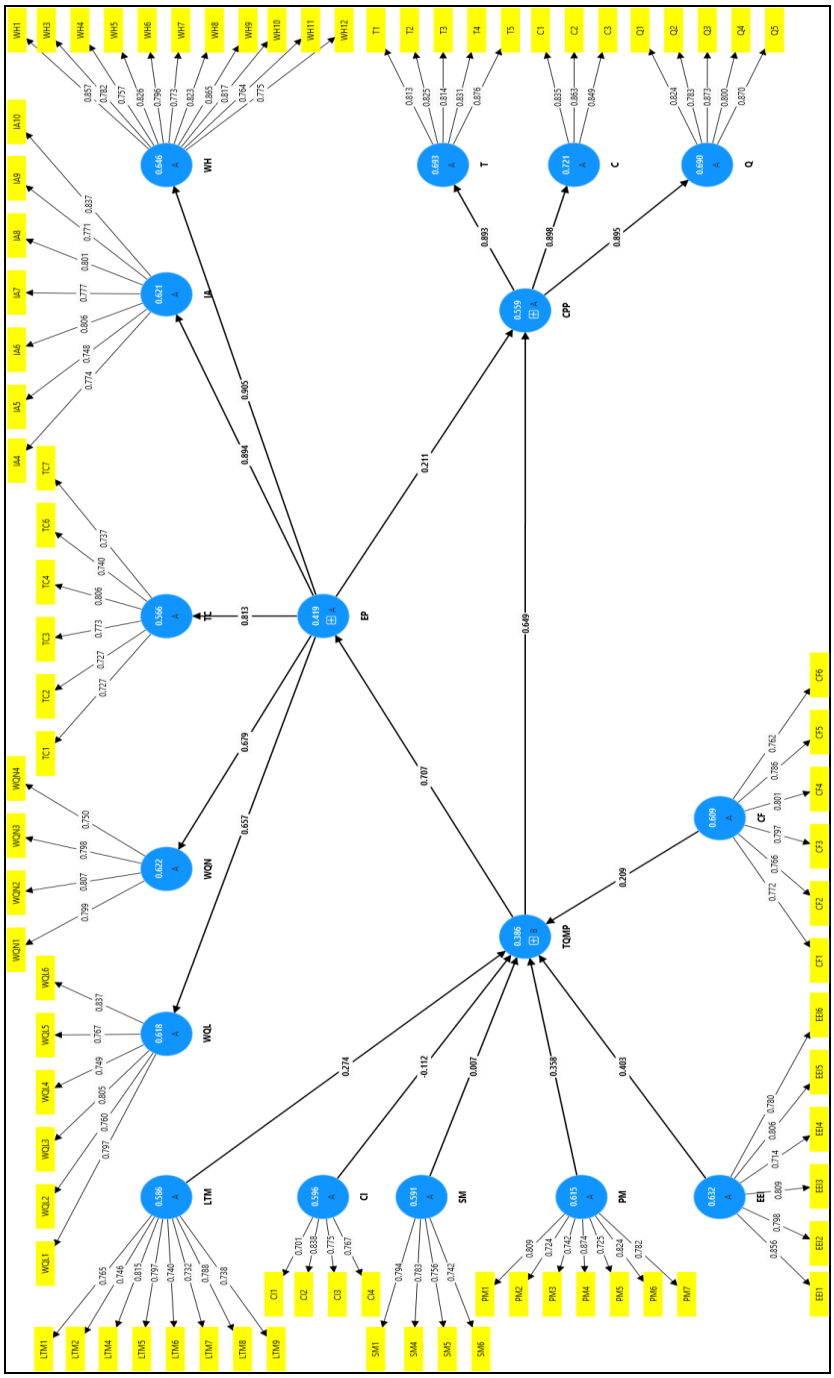


Figure 10

Final result of the first stage of the two-stage approach to assessing the lower-order constructs (outer loadings & inner loading shown on arrows, average variance extracted shown in circle)



To evaluate the reflective and formative measurement model, the criteria proposed by (Hair et al., 2017) were followed, which are as follows:

3.3.1.1 Internal consistency reliability for reflective lower-order constructs:

Internal consistency reliability indicates the degree of consistency between the indicators used to measure the same construct. Cronbach's alpha and composite reliability used to measure this. Appendix K displays the values of Cronbach's alpha and composite reliability for lower-order constructs, where Cronbach's alpha is the lower limit of internal consistency reliability and composite reliability is the upper limit (Hair et al., 2017).

According to (Hair et al., 2017), good internal consistency reliability values for both Cronbach's alpha and composite reliability should be higher than 0.7. This is to confirm that the construct indicators reflect the latent variable (Hair et al., 2014), and according to the values presented in Appendix K, internal consistency can be confirmed, all lower-order constructs are considered reliable, as Cronbach's alpha values range between 0.765 and 0.945, and composite reliability values range between 0.848 and 0.953.

3.3.1.2 Convergent validity for reflective lower-order constructs

Convergent validity measures the degree to which indicators relate to alternative indicators of the same construct (Hair et al., 2011), which is evaluated through the factor loading of the indicators and the AVE of the reflective constructs (Hair et al., 2017) as it is based on methods and procedures that examine the relationship between responses to measure and evaluate a particular concept (Peter, 1981).

The factor loading value must be higher than 0.7 (Hair et al., 2017) and the values of all factor loadings according to the values in Appendix K were higher than 0.7 with the exception of LTM3, LTM10, LTM11, LTM12, CI5, CI6, CI7, SM2, SM3, EEI7, EEI8, EEI9, EEI10, WQL7, WQL8, TC5, IA1, IA2, IA3 and WH2 were less and therefore deleted.

According to (Hair et al., 2017; Fernandes, 2012;), the AVE values must be higher than 0.5, and according to the values presented in Appendix K, the AVE values ranged between 0.566 and 0.721 for the lower-order constructs, all of which are acceptable.

3.3.1.3 Internal consistency reliability for reflective- reflective higher-order constructs

According to the values presented in Table 3, taken from stage two of the Smart PLS software, internal consistency can be confirmed, and all higher-order constructs are considered reliable, where the Cronbach's alpha values for CPP and EP are 0.878 and 0.861, respectively, and the composite reliability values are 0.925 and 0.901 respectively as well, this is higher than 0.7 (Hair et al., 2017).

3.3.1.4 Convergent validity for reflective-reflective higher-order constructs

According to the values presented in Table 2, taken from stage two of Smart PLS, where the path coefficients between the lower-order constructs and the higher-order constructs were considered as the factor loadings (Hair et al., 2011) values ranged between 0.714 and 0.924, all of which are higher than 0.7 (Hair et al., 2017), which is acceptable. Also, the AVE values for CPP and EP were 0.805 and 0.645, respectively, which are acceptable, higher than 0.5 (Hair et al., 2017).

Table 2

Internal consistency reliability & Convergent validity for reflective higher-order constructs

Higher Order Construct	indicator	Loading	Cronbach's alpha	CR	(AVE)
Construction Project Performance (CPP)	LV scores - C	0.924	0.878	0.925	0.805
	LV scores - Q	0.889			
	LV scores - T	0.877			
Employee Performance (EP)	LV scores - IA	0.871	0.861	0.901	0.645
	LV scores - TC	0.831			
	LV scores - WH	0.832			
	LV scores - WQL	0.714			
	LV scores - WQN	0.758			

3.3.1.5 Convergent validity for reflective-formative higher-order construct

In Table 3, the higher-order construct TQMP was not included. By examining the weight significance of the latent variables associated with the higher-order variable obtained from stage two, the convergent validity of the reflective-formative higher-order construct can be examined. A p-value must be less than 0.05 for weights of its indicators to be an significance effect. From Table 3, it was found that both EEI and PM have good weights

of 0.406 and 0.362, respectively, and have a clear value and significant effect (P < 0.05) on TQMP, while CF, CI, LTM, and SM are much smaller and non significant.

Table 3

Outer weights for formative higher-order construct

	Weights	(STDEV)	T statistics (|O/STDEV|)	P values
LV scores - CF -> TQMP	0.208	0.116	1.79	0.074
LV scores - CI -> TQMP	-0.13	0.153	0.851	0.395
LV scores - EEI -> TQMP	0.406	0.107	3.786	0.000
LV scores - LTM -> TQMP	0.287	0.148	1.937	0.053
LV scores - PM -> TQMP	0.362	0.125	2.892	0.004
LV scores - SM -> TQMP	0.035	0.141	0.248	0.804

However, Table 4 is given the factor loadings for these indicators are higher than 0.7, which has a significant effect (P < 0.05) (Hair et al., 2021), and therefore these indicators CF, CI, LTM, and SM are retained in the model measuring the higher-order construct, these results give clear support for the validity of reflective-formative higher-order construct.

Table 4

Outer loadings for formative higher-order construct

	Loadings	(STDEV)	T statistics (|O/STDEV|)	P values
LV scores - CF -> TQMP	0.847	0.048	17.479	0
LV scores - CI -> TQMP	0.729	0.076	9.552	0
LV scores - EEI -> TQMP	0.859	0.053	16.182	0
LV scores - LTM -> TQMP	0.789	0.083	9.478	0
LV scores - PM -> TQMP	0.876	0.043	20.459	0
LV scores - SM -> TQMP	0.756	0.092	8.222	0

3.3.1.6 Discriminant validity

According to Hair, "Discriminant validity refers to the extent to which a construct is not related to other constructs and how unique it is" (Hair et al., 2017). Researchers rely on three methods to test discriminant validity, which are the cross-loading, the Fornell-Larcker criterion, and heterotrait–monotrait ratio (HTMT) of correlations criterion (Hair et al., 2014). The first criterion for evaluating discriminant validity is cross-loading,

where the outer loading of the indicators associated with a particular construct must be higher than the cross-loading (correlation) on the other constructs as shown in the Appendix L and Table 5.

Table 5

Cross-Loading criterion for higher-order constructs

	CPP	EP	TQMP
LV scores – T	0.877	0.602	0.628
LV scores – C	0.924	0.613	0.719
LV scores – Q	0.889	0.597	0.721
LV scores – WQL	0.481	0.714	0.591
LV scores – WQN	0.535	0.758	0.518
LV scores – TC	0.532	0.831	0.468
LV scores – IA	0.533	0.871	0.482
LV scores – WH	0.607	0.832	0.564
LV scores – LTM	0.57	0.563	0.789
LV scores – CI	0.525	0.523	0.729
LV scores – SM	0.566	0.517	0.756
LV scores – PM	0.735	0.505	0.876
LV scores – EEI	0.628	0.604	0.859
LV scores – CF	0.646	0.564	0.847

The Fornell-Larcker criterion was used to evaluate the discriminant validity of the indicators, which consists of comparing the square root of the AVE values for all constructs with the correlations of the other constructs (Fornell & Larcker, 1981). To confirm the discriminant validity, the correlation value of each construct with itself must be higher than the correlation value with other constructs (Hair et al., 2017). As shown in Table 6 and Table 7, the bold diagonal line, which represents the square root of the AVE values, exceeds the value of the other values within the matrix, which represents the correlation value with other constructs. Thus, the existence of discriminant validity was confirmed.

Table 6

Fornell-Larcker criterion for lower-order constructs

	C	CF	CI	EEI	IA	LTM	PM	Q	SM	T	TC	WH	WQL	WQN
C	0.849													
CF	0.618	0.781												
CI	0.487	0.624	0.772											
EEI	0.555	0.607	0.621	0.795										
IA	0.49	0.419	0.416	0.518	0.788									
LTM	0.527	0.647	0.736	0.557	0.401	0.766								
PM	0.716	0.726	0.678	0.631	0.315	0.593	0.784							
Q	0.74	0.652	0.46	0.536	0.426	0.582	0.66	0.831						
SM	0.493	0.711	0.579	0.537	0.269	0.637	0.685	0.624	0.769					
T	0.74	0.458	0.465	0.602	0.524	0.417	0.595	0.64	0.396	0.832				
TC	0.475	0.44	0.336	0.438	0.661	0.363	0.344	0.52	0.401	0.433	0.752			
WH	0.573	0.484	0.458	0.483	0.782	0.474	0.488	0.498	0.388	0.566	0.629	0.804		
WQL	0.38	0.524	0.498	0.462	0.399	0.578	0.474	0.503	0.606	0.408	0.544	0.458	0.786	
WQN	0.528	0.387	0.375	0.518	0.652	0.426	0.385	0.441	0.401	0.47	0.514	0.431	0.458	0.789

Table 7

Fornell-Larcker criterion for higher-order constructs

	CPP	EP
CPP	0.897	
EP	0.673	0.803

Some researchers believe that the heterotrait–monotrait ratio (HTMT) is more accurate than the previous two criteria in assessing discriminant validity (Henseler et al., 2015), and according to Voorhees, the performance of Fornell-Larcker criterion is weaker in assessing discriminant validity (Voorhees et al., 2016). Using HTMT, the true correlation between two constructs is estimated if they are measured perfectly, i.e., completely reliable (Hair et al., 2017). The HTMT value ranges from 0 to 1 where all values less than 0.9 are considered to indicate good reliability (Henseler et al., 2015). As shown in Table 8 and Appendix O, all values less than 0.9 are indicative of good reliability.

Table 8

HTMT for lower-order constructs

	C	CF	CI	EEI	IA	LTM	PM	Q	SM	T	TC	WH	WQL	WQN
C														
CF	0.738													
CI	0.602	0.746												
EEI	0.65	0.68	0.727											
IA	0.574	0.469	0.491	0.588										
LTM	0.613	0.721	0.873	0.614	0.435									
PM	0.84	0.817	0.783	0.696	0.342	0.642								
Q	0.873	0.743	0.542	0.599	0.474	0.646	0.736							
SM	0.618	0.863	0.725	0.644	0.322	0.754	0.815	0.744						
T	0.869	0.519	0.542	0.672	0.582	0.464	0.66	0.715	0.475					
TC	0.57	0.506	0.399	0.5	0.753	0.404	0.391	0.6	0.495	0.499				
WH	0.656	0.532	0.519	0.528	0.842	0.507	0.525	0.544	0.452	0.617	0.695			
WQL	0.446	0.59	0.577	0.502	0.445	0.636	0.528	0.568	0.744	0.458	0.622	0.487		
WQN	0.658	0.462	0.473	0.619	0.771	0.496	0.455	0.524	0.511	0.554	0.623	0.495	0.55	

3.3.2 Multi-Collinearity Test

The multi-collinearity test refers to examining the extent to which the indicators in the outer model are related to each other. The presence of multicollinearity in the outer model may affect the reliability and validity of the latent constructs. Therefore, Hair suggest checking for multi-collinearity between indicators in order to evaluate the measurement model, as there is a problem when one indicator is significantly correlated with another indicator (Hair et al., 2017). Thus, the tolerance (TOL) should be calculated, which represents the degree of variance for a specific indicator that is not explained by other indicators.

The variance inflation factor (VIF) represents the degree of increase in the standard error due to the presence of collinearity and is also the inverse of the tolerance (i.e., VIFxs = 1/TOLxs) and is used to evaluate collinearity. (Hair et al., 2011) considers that multi-collinearity is present if the value of the variance inflation factor is greater than 5 and the value of the tolerance is less than 0.20.

Appendix C shows the values of the variance inflation factor for the indicators, all of which are less than 5. As a result, the results indicate that there is no violation of multi-collinearity.

3.3.3 Common Method Bias

Common method bias refers to the extent to which measurement error is likely to occur when the same method is used to measure both the independent and dependent variables (inner model) in a study.

Through the variance inflation factor (VIF) values extracted from Smart PLS software for the inner model, common method bias (CMB) was assessed. Table 9 shows the VIF values for the inner model and it is noted that they are less than 3.3, and according to Kock, with these values, the model is considered free of common method bias (Kock, 2015).

Table 9

(VIF) values

	C	CPP	EP	IA	Q	T	TC	TQMP	WH	WQL	WQN
CF								2.828			
CI								2.990			
CPP	1.00				1.00	1.00					
EEI								2.131			
EP		2.049		1.00			1.00		1.00	1.00	1.00
LTM								2.755			
PM								2.895			
SM								2.488			
TQMP		2.049	1.00								

3.4 Results of the Structural Model

In this section, the results of the Smart PLS structural model analysis will be presented. The author adhered to the stipulations in the (Fernandes, 2012; Hair et al., 2011; Vinzi, 2010). This included examining the R^2 values, effect size (f^2), and Model Fit. Furthermore, the size and significance of the path coefficients were assessed. Bootstrapping was used to test the hypotheses proposed in the study.

3.4.1 The determination coefficient (R^2)

R^2 value is "one of the measures that explain the proportion of variance in a dependent variable that can be explained by one or more independent variables in a regression model, and is the most widely used measure to evaluate a structural model" (Hair et al., 2017), as this coefficient expresses the sum of the influence of the external latent variables on the internal latent variable, and it represents a measure of the predictive power of the sample (Hair et al., 2014; Rigdon, 2012; Cohen, 1988) consider that the R^2 value if it is greater than 0.25 is high, if it is between 0.25 and 0.12 it is moderate, and if it is between 0.12 and 0.02, it is low, and it is considered without an explanation coefficient if it is less than 0.02. The results in the Appendix M show that the R^2 value for the internal latent variables CPP and EP is high.

3.4.2 Effect Size (f^2)

Effect size (f^2) is "a measure used to measure the strength of the relationship between an independent variable and a dependent variable. It is analyzed to assess the magnitude of the relationships between them in a structural model" (Vinzi, 2010). The f^2 value indicates the ability of a given exogenous variable to explain an endogenous variable when the model is fit, which helps to understand the significance of the empirical relationships. (Cohen, 1988) considered the f^2 value to be null if it is less than 0.02, small if it ranges between 0.02 and 0.15, medium if it ranges between 0.15 and 0.35, and large if it is greater than 0.35.

Appendix N shows that TQMP has a large effect on CPP ($f^2 = 0.530$), and a large effect on EP ($f^2 = 0.760$). On the other hand, EP has a small effect on CPP ($f^2 = 0.137$).

3.4.3 Model Fit

SRMR (standardized root mean square residual) compares "the observed correlation matrix to the implied correlation matrix of the model and is an Inconsistency-based measure" (Henseler et al., 2015). SRMR was used as a measure of model fit to validate and verify the reliability of the previous bootstrap analysis, and is a robust fit index that works with reflective, formative, and higher-order constructs and is particularly useful for complex models (including higher-order models) in PLS-SEM (Henseler et al., 2015). A value of SRMR of 0.08 or less is considered a good fit for the model, with lower values

indicating a better fit for the model (Hu et al., 2009). By using Jamovi 2.3.28, the SRMR value for the model was found to be 0.0742, which is less than 0.08 this indicates that the model is a good fit.

3.5 Goodness of Fit

To assess how well the overall model fits the data, the Goodness of Fit (GOF) index was calculated based on the method suggested by (Tenenhaus et al., 2005). This index helps combine the quality of the measurement model and the explanatory power of the structural model into a single value. It is calculated using the square root of the product of the average AVE and the average R^2 of the dependent variables in the model.

In this case, the AVE values for the main constructs CPP and EP were 0.805 and 0.645, respectively. Their average came out to approximately 0.725. As for the R^2 values, Construction Project Performance had a value of 0.642, and Employee Performance had 0.432, giving an average of about 0.537.

When applying these values to the GOF formula, the resulting score was 0.624. According to the criteria introduced by (Wetzels et al., 2009), this value is considered strong, as anything above 0.36 indicates a high level of model fit. Therefore, this result confirms that the model fits the data well and has solid predictive capability.

3.6 Hypotheses Testing

In this section, the path coefficients and their associated significance levels in the structural model will be examined to test hypotheses regarding the relationships between the constructs, where data on direct, indirect, or mediated effects will be identified and thus provide empirical evidence to support or refute the proposed hypothesis.

The examination includes calculating path coefficients (β-values) which must be equal to or greater than 0.1 Cepeda-Carrion et al. (2019) and determining their statistical significance through t-values which must be greater than +1.96 or less than -1.96 (two-tailed test at (5%) significance level), and confidence intervals and p-values which must be less than the significance level to support the hypothesis where the closer the value is to zero the more important the relationship, Hair et al. (2011) use bootstrapping in PLS-

SEM by creating multiple subsamples (e.g., 5000) of the data to obtain more accurate measures of variance.

According to the theoretical framework of this study, four hypotheses will be investigated between the study predictor TQMP and the outcome CPP, where EP mediates this relationship and partially or completely explains the association in the relationship between the study predictor TQMP and its outcome CPP (Baron & Kenny, 1986).

According to (Hair et al., 2013; Preacher & Hayes, 2008), the bootstrapping approach regarding the distribution of the values of the variables does not make any assumptions and is suitable for use with the small sample size in this study. On the other hand, in this approach, the data do not need to be distributed normally, unlike other tests that require large sample sizes and normal distribution of samples such as the Sobel test (Vinzi, 2010), so this approach has been used in analyzing the relationship of the mediating variable.

Table 10 shows the values of direct and indirect effects (mediator effect) of the hypothesized relationships between the constructs: Path coefficients (β-values), confidence intervals, statistical significance (T-values, p-values), and standard deviation (STDEV).

Table 10

The bootstrapping procedure results (Hypotheses testing)

Hypotheses: Relationship (Path)	B-Value	STDEV	t-value	P-value	LLCI (2.5%)	ULCI (97.5%)	Decision
H1: TQMP -> CPP	0.578	0.083	6.923	0.000	0.402	0.727	H1 is supported
H2: TQMP -> EP	0.657	0.064	10.201	0.000	0.542	0.792	H2 is supported
H3: EP -> CPP	0.293	0.083	3.528	0.000	0.14	0.47	H3 is supported
H4: TQMP -> EP -> CPP	0.193	0.069	2.781	0.005	0.083	0.356	H4 is supported

3.7 Summary of the Findings

- The internal consistency reliability and convergent validity of the measurement model were confirmed.
- The internal consistency reliability and convergent validity of the structural model were confirmed.
- There is a significant positive impact of TQMP on the CPP in contracting and consulting companies, as TQMP affect the CPP with values (B = 0.578 and T = 6.923).
- The two dimensions of employee empowerment and involvement and process management within the dimensions of the independent variable (TQMP) are statistically significant, and had a significant impact on the dependent variable (CPP), while the rest of the dimensions had no impact.
- There is a significant positive impact of TQMP on the EP in contracting and consulting companies, as TQMP affect the EP working in contracting and consulting companies with values (B = 0.657 and T = 10.201).
- The two dimensions of employee empowerment and involvement and process management within the dimensions of the independent variable (TQMP) are statistically significant, and had a significant impact on the intermediate variable (EP), while the rest of the dimensions had no impact.
- There is a positive impact of EP on the CPP in contracting and consulting companies, as EP affects the CPP with values (B = 0.293 and T = 3.528).
- There is a simple positive impact of TQMP on the CPP in contracting and consulting companies through EP as an mediation variable with values (B = 0.193 and T = 2.781), which supports that EP plays a role in the impact of TQMP on the CPP.
- As shown in Table 10, support for hypotheses H1, H2, H3 and H4 was confirmed. Accordingly, it can be concluded that TQMP have a significant impact on improving the CPP and EP, in addition to the impact of EP on the CPP, whether directly or indirectly (as an mediation variable).

Chapter Four
Discussion

4.1 Overview

This chapter provides an extensive overview summary of the study, discusses the results and findings, and reviews the limitations of the research and the contributions of the study. It also highlights suggestions for future studies and recommendations.

4.2 Summary of the Study

TQM is one of the modern management concepts that has led to changes in all aspects of companies, as this concept adopts the pursuit of optimal use of human and material resources, with a focus on knowing and meeting the requirements and needs of customers, and doing so in the right way through continuous improvement and development, which enables companies to achieve their goals efficiently and effectively and outperform their competitors. Construction projects are among the sectors that need to apply TQM in order to contribute to raising the level of quality in their implementation, by developing a quality system that includes improving the processes of design, implementation, and monitoring project costs and other project operations, which contributes to improving the quality of projects, commitment to budget, and delivery within the Timeline. Employees are considered one of the main elements that contribute significantly to the completion of the construction project and its success in a timely manner, as they constitute from a one third to one half of the project cost.

The current study explores the effect of EP as a mediating variable on the relationship between TQMP and CPP in the Palestinian construction sector. Through a literature review, this study consisted of two levels of variables: lower-order variables represented by LTM, CI, SM, PM, EEI, CF, WQL, WQN, TC, IA, WHT, C, and Q, and higher-order variables represented by TQMP as an independent variable, CPP as a dependent variable, and EP as an intervening variable. A conceptual model was created to clarify the study framework and the relationships between the variables. Data were collected by distributing questionnaires to managers and engineers working in contracting companies and engineering offices in Palestinian cities. They were analyzed using Smart PLS.

From the results of the previous chapter related to data analysis, where all procedures were examined to ensure the reliability and validity of the study model, it was found that the model was acceptable in terms of reliability and validity for the study. In addition, The hypotheses were examined as well.

4.3 Findings Discussion

The results of this study are aimed to gain a sufficient understanding of the extent to which construction sector companies in Palestine adopt TQMP. In addition to addressing the effectiveness of these practices on EP and CPP. After testing the hypotheses in the previous chapter, this section will discuss the results of testing these hypotheses:

First objective: To study the impact of TQMP on CPP.

The results showed that TQMP has a significant positive impact on the CPP, which is also confirmed by the results extracted from previous literature in this field (Vijayabanu et al., 2022; Yahya & Alabdullah, 2022; Abazid & Gökçekuş, 2019; Mir & Pinnington, 2014; Din et al., 2011) . The study provides clear empirical evidence of an important relationship between TQMP and project performance, as these practices contribute to improving all project performance measures in terms of reducing costs, improving work quality (Arumugam et al., 2008), and completing projects on time. According to the results of the questionnaire analysis, it was found that employee engagement and empowerment are among the most important practices applied in companies that contribute to a positive impact on project performance, and this was supported by (Naqvi et al., 2011) and (Zwikael & Unger-Aviram, 2010), followed by operations management and leadership and top management support, respectively.

Second objective: Studying the impact of TQM on EP.

The results showed that TQMP has a significant positive impact on EP, which was also supported by Sadikoglu & Zehir, (2010) in his study. The study shows that TQMP improve all performance measures for employees in terms of improving their work habits, increasing their commitment to the work system and rules, increasing their obligation to instructions and respect for time, their sense of initiative, and their ability to develop alternative and new ideas and methods to face work challenges, increasing their awareness of the importance of teamwork and cooperation among company employees, and contributing to improving the quality of work and the amount of work accomplished.

It also shows that the greatest impact on EP results from involving employees in decision-making, encouraging them to submit their suggestions, and empowering them. This is evidence that the TQM environment considers employees as valuable and good assets (Sadikoglu & Zehir, 2010).

Third objective: To study the impact of EP practices on CPP.

The results showed a positive relationship between EP and CPP, which is also consistent with previous literature that emphasized the important role of human resources in the success of construction projects (Chua et al., 1999; Gemuenden & Lechler, 1997). High EP, especially in terms of skill, motivation, and productivity, is closely related to improved project outcomes such as on-time completion, cost efficiency, and quality standards (Nani & Apraku, 2016; Sweis, 2013). One key aspect of the positive relationship observed in this study may be rooted in the idea that well-performing employees contribute to reducing project delays, cost overruns, and other inefficiencies that construction projects typically suffer from. This supports the findings of (Chan & Chan, 2004), who assert that good skills and competence of workers directly influence project success factors. Furthermore, a study by Dainty et al. (2003) found that highly skilled and competent employees are more likely to adhere to quality standards and avoid errors, which reduces delays in implementation, thus enhancing overall project performance.

Fourth objective: To study the impact of EP as a mediator of the relationship between TQMP and CPP.

The results showed that EP acts as a mediator of the relationship between TQMP and CPP. This result is consistent with the literature that emphasizes the improvement of EP as a result of TQMP in companies, and the importance of human factors and their contribution to improving CPP measures.

The positive mediation effect of EP found in this study indicates that TQMP is likely to lead to improved project performance when employees are actively engaged, motivated and perform at their best. This supports the idea of Nani & Apraku, (2016) according to the study they conducted, where he found that TQMP led to increased job commitment and productivity, which will result in an improvement in project results in terms of time, cost and commitment to quality standards.

One of the most important TQMP is involving employees in decision-making and problem-solving, and enabling them to manage their daily tasks, which contributes to improving their acceptance of decisions and changes implemented in the workplace. It will also enhance their commitment (Rahman & Bullock, 2005) and improve the quality of work and overall EP (Mohrman et al., 1995), which ultimately leads to improved performance of construction projects as it will in turn contribute to on-time delivery (Rahman & Bullock, 2005) and the ability to deliver the project within the expected budget (Nani & Apraku, 2016), which also contributes to improving quality (Dainty et al., 2003).

These findings have important implications for construction project management and organizational strategy of companies. In order for TQMP to effectively enhance project performance, it is important for companies to prioritize the development of skills, knowledge, and motivation of their workforce. This includes investing in creating a collaborative work environment that encourages employee participation in quality improvement initiatives.

4.4 Study contributions.

This research contributes to providing useful and practical results in several fields.

4.4.1 Academic Contribution

This study contributed positively to providing empirical evidence for academics on the impact of TQMP on EP and CPP, as it shed light on the evaluation of construction project output measures in construction companies in the context of the Palestinian construction sector. It also provides a deeper understanding of how TQMP affect the overall CPP in Palestine when combined with EP. It also contributes to bridging the gap in the research literature by presenting and testing a proposed model for TQMP and their impact on both EP and CPP in Palestine. It opens the way for future studies in light of its results. It will also serve as a future reference for researchers in this field, especially in the field of construction in Palestine, as it still lacks studies.

4.4.2 Managerial contributions

This study contributes to raising the awareness of managers about Palestinian construction companies on the importance of adopting TQMP and their impact on improving EP and CPP. It also increases managers' awareness of the importance of employee satisfaction and improving their performance, as it has an impact on the CPP in particular and on the company's performance in general. It enhances the importance of a culture of cooperation and participation among work teams, which enhances their innovation and motivates employees to provide better performance. The study also shows that TQMP contributes to developing the skills and knowledge of employees, which raises the level of efficiency and competitiveness of companies in the market. It provides recommendations for adopting TQMP and developing and caring for the workforce, which ultimately leads to more efficient and effective construction projects in terms of cost and time. It also shows the importance of human capital in achieving company goals, especially in sectors that rely on complex collaborative efforts such as construction. Finally, companies should pay great attention to TQM policies and practices and the performance of their employees, as these have positive effects in increasing the efficiency of operations, reducing excess costs, and improving the quality of work and final outputs of construction projects, which contributes to delivering projects on time and within budget, which in turn enhances the reputation of companies and increases customer satisfaction.

4.5 Limitations of the study

1. The study was conducted in Palestine, but geographically it did not cover all cities, as it only included the cities of the West Bank and did not include Jerusalem and the Gaza Strip, due to the difficulty of accessing them.
2. The study was conducted in the Palestinian construction sector, and therefore these results cannot be generalized to other sectors.
3. The categories that participated in this study are contractors registered in the Palestinian Contractors Union with a first-class classification in 2024, and consulting offices with a first-class classification registered in the Engineers Syndicate in 2014.
4. The scarcity of published research in this field related to TQMP.

4.6 Future suggested study

1. Expanding the scope of the study to include sectors other than the construction sector.
2. Conducting a study to test the impact of other mediating factors on the relationship between TQM practices and construction project performance other than employee performance, such as organizational quality culture or risk management.
3. Conducting a study on the development of human resources management in light of the concept of TQM in terms of recruitment methods for Palestinian construction companies.
4. Studying the relationship between Total Quality Management practices and each specific dimension (criterion) of construction project performance:

– Cost performance - adherence to budget.
– Time performance - meeting project deadlines.

5. Investigating the obstacles facing Palestinian construction companies in applying TQM in construction projects.
6. Conducting comparative studies on the extent of TQM application in Palestinian construction companies operating in the construction projects sector.

4.7 Conclusions

This study contributed to a more thorough understanding of the relationship between TQMP, EP, and CPP in construction companies. The results showed that TQMP has a significant positive impact on CPP and EP, which provides a greater understanding of the importance of adopting TQM and its practices in companies. It also showed that EP has an impact on CPP. EP plays a mediating role in the relationship between TQMP and CPP, which emphasizes the important role of human resources in the success of construction projects and that they are very valuable resources. Therefore, the study reveals that companies should prioritize and invest in developing skills and knowledge and motivating their workforce to improve performance.

The results of the study also showed that companies may not adopt all TQMP, but only some of them. The results of the study also showed that the most important TQMP that affect improving EP and CPP are employee empowerment and involvement and process management, as they are important in encouraging employees to submit their suggestions and participate in making decisions related to project implementation processes, and arranging, organizing, and clarifying project processes.

The conceptual model in this study can also be considered a valuable tool for managers and those responsible for implementing TQMP and also provides empirical evidence for academics on the positive impact of these practices.

4.8 Recommendations

The results showed that TQMP clearly affects CPP and EP. Therefore, the study recommends:

- It is necessary to strive hard to apply and develop the TQM System to meet the requirements of international quality standards in contracting and consulting companies in the construction projects sector as a successful means of achieving the highest levels of quality at the lowest costs.
- Must take advantage of the application of TQMP in other sectors globally, in order to apply them properly in project management in the local construction sector.

Concluding that employee performance is a pivotal factor in project success, the study recommends:

- It is very necessary to care for the company's employees and select them according to appropriate scientific methods, and to care about their training and development, and to manage communication between them and the rest of the parties in the company effectively.
- It is very necessary for contracting and consulting companies in the construction projects sector to evaluate the efficiency and effectiveness of employees during their application of Total Quality practices.
- Offering rewards and incentives to employees and workers is crucial for motivating them to perform at their best and meet the company's objectives.

Based on the conclusion that employee empowerment is important in improving performance and enhancing quality, the study recommends:

- Encouraging the actual participation of all project workers in ongoing discussions about Total Quality and the field application of their creative, scientific, and practical ideas and opinions.
- Based on the discussion that TQM success is linked to a strong organizational culture, and as the results indicated variations in the adoption of practices among companies, the study recommends:

– Raising awareness among employees of companies working in the construction projects sector of the importance of the TQM system through workshops and training courses in this field.

As previously discussed, to achieve performance efficiency, collaboration and coordination are essential to ensure project success in terms of time, quality, and cost. Therefore, the study recommends:

– The need for companies to define and clarify outline the roles and authority of all individuals working in the company, and to define relationships with all relevant parties to ensure that operations as planned.

  Awareness of the necessity of project activities running in an integrated and parallel manner, so that the cost is undefined without taking quality into consideration, and the time is undefined without considering the cost and quality.

Based on the discussion results that linked good performance to sound planning, the study recommends:

– It is very necessary to study the requirements of projects before starting their implementation, in order to ensure that the project activities run according to what was planned to obtain high-quality results at affordable costs and to complete the implementation without delay.
– As previously discussed regarding the importance of a clear and shared vision for quality, the study recommends:
– Every contracting or consulting firm should have a well-defined and easily understandable concept of quality that is shared by all employees within the organization.
– Based on the final analysis in the discussion, which stated that quality success does not depend solely on management, the study recommends:
– It is necessary to be aware that quality is everyone's responsibility and the result of collective work and not just the responsibility of top management.

List of Abbreviations

Abbreviation	Meaning
TQMP	Total Quality Management Practice
EP	Employee Performance
CPP	Construction Project Performance
TQM	Total Quality Management
LTM	Leadership & Top Management
CI	Continues Improvement
SM	Supplier Management
PM	Process Management
EEI	Employee Empowerment & Involvement
CF	Costumer Focus
WQL	Work Quality
WQN	Work Quantity
TC	Teamwork & Cooperation
IA	Initiative & Ability
WH	Work Habit
T	Time
C	Cost
Q	Quality
AVE	Average Variance Extracted
PLS	Partial Least Squares
SEM	Structural Equation Modeling

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Appendices

Appendix A

The constructs' measurement of the survey

Construct	Code	indicators	Source
Cost (C)	C1	The necessary corrective actions are taken in a timely manner, in the event of any excesses or problems affecting the project budget.	(White et al., 2002) (Iyer et al., 2005) (Ling et al., 2009) (Femi, 2015) (Z. A. Memon et al., 2006) (Long et al., 2004) (Chan & Kumaraswamy, 2002) (Kuprenas, 2003)
	C2	Usually the scope of the specified project is appropriate to the size, nature and budget of the project.	
	C3	Usually the project is implemented and delivered within the expected budget of the project and any deviation is justified in an acceptable manner.	
Costumer Focus (CF)	CF1	The company is interested in knowing the level of customer satisfaction after completing projects.	(Mwidini & Ndume, 2018) (Syaj, 2015) (Koh & Low, 2010) (Yee, 2018) (Jose & Ambili, 2017)
	CF2	The company and employees are interested in taking into account the desires and expectations of customers.	
	CF3	The company disseminates the desires and expectations of customers among its employees and workers and ensures that they understand them.	
	CF4	The company is interested in and effectively follows up on customer complaints and inquiries.	
	CF5	The company submits customer complaints to the project manager in order to meet his expectations.	
	CF6	The company carries out several meetings and sessions between it and the customer, even if they are informal, to follow up on his satisfaction with the project completion process.	
Continues Improvement (CI)	CI1	The company has a vision to improve the work methods of its employees and workers.	(Mwidini & Ndume, 2018) (Syaj, 2015) (Yee, 2018) (Tabeeb, 2019)
	CI2	The company's policy regarding quality matters is gradually changed and improved.	
	CI3	The company evaluates the performance of its employees and workers and takes the necessary measures to improve it.	

	CI4	The company encourages its employees and workers to be creative and innovative in improving project completion processes.	(Koh & Low, 2010) (Jose & Ambili, 2017)
	CI5	The company works on preparing well to complete projects accurately to meet the needs and expectations of its customers.	
	CI6	The company is interested in developing completion processes by continuously reducing the time and cost required to complete projects.	
	CI7	The company is interested in finding reasons for losing cost and time in project completion processes.	
Employee Empowerment & Involvement (EEI)	EEI1	The company encourages its employees and workers to submit their distinguished suggestions.	(Koh & Low, 2010) (Mwidini & Ndume, 2018) (Syaj, 2015) (Yee, 2018) (Tabeeb, 2019) (Jose & Ambili, 2017) (Vijayabanu et al., 2022)
	EEI2	The company encourages its employees to participate in making decisions related to projects.	
	EEI3	The company encourages social relations between employees and workers.	
	EEI4	The company encourages a culture of teamwork among employees and workers in completing projects.	
	EEI5	The company encourages employees and workers to participate in finding the appropriate solution to the problems it faces in completing projects.	
	EEI6	The company enhances the awareness of employees and workers to participate in quality activities related to projects.	
	EEI7	All employees and workers in the company know their roles and work responsibilities according to their job description from the management.	
	EEI8	The company uses a system of motivation and rewards for employees and workers for their excellent suggestions.	
	EEI9	Employees receive training courses in quality improvement skills and their technical skills, whether inside or outside the company.	

	EEI10	Employees in the company attend work and project meetings on a regular basis.	
Initiative & Ability (IA)	IA1	The employee/worker is able to develop new ideas and alternative methods and suggest different procedures to meet work challenges.	(Kalsum Zolkafli et al., 2010) (Okoro, 2017) (Prasetya et al., 2020) (Abu Al-Nasr, 2008)
	IA2	The employee has the physical ability to perform the arduous aspects of the work.	
	IA3	The employee/worker is able to complete tasks in an acceptable manner and within the timetables.	
	IA4	The employee/worker is able to improve the level of work on his/her own according to the requirements of the work on site without the need for guidance.	
	IA5	The employee/worker is able to work effectively and efficiently with minimal supervision.	
	IA6	The employee/worker is able to work on analyzing the challenges he/she faces and providing alternative solutions.	
	IA7	The employee/worker is willing to take on additional responsibilities.	
	IA8	The employee/worker is able to make changes to the schedule according to priorities.	
	IA9	The employee/worker has the knowledge or skill necessary to perform his/her duties.	
	IA10	The employee/worker is fully and clearly aware of the nature of his/her job performance.	
Leadership & Top Management (LTM)	LTM1	The management of the company considers quality to be one of the basic and important goals.	(Koh & Low, 2010) (Mwidini & Ndume, 2018) (Syaj, 2015) (Yee, 2018) (Tabeeb, 2019) (Vijayabanu et al., 2022) (Jose & Ambili, 2017)
	LTM2	There is a clear approach and policy by the management regarding the company's vision towards quality.	
	LTM3	The management considers quality to be one of the important factors that lead to achieving a competitive advantage among companies.	
	LTM4	One of the issues that are reviewed in the management meetings of the company is quality issues.	
	LTM5	The management of the company considers quality to be more important than the schedule.	

	LTM6	The management of the company considers quality to be more important than the cost.	
	LTM7	The management of the company includes the importance of quality within the cost of projects and their schedule.	
	LTM8	The management of the company is interested in employees and workers obtaining knowledge of quality procedures.	
	LTM9	The management is keen to improve and develop the performance of employees and workers in it.	
	LTM10	The management distinguishes employees and workers in it who accomplish work with better quality than others with material and moral incentives.	
	LTM11	There is a clear and specific role for all employees and workers in the company that has been formulated by the management.	
	LTM12	The management of the company supports the opinions of employees and workers in it that aim to improve the level of quality.	
Process Management (PM)	PM1	Drawings and specifications are reviewed before construction work begins.	(Koh & Low, 2010) (Mwidini & Ndume, 2018) (Syaj, 2015) (Othman & Rashed, 2016)
	PM2	Executive plans and drawings are prepared and used for projects.	
	PM3	The company uses a comprehensive supervision system and continuous monitoring of various project operations.	
	PM4	Quality standards are included in various construction operations.	
	PM5	Safety and security measures are emphasized on the site before construction operations begin.	
	PM6	Work instructions provided to employees and workers at the construction site are clear.	
	PM7	Final inspection, review and audit of various construction operations are conducted after implementation.	
Quality (Q)	Q1	All necessary tests and examinations are usually carried out to ensure the quality of the project.	(Long et al., 2004) (Chan & Kumaraswamy, 2002) (White et al., 2002)
	Q2	The necessary corrective actions are taken in a timely manner, in case any defects or problems	

		affecting the quality of the project are discovered.	(Z. A. Memon et al., 2006) (Femi, 2015) (Kuprenas, 2003)
	Q3	The project is usually implemented according to the required specifications and standards.	
	Q4	The project is usually delivered with the best quality and the least errors.	
	Q5	The agreed upon goals and outputs of the project are usually achieved.	
Supplier Management (SM)	SM1	The company takes supplier delivery performance into consideration in the supplier selection process.	(Koh & Low, 2010) (Mwidini & Ndume, 2018) (Syaj, 2015) (Vijayabanu et al., 2022)
	SM2	The company considers the quality standard to be more important than price in the supplier selection process.	
	SM3	The company considers the quality standard to be more important than delivery time in the supplier selection process.	
	SM4	The company requires suppliers to have clear specifications and requirements for the supplied materials to achieve quality.	
	SM5	The supplied materials are carefully inspected before use.	
	SM6	The company is concerned with managing and maintaining relationships with suppliers to ensure consistency.	
Time (T)	T1	The time allocated to each task and activity within the project is usually appropriate for it.	(Long et al., 2004) (Chan & Kumaraswamy, 2002) (White et al., 2002) (Z. A. Memon et al., 2006) (Femi, 2015) (Iyer & Jha, 2005) (Iyer & Jha, 2005; Ling et al., 2009) (Kuprenas, 2003)
	T2	The necessary corrective actions are usually taken in a timely manner, in the event of any delays or problems affecting the project schedule.	
	T3	The project goals and objectives are usually achieved without delay or fatigue.	
	T4	Each part of the project scope is usually implemented and delivered according to the specified plan.	
	T5	The company usually completes the project implementation and delivery within the project timelines.	
Teamwork & Cooperation (TC)	TC1	The employee/worker is willing to help new employees.	(Siriwardana et al., 2012)
	TC2	The employee/worker is willing to help colleagues who are	

		suffering from excessive workload.	(Kalsum Zolkafli et al., 2010) (Prasetya et al., 2020)
	TC3	The employee/worker is able to adapt and work within other work teams.	
	TC4	The employee/worker is receptive to the instructions of the supervising engineer.	
	TC5	The employee/worker is willing to replace colleagues who are struggling to perform tasks.	
	TC6	The employee/worker communicates effectively with colleagues and superiors.	
	TC7	The employee/worker is willing to inform the supervisor of any error in performing the assigned tasks.	
Work Habit (WH)	WH1	The employee/worker is committed to regularly attending work and not being absent without permission.	(Kalsum Zolkafli et al., 2010) (Prasetya et al., 2020) (Okoro, 2017) (Siriwardana & Ruwanpura, 2012)
	WH2	The employee/worker is committed to attending work on time.	
	WH3	The employee/worker is committed to the time specified for breaks according to the company's regulations.	
	WH4	The employee/worker is committed to adhering to official working hours and not leaving without permission.	
	WH5	The employee/worker is committed to the management's rules and procedures.	
	WH6	The employee/worker is committed to practicing safety rules at the workplace to protect themselves and others.	
	WH7	The employee/worker in the company is committed to taking care of the equipment and using it properly.	
	WH8	The employee/worker is committed to the deadlines for submitting his tasks.	
	WH9	The employee/worker uses working hours effectively and efficiently.	
	WH10	The employee/worker follows instructions, whether written or verbal, and has the ability to perform work well according to instructions.	
	WH11	The employee/worker organizes and arranges work activities in harmony with the work of others	

		to achieve the best possible results for everyone.	
	WH12	The employee/worker organizes and arranges work activities to use time and resources effectively to achieve the greatest results with the least amount of time and effort.	
Work Quality (WQL)	WQL1	The employee/worker is able to accomplish the tasks assigned to him/her according to the company's standards.	(Siriwardana & Ruwanpura, 2012) (Kalsum Zolkafli et al., 2010) (Prasetya et al., 2020) (Okoro, 2017)
	WQL2	The employee/worker is committed to his/her responsibilities as stated in the job description.	
	WQL3	The employee/worker is committed to the procedures and policies set by the management.	
	WQL4	The employee/worker is able to organize and arrange his/her tasks.	
	WQL5	The employee/worker is able to accomplish the tasks assigned to him/her in an effective and efficient manner.	
	WQL6	The employee/worker is able to optimally utilize the necessary tools, equipment and resources to accomplish the work effectively.	
	WQL7	The employee/worker is able to accomplish his/her tasks without errors.	
	WQL8	The quality of the work performed by the employee/worker is excellent.	
Quantity Work (WQN)	WQN1	The employee/worker is committed to completing assigned tasks within the specified timeframes in an efficient manner.	(Siriwardana & Ruwanpura, 2012) (Kalsum Zolkafli et al., 2010) (Prasetya et al., 2020) (Okoro, 2017)
	WQN2	The employee/worker is able to complete assigned tasks within reasonable time limits for these tasks.	
	WQN3	The employee/worker is able to complete tasks well under pressure.	
	WQN4	The employee/worker is willing to put in extra effort to complete assigned tasks.	

Appendix B

Experts and arbitrators who reviewed the questionnaire

Number	Position
1	Company Manager with a PhD in Business Administration
1	Company Manager with a PhD in Civil Engineering
1	Quality Manager with a Master's Degree
3	Teaching Staff at An-Najah University
2	Project Manager with a Master's Degree
1	Consulting Manager with a Master's Degree

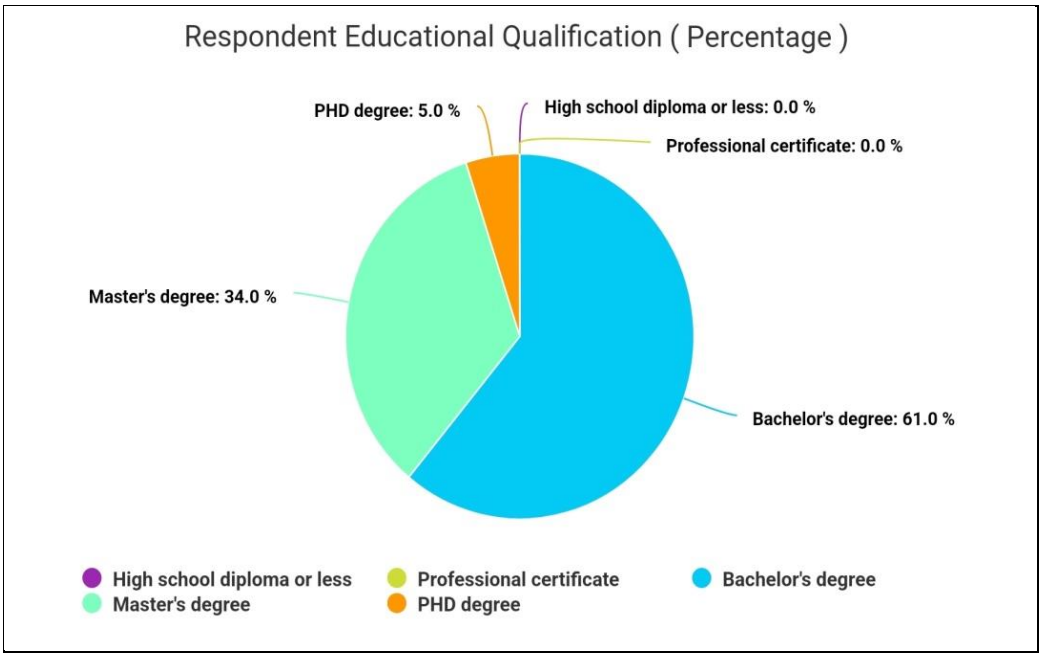
Appendix B

Collinearity statistics (VIF)

indicator	VIF	indicator	VIF
C1	1.655	Q1	2.065
C2	1.933	Q2	1.849
C3	1.733	Q3	2.671
CF1	2.008	Q4	1.989
CF2	1.949	Q5	2.656
CF3	1.981	SM1	1.569
CF4	2.046	SM4	1.575
CF5	1.967	SM5	1.416
CF6	1.762	SM6	1.524
CI1	1.557	T1	2.138
CI2	1.911	T2	2.140
CI3	1.664	T3	2.117
CI4	1.538	T4	2.231
EEI1	2.570	T5	2.761
EEI2	2.185	TC1	1.656
EEI3	2.189	TC2	1.637
EEI4	1.749	TC3	1.737
EEI5	2.416	TC4	2.049
EEI6	2.225	TC6	1.780
IA4	2.328	TC7	1.603
IA5	2.118	WH1	3.593
IA6	2.545	WH3	2.430
IA7	2.217	WH4	2.401
IA8	2.291	WH5	3.303
IA9	2.423	WH6	3.943
IA10	2.939	WH7	2.428
LTM1	2.138	WH8	4.175
LTM2	2.124	WH9	3.385
LTM4	2.604	WH10	2.883
LTM5	2.538	WH11	2.614
LTM6	1.921	WH12	2.899
LTM7	1.873	WQL1	1.999
LTM8	2.089	WQL2	1.855
LTM9	1.922	WQL3	2.130
PM1	2.398	WQL4	1.825
PM2	1.849	WQL5	1.881
PM3	1.843	WQL6	2.357
PM4	3.036	WQN1	1.837
PM5	1.801	WQN2	1.757
PM6	2.332	WQN3	1.676
PM7	2.078	WQN4	1.492

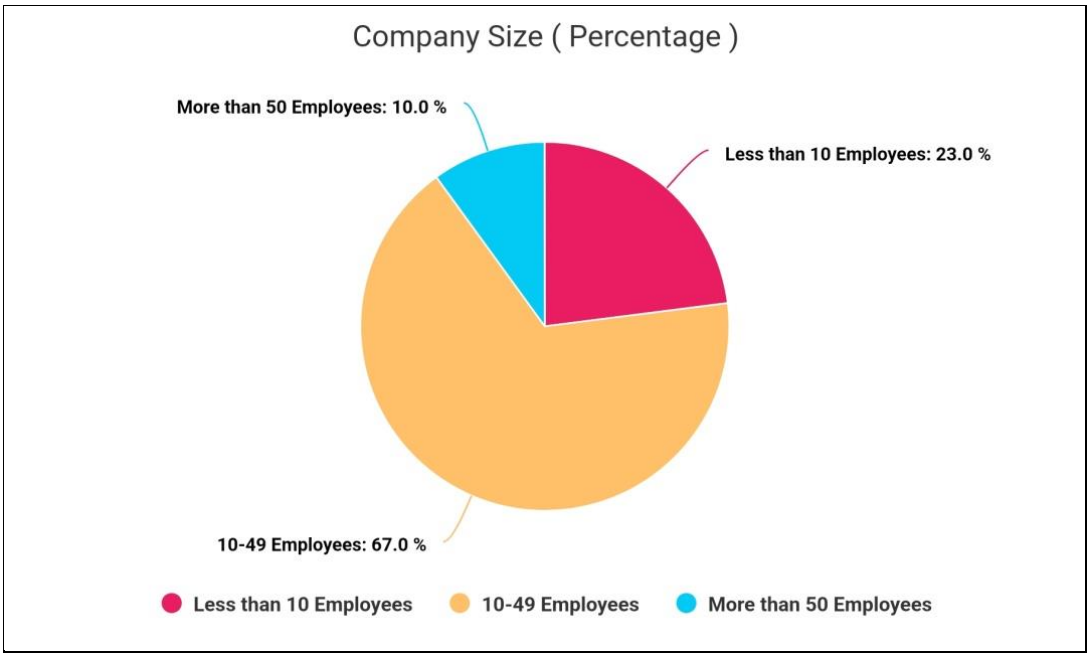
Appendix D

Respondents Educational Qualification.



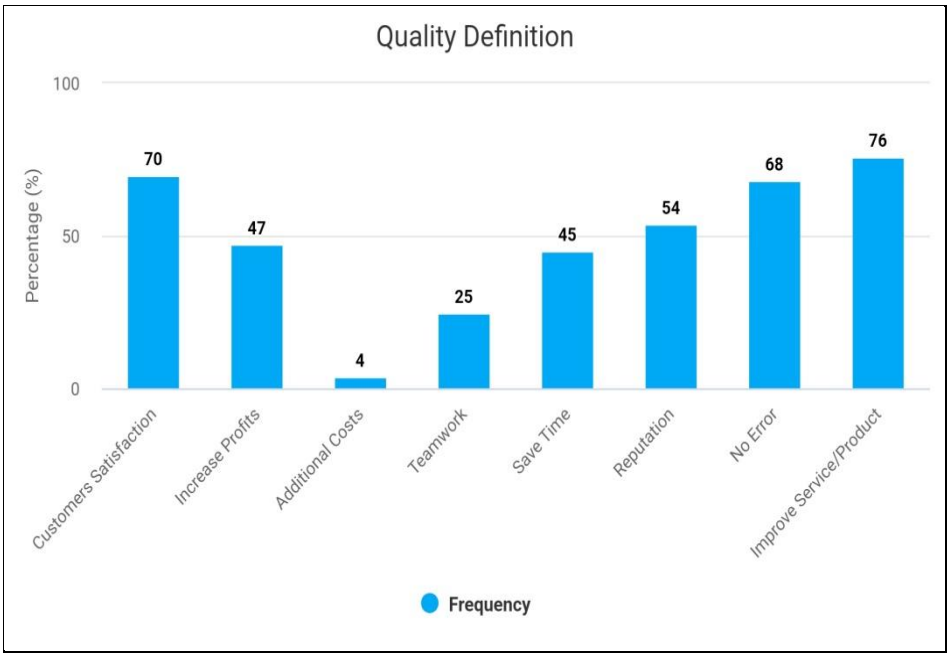
Appendix E

Company Size (Number of Employees)



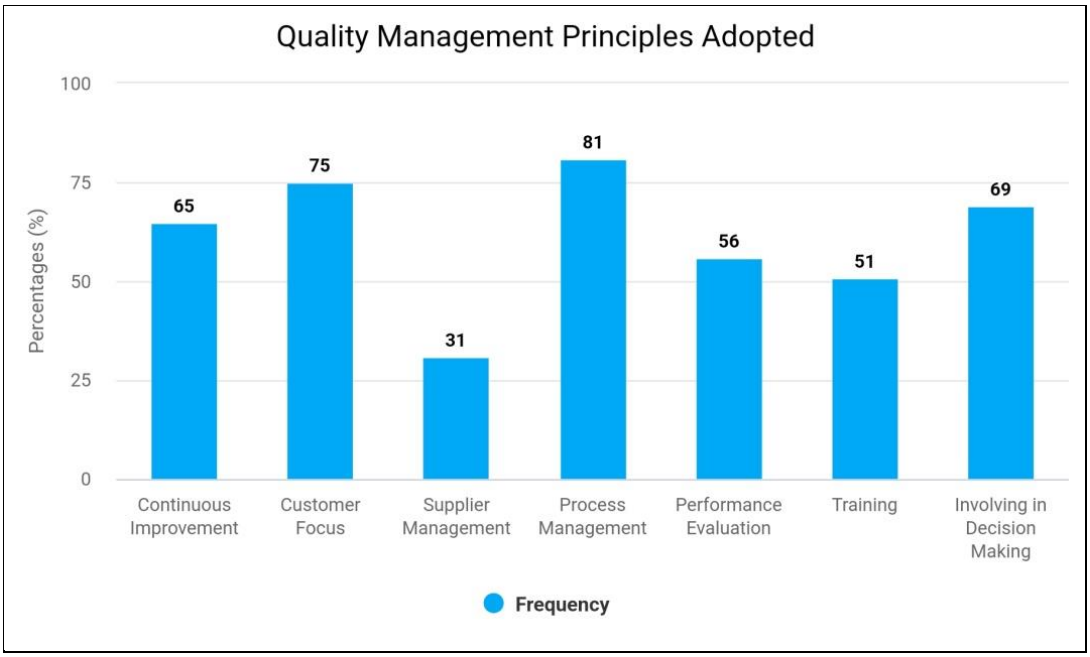
Appendix F

Quality Definition



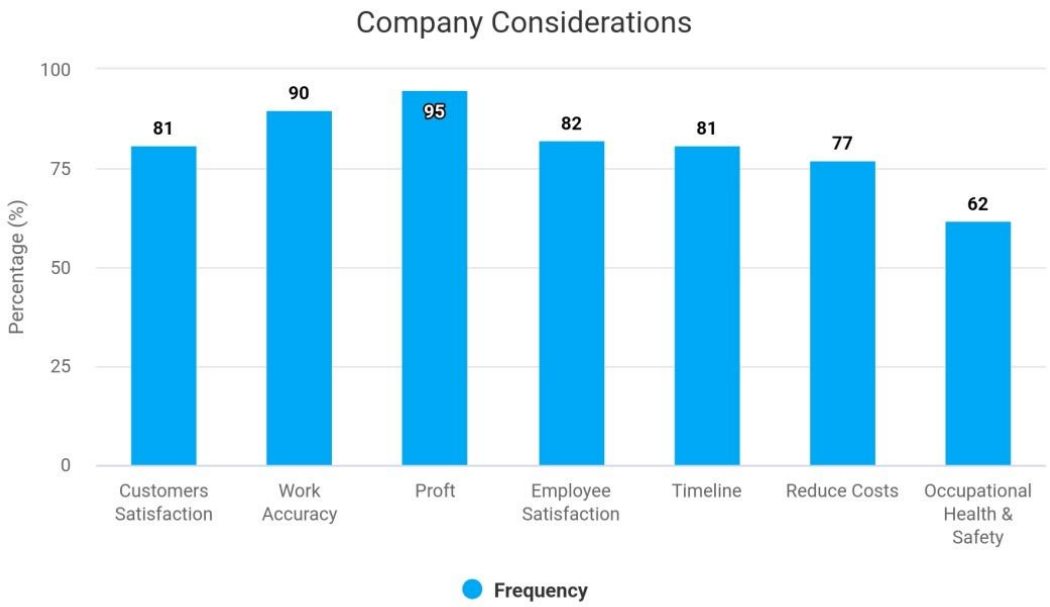
Appendix G

Quality Management Principles



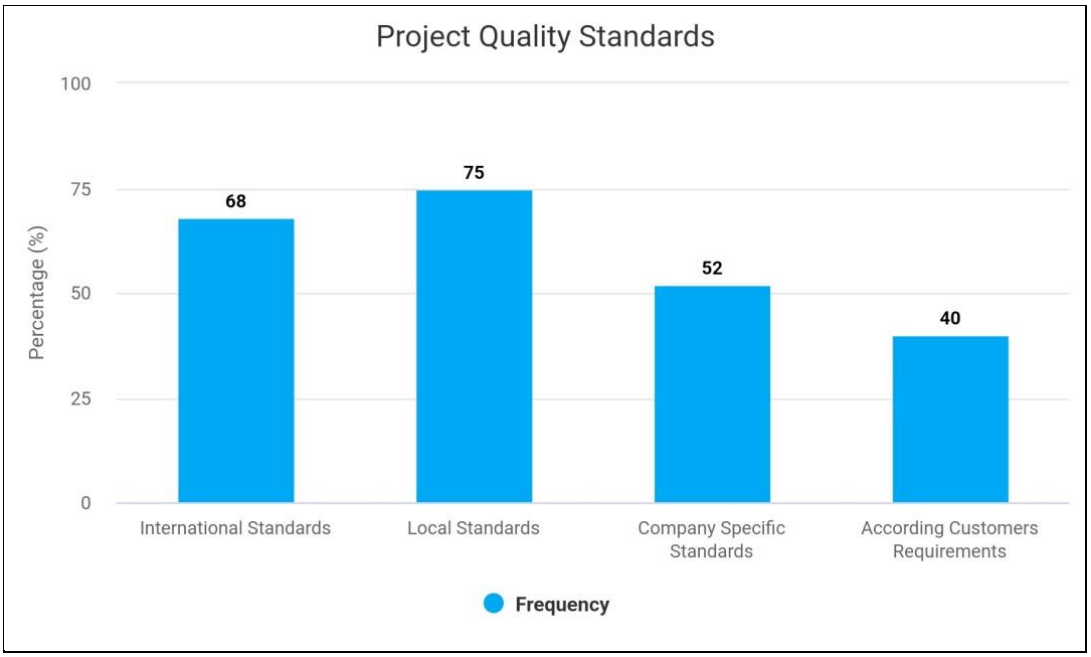
Appendix H

Company Considerations



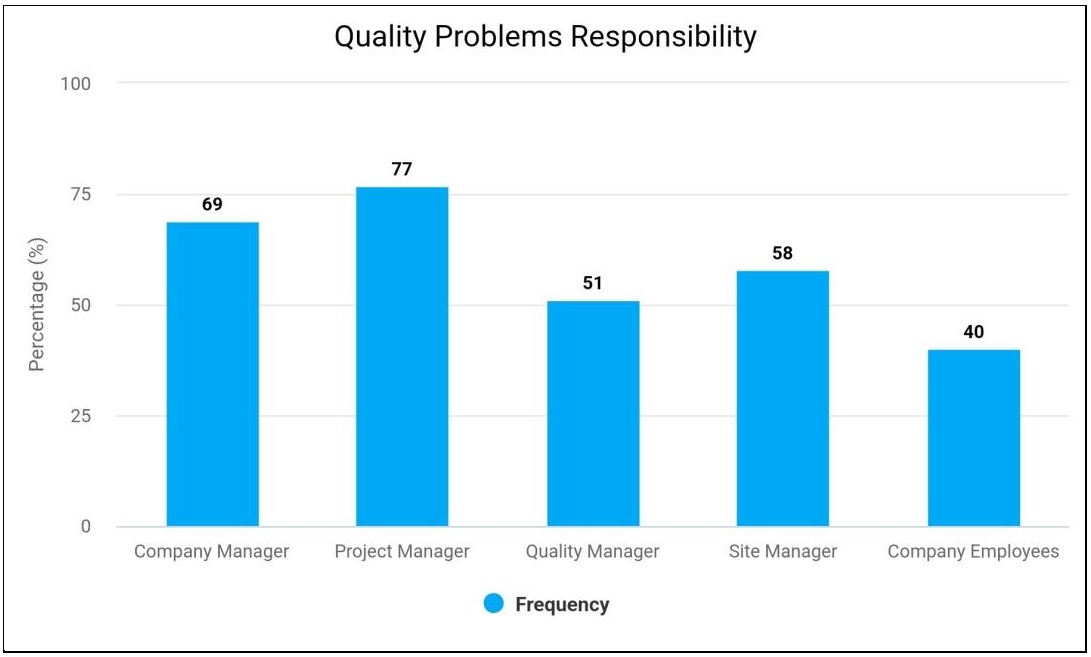
Appendix I

Company Quality Standard



Appendix J

Responsible of Quality Problems



Appendix K

Internal consistency reliability & Convergent validity for lower-order construct

Lower-Order Construct	indicator	Loading	Cronbach's alpha	CR	(AVE)
Cost (C)	**C1**	**0.835**	**0.806**	**0.886**	**0.721**
	C2	**0.863**			
	C3	**0.849**			
Costumer Focus (CF)	**CF1**	**0.772**	**0.872**	**0.903**	**0.609**
	CF2	**0.766**			
	CF3	**0.797**			
	CF4	**0.801**			
	CF5	**0.786**			
	CF6	**0.761**			
Continues Improvement (CI)	**CI1**	**0.701**	**0.765**	**0.848**	**0.584**
	CI2	**0.838**			
	CI3	**0.775**			
	CI4	**0.767**			
Employee Empowerment & Involvement (EEI)	**EEI1**	**0.856**	**0.883**	**0.911**	**0.632**
	EEI2	**0.798**			
	EEI3	**0.809**			
	EEI4	**0.714**			
	EEI5	**0.806**			
	EEI6	**0.78**			
Initiative & Ability (IA)	**IA4**	**0.774**	**0.898**	**0.92**	**0.621**
	IA5	**0.748**			
	IA6	**0.806**			
	IA7	**0.777**			
	IA8	**0.801**			
	IA9	**0.771**			
	IA10	**0.837**			
Leadership & Top Management (LTM)	**LTM1**	**0.765**	**0.899**	**0.919**	**0.586**
	LTM2	**0.746**			
	LTM4	**0.815**			
	LTM5	**0.797**			
	LTM6	**0.74**			
	LTM7	**0.732**			
	LTM8	**0.788**			
	LTM9	**0.738**			
Process Management (PM)	**PM1**	**0.809**	**0.895**	**0.918**	**0.615**
	PM2	**0.724**			
	PM3	**0.742**			
	PM4	**0.874**			
	PM5	**0.725**			

	PM6	**0.824**			
	PM7	**0.782**			
Quality (Q)	**Q1**	**0.824**	**0.887**	**0.917**	**0.69**
	Q2	**0.783**			
	Q3	**0.873**			
	Q4	**0.8**			
	Q5	**0.87**			
Supplier Management (SM)	**SM1**	**0.794**	**0.77**	**0.852**	**0.591**
	SM4	**0.783**			
	SM5	**0.756**			
	SM6	**0.742**			
Time (T)	**T1**	**0.813**	**0.889**	**0.918**	**0.693**
	T2	**0.825**			
	T3	**0.814**			
	T4	**0.831**			
	T5	**0.876**			
Teamwork & Cooperation (TC)	**TC1**	**0.727**	**0.846**	**0.886**	**0.566**
	TC2	**0.727**			
	TC3	**0.773**			
	TC4	**0.806**			
	TC6	**0.74**			
	TC7	**0.737**			
Work Habit (WH)	**WH1**	**0.857**	**0.945**	**0.953**	**0.646**
	WH3	**0.782**			
	WH4	**0.757**			
	WH5	**0.826**			
	WH6	**0.796**			
	WH7	**0.773**			
	WH8	**0.823**			
	WH9	**0.865**			
	WH10	**0.817**			
	WH11	**0.764**			
	WH12	**0.775**			
Work Quality (WQL)	**WQL1**	**0.797**	**0.877**	**0.907**	**0.618**
	WQL2	**0.76**			
	WQL3	**0.805**			
	WQL4	**0.749**			
	WQL5	**0.767**			
	WQL6	**0.837**			
Quantity Work (WQN)	**WQN1**	**0.799**	**0.797**	**0.868**	**0.622**
	WQN2	**0.807**			
	WQN3	**0.798**			
	WQN4	**0.75**			

Appendix L

Cross-Loading criterion for lower-order constructs:

	C	CF	CI	EEI	IA	LTM	PM	Q	SM	T	TC	WH	WQL	WQN
C1	**0.835**	0.484	0.411	0.491	0.48	0.457	0.581	0.6	0.426	0.679	0.4	0.583	0.329	0.541
C2	**0.863**	0.556	0.456	0.441	0.4	0.502	0.609	0.612	0.413	0.551	0.36	0.419	0.295	0.443
C3	**0.849**	0.536	0.375	0.479	0.368	0.388	0.634	0.669	0.415	0.65	0.444	0.454	0.343	0.362
CF1	0.503	**0.772**	0.449	0.501	0.216	0.52	0.597	0.572	0.633	0.366	0.228	0.266	0.423	0.29
CF2	0.46	**0.766**	0.434	0.449	0.221	0.456	0.568	0.565	0.602	0.389	0.388	0.324	0.458	0.244
CF3	0.487	**0.797**	0.629	0.528	0.348	0.597	0.588	0.446	0.545	0.356	0.272	0.337	0.451	0.336
CF4	0.523	**0.801**	0.439	0.439	0.375	0.465	0.543	0.503	0.498	0.319	0.417	0.416	0.345	0.344
CF5	0.482	**0.786**	0.412	0.445	0.314	0.485	0.541	0.528	0.574	0.35	0.391	0.347	0.397	0.336
CF6	0.442	**0.762**	0.553	0.48	0.48	0.507	0.564	0.444	0.479	0.364	0.364	0.569	0.38	0.261
CI1	0.254	0.375	**0.701**	0.339	0.265	0.516	0.306	0.244	0.277	0.209	0.191	0.206	0.235	0.264
CI2	0.402	0.493	**0.838**	0.53	0.323	0.636	0.575	0.353	0.48	0.415	0.312	0.406	0.437	0.29
CI3	0.379	0.498	**0.775**	0.463	0.323	0.572	0.585	0.388	0.49	0.38	0.217	0.414	0.421	0.262
CI4	0.433	0.534	**0.767**	0.546	0.362	0.545	0.562	0.404	0.492	0.386	0.297	0.346	0.399	0.338
EEI1	0.566	0.597	0.579	**0.856**	0.414	0.469	0.655	0.539	0.531	0.596	0.415	0.43	0.531	0.43
EEI2	0.454	0.573	0.553	**0.798**	0.332	0.511	0.597	0.463	0.505	0.481	0.395	0.397	0.511	0.32
EEI3	0.408	0.415	0.479	**0.809**	0.467	0.422	0.412	0.363	0.366	0.485	0.287	0.427	0.273	0.397
EEI4	0.409	0.465	0.459	**0.714**	0.457	0.365	0.457	0.431	0.386	0.416	0.325	0.384	0.242	0.385
EEI5	0.396	0.503	0.496	**0.806**	0.401	0.503	0.441	0.41	0.435	0.416	0.375	0.32	0.383	0.511
EEI6	0.384	0.292	0.362	**0.78**	0.416	0.367	0.399	0.317	0.297	0.455	0.27	0.337	0.195	0.435
IA4	0.421	0.336	0.273	0.491	**0.774**	0.304	0.25	0.357	0.201	0.417	0.515	0.537	0.362	0.603
IA5	0.33	0.252	0.192	0.383	**0.748**	0.232	0.086	0.268	0.15	0.369	0.494	0.472	0.275	0.483
IA6	0.38	0.362	0.371	0.432	**0.806**	0.378	0.292	0.337	0.261	0.434	0.498	0.665	0.331	0.458
IA7	0.383	0.339	0.538	0.415	**0.777**	0.453	0.294	0.303	0.177	0.363	0.517	0.632	0.256	0.486
IA8	0.369	0.285	0.255	0.341	**0.801**	0.268	0.221	0.335	0.2	0.447	0.554	0.683	0.265	0.453
IA9	0.322	0.334	0.326	0.407	**0.771**	0.267	0.218	0.307	0.226	0.342	0.52	0.582	0.329	0.528
IA10	0.487	0.391	0.33	0.396	**0.837**	0.306	0.347	0.425	0.259	0.503	0.55	0.715	0.376	0.587
LTM1	0.402	0.462	0.626	0.414	0.191	**0.765**	0.447	0.414	0.435	0.342	0.087	0.292	0.412	0.265
LTM2	0.383	0.524	0.567	0.335	0.215	**0.746**	0.531	0.427	0.475	0.247	0.216	0.262	0.398	0.314
LTM4	0.467	0.5	0.63	0.432	0.279	**0.815**	0.507	0.542	0.535	0.332	0.306	0.344	0.422	0.389
LTM5	0.336	0.455	0.478	0.341	0.275	**0.797**	0.348	0.354	0.398	0.284	0.249	0.338	0.429	0.259
LTM6	0.278	0.331	0.483	0.435	0.19	**0.74**	0.395	0.413	0.515	0.346	0.222	0.295	0.46	0.275
LTM7	0.402	0.468	0.51	0.446	0.44	**0.732**	0.349	0.392	0.404	0.31	0.303	0.429	0.442	0.294
LTM8	0.443	0.53	0.555	0.466	0.375	**0.788**	0.531	0.47	0.535	0.341	0.387	0.462	0.458	0.355
LTM9	0.474	0.644	0.633	0.505	0.433	**0.738**	0.491	0.511	0.57	0.34	0.39	0.437	0.504	0.419
PM1	0.587	0.649	0.447	0.495	0.226	0.412	**0.809**	0.621	0.633	0.522	0.291	0.409	0.433	0.322
PM2	0.574	0.58	0.476	0.451	0.199	0.314	**0.724**	0.468	0.47	0.422	0.272	0.384	0.342	0.205
PM3	0.481	0.437	0.434	0.43	0.196	0.308	**0.742**	0.427	0.491	0.43	0.282	0.308	0.31	0.268
PM4	0.592	0.609	0.589	0.541	0.285	0.517	**0.874**	0.519	0.612	0.486	0.295	0.422	0.414	0.303
PM5	0.468	0.458	0.563	0.54	0.286	0.429	**0.725**	0.475	0.457	0.414	0.25	0.324	0.276	0.407
PM6	0.627	0.634	0.672	0.572	0.324	0.697	**0.824**	0.612	0.585	0.57	0.289	0.503	0.446	0.308

PM7	0.587	0.591	0.511	0.417	0.192	0.513	**0.782**	0.467	0.483	0.394	0.202	0.291	0.35	0.3
Q1	0.676	0.554	0.358	0.373	0.396	0.466	0.558	**0.824**	0.519	0.526	0.441	0.437	0.409	0.389
Q2	0.598	0.536	0.434	0.398	0.356	0.526	0.54	**0.783**	0.47	0.465	0.472	0.41	0.375	0.401
Q3	0.635	0.551	0.383	0.432	0.361	0.473	0.52	**0.873**	0.52	0.582	0.442	0.444	0.45	0.33
Q4	0.54	0.502	0.314	0.491	0.317	0.475	0.53	**0.8**	0.563	0.461	0.401	0.355	0.412	0.304
Q5	0.618	0.564	0.42	0.535	0.339	0.483	0.594	**0.87**	0.523	0.611	0.409	0.418	0.442	0.407
SM1	0.386	0.593	0.485	0.395	0.249	0.536	0.527	0.451	**0.794**	0.283	0.303	0.402	0.518	0.264
SM4	0.392	0.53	0.418	0.485	0.201	0.516	0.496	0.502	**0.783**	0.309	0.326	0.225	0.449	0.408
SM5	0.449	0.582	0.469	0.347	0.167	0.489	0.608	0.628	**0.756**	0.35	0.332	0.32	0.367	0.274
SM6	0.272	0.468	0.403	0.431	0.214	0.407	0.464	0.307	**0.742**	0.27	0.263	0.237	0.546	0.286
T1	0.567	0.338	0.353	0.417	0.415	0.363	0.408	0.445	0.29	**0.813**	0.358	0.455	0.295	0.312
T2	0.577	0.412	0.435	0.517	0.469	0.362	0.503	0.529	0.329	**0.825**	0.409	0.49	0.344	0.339
T3	0.655	0.367	0.336	0.51	0.432	0.342	0.51	0.584	0.297	**0.814**	0.329	0.468	0.363	0.395
T4	0.587	0.364	0.398	0.496	0.373	0.295	0.52	0.51	0.326	**0.831**	0.315	0.441	0.31	0.394
T5	0.684	0.419	0.413	0.556	0.486	0.375	0.529	0.584	0.4	**0.876**	0.392	0.498	0.38	0.499
TC1	0.276	0.277	0.206	0.296	0.384	0.183	0.221	0.342	0.403	0.284	**0.727**	0.377	0.505	0.354
TC2	0.318	0.26	0.208	0.301	0.428	0.263	0.186	0.375	0.295	0.299	**0.727**	0.392	0.433	0.363
TC3	0.408	0.402	0.307	0.34	0.513	0.375	0.308	0.408	0.334	0.375	**0.773**	0.512	0.5	0.505
TC4	0.376	0.329	0.245	0.316	0.562	0.279	0.258	0.378	0.242	0.279	**0.806**	0.548	0.4	0.331
TC6	0.419	0.293	0.154	0.323	0.515	0.188	0.25	0.38	0.192	0.365	**0.74**	0.421	0.273	0.42
TC7	0.336	0.401	0.371	0.396	0.561	0.325	0.312	0.456	0.347	0.351	**0.737**	0.56	0.348	0.341
WH1	0.437	0.382	0.311	0.4	0.604	0.372	0.346	0.391	0.321	0.471	0.543	**0.857**	0.397	0.327
WH3	0.529	0.44	0.39	0.418	0.556	0.414	0.483	0.457	0.401	0.496	0.492	**0.782**	0.442	0.297
WH4	0.443	0.288	0.2	0.364	0.596	0.262	0.267	0.322	0.21	0.404	0.539	**0.757**	0.277	0.415
WH5	0.502	0.413	0.361	0.377	0.626	0.337	0.41	0.399	0.3	0.47	0.528	**0.826**	0.364	0.346
WH6	0.45	0.401	0.394	0.33	0.561	0.402	0.39	0.433	0.357	0.395	0.466	**0.796**	0.307	0.276
WH7	0.363	0.292	0.222	0.322	0.68	0.227	0.291	0.354	0.261	0.341	0.548	**0.773**	0.269	0.385
WH8	0.499	0.392	0.43	0.393	0.626	0.395	0.445	0.407	0.306	0.459	0.475	**0.823**	0.364	0.341
WH9	0.432	0.358	0.373	0.331	0.723	0.403	0.379	0.382	0.286	0.453	0.563	**0.865**	0.39	0.368
WH10	0.505	0.447	0.429	0.386	0.652	0.432	0.431	0.462	0.356	0.465	0.525	**0.817**	0.432	0.317
WH11	0.429	0.456	0.459	0.452	0.575	0.495	0.426	0.372	0.309	0.485	0.4	**0.764**	0.38	0.314
WH12	0.482	0.415	0.484	0.503	0.694	0.456	0.448	0.425	0.331	0.56	0.475	**0.775**	0.421	0.422
WQL1	0.371	0.498	0.421	0.404	0.335	0.541	0.38	0.446	0.494	0.32	0.478	0.428	**0.797**	0.446
WQL2	0.29	0.38	0.285	0.322	0.273	0.389	0.341	0.375	0.416	0.267	0.332	0.202	**0.76**	0.453
WQL3	0.379	0.488	0.463	0.473	0.326	0.599	0.423	0.418	0.498	0.355	0.535	0.458	**0.805**	0.38
WQL4	0.173	0.28	0.336	0.256	0.308	0.333	0.353	0.356	0.446	0.333	0.383	0.366	**0.749**	0.284
WQL5	0.296	0.353	0.4	0.358	0.276	0.403	0.391	0.392	0.546	0.308	0.353	0.228	**0.767**	0.387
WQL6	0.264	0.436	0.414	0.343	0.351	0.416	0.345	0.381	0.459	0.332	0.441	0.414	**0.837**	0.225
WQN1	0.361	0.213	0.202	0.328	0.49	0.338	0.217	0.318	0.313	0.364	0.4	0.275	0.376	**0.799**
WQN2	0.457	0.395	0.329	0.457	0.492	0.327	0.389	0.416	0.402	0.352	0.424	0.361	0.43	**0.807**
WQN3	0.361	0.217	0.255	0.347	0.539	0.337	0.201	0.259	0.228	0.371	0.456	0.341	0.355	**0.798**
WQN4	0.485	0.39	0.393	0.498	0.537	0.344	0.405	0.396	0.319	0.395	0.337	0.381	0.28	**0.75**

Appendix M

R2 value for endogenous variables:

	R-square	R-square adjusted
CPP	0.642	0.635
EP	0.432	0.426

Appendix N

f2 value for endogenous variables:

	f-square
EP -> CPP	0.137
TQMP -> CPP	0.53
TQMP -> EP	0.76

Appendix O

HTMT for higher-order constructs:

	CPP	EP
CPP		
EP	0.772	

Appendix P

Questionnaire Form

Dear Respondent**,**

Greetings**,**

Topic: Filling out a special questionnaire to determine the impact of employee performance on the relationship between TQM practices and project performance in the construction sector in Palestine**.**

First, I would like to extend my best regards to you. Based on the above topic, I seek to study and evaluate the impact of employee performance on the relationship between TQM practices and project performance in the construction sector in Palestine as a requirement for completing a master's thesis in the Engineering Management Program at An-Najah National University**.**

I hope for your understanding and cooperation in filling out the questionnaire, knowing that all data and information you will provide for this study will be used only for scientific research purposes, and will be treated with complete confidentiality. Thank you for your cooperation in making this study a success**.**

Please note that the questionnaire is filled out in approximately 25 minutes**.**

Thank you for your contribution to this research and I wish you success and good luck. Please accept my sincere appreciation and respect**.**

Researcher: Aysar Ashqar

An-Najah National University - Master of Engineering Management

Mobile number - 0597589590

Section One: Personal and Job Information

This section contains questions about general information about you and the company. Please put a checkmark (✔) in the appropriate box according to your choice**.**

Your age	□ Less than 20 years □ 20 to 30 years □ 31 to 40 years □ 41 to 50 years □ Over 50 years
Academic or professional qualification	□ High school or less □ Professional certificate □ Bachelor's degree □ Master's degree □ Doctorate degree □ Other**.....**
Your specialization	□ Civil Engineering □ Construction Engineering □ Architecture □ Quality Management □ Project Management □ Business Administration □ Other .....
Company location	□ Hebron □ Qalqilya □ Tulkarm □ Bethlehem □ Jenin □ Jericho □ Nablus □ Jerusalem □ Ramallah □ Salfit

Your job position	□ Company Manager □ Project Manager □ Quality Manager □ Site Manager □ Site Engineer □ Supervisory Engineer □ Manager ..... □ Employee (worker) in the company ..... □ Other .....
Years of experience in the construction field	□ Less than 5 years □ 5 - 10 years □ 10 - 15 years □ More than 15 years
Company's field activity	□ Engineering and Project Design □ Construction and Contracting □ Management and Consulting □ Infrastructure Engineering □ Other .....
Number of employees in the company	□ Less than 10 employees □ 10- 49 employees □ More than 50 employees

Section Two: Information about Quality and Total Quality Management Applications

The aim of this section is to determine the extent of your knowledge and awareness of quality and total quality management applications. Please put a checkmark (✔) in the appropriate box according to your choice**.**

The following words give the best definition of quality in your opinion (multiple options are possible)	□ Customer Satisfaction □ Increased Profit □ Additional Costs □ Teamwork □ Save Time □ Company Reputation □ No Errors □ Improve Service/Product □ Other**……**
Principles of quality management adopted by your company (multiple options are possible)	□ Continuous Improvement □ Customer Focus □ Supplier Management □ Operations Management □ Performance Evaluation □ Employee/Worker Training □ Involvement of Employees/Workers in Decision Making □ Other**……**
Considerations that your company cares about (multiple options are possible)	□ Customer Satisfaction □ Work Accuracy □ Profit □ Employee/Worker Satisfaction □ Completion of Work on Time □ Cost Reduction □ Occupational Health and Safety □ Other**……**

Quality standards for projects in your company (multiple options are possible)	□ International Standards □ Local Standards □ Company-Specific Standards □ According to Customer Requirements □ Other**……**
Solves quality-related problems in your company	□ Company Manager □ Project Manager □ Quality Manager □ Site Manager □ Staff/Workers □ Other**……**

Section Three: Information about Quality and Total Quality Management Practices

The aim of this section is to identify the extent to which Total Quality Management practices are applied in your company according to your perception. Please put a check mark (×) in the appropriate box according to your choice**.**

Total Quality Management (TQM) Practices Within Your Company						
No**.**	Leadership and Top Management	Very Low	Low	Medium	High	Very High
1	The management of the company considers quality to be one of the basic and important goals.					
2	There is a clear approach and policy by the management regarding the company's vision towards quality.					
3	The management considers quality to be one of the important factors that lead to achieving a competitive advantage among companies.					
4	One of the issues that are reviewed in the management meetings of the company is quality issues.					
5	The management of the company considers quality to be more important than the schedule.					
6	The management of the company considers quality to be more important than the cost.					
7	The management of the company includes the importance of quality within the cost of projects and their schedule.					
8	The management of the company is interested in employees and workers obtaining knowledge of quality procedures.					

9	The management is keen to improve and develop the performance of employees and workers in it.					
10	The management distinguishes employees and workers in it who accomplish work with better quality than others with material and moral incentives.					
11	There is a clear and specific role for all employees and workers in the company that has been formulated by the management.					
12	The management of the company supports the opinions of employees and workers in it that aim to improve the level of quality.					
No.	Continuous Improvement	Very Low	Low	Medium	High	Very High
1	The company has a vision to improve the work methods of its employees and workers.					
2	The company's policy regarding quality matters is gradually changed and improved.					
3	The company evaluates the performance of its employees and workers and takes the necessary measures to improve it.					
4	The company encourages its employees and workers to be creative and innovative in improving project completion processes.					
5	The company works on preparing well to complete projects accurately to meet the needs and expectations of its customers.					
6	The company is interested in developing completion processes by continuously					

	reducing the time and cost required to complete projects.					
7	The company is interested in finding reasons for losing cost and time in project completion processes.					
No.	Supplier Management	Very Low	Low	Medium	High	Very High
1	The company takes supplier delivery performance into consideration in the supplier selection process.					
2	The company considers the quality standard to be more important than price in the supplier selection process.					
3	The company considers the quality standard to be more important than delivery time in the supplier selection process.					
4	The company requires suppliers to have clear specifications and requirements for the supplied materials to achieve quality.					
5	The supplied materials are carefully inspected before use.					
6	The company is concerned with managing and maintaining relationships with suppliers to ensure consistency.					
No.	Process Management	Very Low	Low	Medium	High	Very High
1	Drawings and specifications are reviewed before construction work begins.					

2	Executive plans and drawings are prepared and used for projects.					
3	The company uses a comprehensive supervision system and continuous monitoring of various project operations.					
4	Quality standards are included in various construction operations.					
5	Safety and security measures are emphasized on the site before construction operations begin.					
6	Work instructions provided to employees and workers at the construction site are clear.					
7	Final inspection, review and audit of various construction operations are conducted after implementation.					
No.	Employee Empowerment & Involvement	Very Low	Low	Medium	High	Very High
1	The company encourages its employees and workers to submit their distinguished suggestions.					
2	The company encourages its employees to participate in making decisions related to projects.					
3	The company encourages social relations between employees and workers.					
4	The company encourages a culture of teamwork among employees and workers in completing projects.					
5	The company encourages employees and workers to participate in finding the appropriate solution to the problems it faces in completing projects.					

6	The company enhances the awareness of employees and workers to participate in quality activities related to projects.					
7	All employees and workers in the company know their roles and work responsibilities according to their job description from the management.					
8	The company uses a system of motivation and rewards for employees and workers for their excellent suggestions.					
9	Employees receive training courses in quality improvement skills and their technical skills, whether inside or outside the company.					
10	Employees in the company attend work and project meetings on a regular basis.					
No.	Customer Focus	Very Low	Low	Medium	High	Very High
1	The company is interested in knowing the level of customer satisfaction after completing projects.					
2	The company and employees are interested in taking into account the desires and expectations of customers.					
3	The company disseminates the desires and expectations of customers among its employees and workers and ensures that they understand them.					
4	The company is interested in and effectively follows up on customer complaints and inquiries.					
5	The company submits customer complaints to the project manager in order to meet his expectations.					

6	The company carries out several meetings and sessions between it and the customer, even if they are informal, to follow up on his satisfaction with the project completion process.					

Section Four: Information about the performance of employees and workers in the company

The purpose of this section is to evaluate the performance of employees and workers in the company according to your perception. Please put an (×) in the appropriate box according to your choice..

No.	Quality of Work	Very Low	Low	Medium	High	Very High
1	The employee/worker is able to accomplish the tasks assigned to him/her according to the company's standards.					
2	The employee/worker is committed to his/her responsibilities as stated in the job description.					
3	The employee/worker is committed to the procedures and policies set by the management.					
4	The employee/worker is able to organize and arrange his/her tasks.					
5	The employee/worker is able to accomplish the tasks assigned to him/her in an effective and efficient manner.					
6	The employee/worker is able to optimally utilize the necessary tools, equipment and resources to accomplish the work effectively.					

7	The employee/worker is able to accomplish his/her tasks without errors.					
8	The quality of the work performed by the employee/worker is excellent.					
No.	Quantity of Work	Very Low	Low	Medium	High	Very High
1	The employee/worker is committed to completing assigned tasks within the specified timeframes in an efficient manner.					
2	The employee/worker is able to complete assigned tasks within reasonable time limits for these tasks.					
3	The employee/worker is able to complete tasks well under pressure.					
4	The employee/worker is willing to put in extra effort to complete assigned tasks.					
5						
No	Teamwork and Cooperation	Very Low	Low	Medium	High	Very High
1	The employee/worker is willing to help new employees.					
2	The employee/worker is willing to help colleagues who are suffering from excessive workload.					
3	The employee/worker is able to adapt and work within other work teams.					
4	The employee/worker is receptive to the instructions of the supervising engineer.					
5	The employee/worker is willing to replace colleagues who are struggling to perform tasks.					

6	The employee/worker communicates effectively with colleagues and superiors.					
7	The employee/worker is willing to inform the supervisor of any error in performing the assigned tasks.					
No.	Initiative and Ability	Very Low	Low	Medium	High	Very High
1	The employee/worker is able to develop new ideas and alternative methods and suggest different procedures to meet work challenges.					
2	The employee has the physical ability to perform the arduous aspects of the work.					
3	The employee/worker is able to complete tasks in an acceptable manner and within the timetables.					
4	The employee/worker is able to improve the level of work on his/her own according to the requirements of the work on site without the need for guidance.					
5	The employee/worker is able to work effectively and efficiently with minimal supervision.					
6	The employee/worker is able to work on analyzing the challenges he/she faces and providing alternative solutions.					
7	The employee/worker is willing to take on additional responsibilities.					
8	The employee/worker is able to make changes to the schedule according to priorities.					

9	The employee/worker has the knowledge or skill necessary to perform his/her duties.					
10	The employee/worker is fully and clearly aware of the nature of his/her job performance.					
No.	Work Habits	Very Low	Low	Medium	High	Very High
1	The employee/worker is committed to regularly attending work and not being absent without permission.					
2	The employee/worker is committed to attending work on time.					
3	The employee/worker is committed to the time specified for breaks according to the company's regulations.					
4	The employee/worker is committed to adhering to official working hours and not leaving without permission.					
5	The employee/worker is committed to the management's rules and procedures.					
6	The employee/worker is committed to practicing safety rules at the workplace to protect themselves and others.					
7	The employee/worker in the company is committed to taking care of the equipment and using it properly.					
8	The employee/worker is committed to the deadlines for submitting his tasks.					
9	The employee/worker uses working hours effectively and efficiently.					
10	The employee/worker follows instructions, whether written or verbal,					

	and has the ability to perform work well according to instructions.					
11	The employee/worker organizes and arranges work activities in harmony with the work of others to achieve the best possible results for everyone.					
12	The employee/worker organizes and arranges work activities to use time and resources effectively to achieve the greatest results with the least amount of time and effort.					

Section Five: Information on the performance of construction projects in the company

The purpose of this section is to evaluate the performance of the company's construction projects according to your perception. Please put an (×) in the appropriate box according to your choice.

No.	Time	Very Low	Low	Medium	High	Very High
1	The time allocated to each task and activity within the project is usually appropriate for it.					
2	The necessary corrective actions are usually taken in a timely manner, in the event of any delays or problems affecting the project schedule.					
3	The project goals and objectives are usually achieved without delay or fatigue.					
4	Each part of the project scope is usually implemented and delivered according to the specified plan.					

5	The company usually completes the project implementation and delivery within the project timelines.					
No.	Cost	Very Low	Low	Medium	High	Very High
1	The necessary corrective actions are taken in a timely manner, in the event of any excesses or problems affecting the project budget.					
2	Usually the scope of the specified project is appropriate to the size, nature and budget of the project.					
3	Usually the project is implemented and delivered within the expected budget of the project and any deviation is justified in an acceptable manner.					
No.	Quality	Very Low	Low	Medium	High	Very High
1	All necessary tests and examinations are usually carried out to ensure the quality of the project.					
2	The necessary corrective actions are taken in a timely manner, in case any defects or problems affecting the quality of the project are discovered.					
3	The project is usually implemented according to the required specifications and standards.					
4	The project is usually delivered with the best quality and the least errors.					
5	The agreed upon goals and outputs of the project are usually achieved.					

إستمارة إستبيان

الأخ الفاضل/ الأخت الفاضلة

تحية طيبة وبعد،

الموضوع: تعبئة استبيان خاص لتحديد أثر أداء العاملين على العلاقة بين ممارسات إدارة الجودة الشاملة وأداء المشاريع في قطاع الانشاءات في فلسطين.

بداية اتقدم لحضرتكم بأطيب التحيات، بناء على الموضوع أعلاه فإنني اسعى لدراسة وتقييم أثر أداء العاملين على العلاقة بين ممارسات إدارة الجودة الشاملة وأداء المشاريع في قطاع الانشاءات في فلسطين كمتطلب لإتمام رسالة الماجستير في برنامج الإدارة الهندسية في جامعة النجاح الوطنية.

أرجو تفهمكم وتعاونكم في تعبئة الاستبيان، مع العلم بأن جميع البيانات والمعلومات التي ستوفرونها لهذه الدراسة ستستخدم فقط لأغراض البحث العلمي، وستعامل بسرية تامة، شاكراً لكم حسن التعاون على إنجاح هذه الدراسة.

أحيطكم علماً أن مدة تعبئة الاستبيان هي 25 دقيقة تقريباً.

أشكركم على مساهمتكم في هذا البحث وأتمنى لكم النجاح والتوفيق، وتفضلوا بقبول وافر التقدير والاحترام.

الباحث: أيسر أشقر

جامعة النجاح الوطنية – ماجستير إدارة هندسية

جوال رقم –0597589590

القسم الأول: المعلومات الشخصية والوظيفية

يحتوي هذا القسم على اسئلة عن معلومات عامة عنك وعن الشركة, الرجاء وضع إشارة (✔) في المربع المناسب حسب اختيارك.

العمر	□ أقل من 20 سنة □ من 20 إلى 30 سنة □ من 31 إلى 40 سنة □ من 41 إلى 50 سنة □ أكبر من 50 سنة	
المؤهل العلمي أو المهني	□ الثانوية العامة أو أقل □ شهادة مهنية □ درجة البكالوريوس □ درجة الماجستير □ درجة الدكتوراه □ آخر	
تخصصك	□ هندسة مدنية □ هندسة بناء □ هندسة معمارية □ إدارة الجودة □ إدارة مشاريع □ ادارة الأعمال □ آخر	
موقع الشركة	□ الخليل □ طولكرم □ جنين □ نابلس □ رام الله	□ قلقيلية □ بيت لحم □ أريحا □ القدس □ سلفيت

عملك	□ مدير الشركة □ مدير المشروع □ مدير الجودة □ مدير الموقع □ مهندس الموقع □ مهندس اشراف □ مدير ..... □ موظف (عامل) في الشركة ..... □ آخر .....
سنوات الخبرة في مجال الانشاءات	□ أقل من 5 سنوات □ 5 - 10 سنوات □ 10 – 15 سنة □ أكثر من 15 سنة
مجالات نشاط الشركة (يمكن تعدد الخيارات)	□ الهندسة وتصميم المشاريع □ البناء والمقاولات □ الإدارة والاستشارات □ هندسة البنية التحتية □ آخر .....
عدد الموظفين في الشركة	□ أقل من 10 موظفين □ 10- 49 موظف □ أكثر من 50 موظف

القسم الثاني: معلومات عن الجودة وتطبيقات إدارة الجودة الشاملة

الهدف من هذا القسم هو التبين من مدى معرفتك وإدراكك للجودة وتطبيقات إدارة الجودة الشاملة, الرجاء وضع إشارة (✔) في المربع المناسب حسب اختيارك.

الكلمات التالية تعطي أفضل تعريف للجودة حسب رأيك (يمكن تعدد الخيارات)	□ رضا العملاء □ زيادة ارباح □ تكاليف إضافية □ العمل الجماعي □ توفير للوقت □ سمعة للشركة □ عدم وجود أخطاء □ تحسين خدمة / منتج □ آخر .....
مبادئ في إدارة الجودة تتبناها شركتك (يمكن تعدد الخيارات)	□ التحسين المستمر □ التركيز على العملاء □ ادارة الموردين □ ادارة العمليات □ تقييم الأداء □ تدريب الموظفين / العمال □ إشراك الموظفين / العمال في اتخاذ القرارات □ آخر .....
من الاعتبارات التي تهتم بها شركتك (يمكن تعدد الخيارات)	□ رضا العملاء □ دقة العمل □ الربح

	□ رضا الموظفين / العمال □ انهاء العمل في الوقت المناسب □ تقليل التكاليف □ الصحة والسلامة المهنية □ آخر .....
معايير جودة المشاريع في شركتك (يمكن تحديد أكثر من خيار)	□ معايير دولية □ معايير محلية □ معايير خاصة بالشركة □ حسب متطلبات العملاء □ آخر .....
يقوم بحل المشاكل المتعلقة بالجودة في شركتك	□ مدير الشركة □ مدير المشروع □ مدير الجودة □ مدير الموقع □ الموظفين / العمال □ آخر .....

القسم الثالث: معلومات عن الجودة وممارسات إدارة الجودة الشاملة

الهدف من هذا القسم هو التعرف على مدى تطبيق ممارسات إدارة الجودة الشاملة في شركتك حسب تصورك, الرجاء وضع إشارة (×) في المربع المناسب حسب اختيارك.

	ممارسات إدارة الجودة الشاملة (TQM) داخل شركتك					
الرقم	**القيادة والإدارة العليا**	منخفض جدًا	منخفض	متوسط	مرتفع	مرتفع جدًا
1	تعتبر الإدارة في الشركة ان الجودة من الأهداف الأساسية والمهمة					

2	يوجد منهج وسياسة واضحة من قبل الإدارة تخص رؤية الشركة تجاه الجودة					
3	تعتبر الإدارة ان الجودة من العوامل المهمة التي تؤدي إلى تحقيق ميزة التنافس بين الشركات					
4	من القضايا التي يتم مراجعتها في إجتماعات الإدارة في الشركة قضايا الجودة					
5	تعتبر الإدارة في الشركة أن الجودة أكثر أهمية من الجدول الزمني					
6	تعتبر الإدارة في الشركة أن الجودة أكثر أهمية من التكلفة					
7	ترفق الإدارة في الشركة أهمية الجودة ضمن تكلفة المشاريع وجدولها الزمني					
8	تهتم الإدارة في الشركة في حصول الموظفين والعاملين فيها على المعرفة في إجراءات الجودة					
9	تحرص الإدارة على تحسين وتطوير أداء الموظفين والعاملين فيها					
10	تميز الإدارة الموظفين والعاملين فيها ممن ينجزون العمل بجودة أفضل عن غيرهم بحوافز مادية ومعنوية					
11	يوجد دور واضح ومحدد لكل الموظفين والعاملين في الشركة تم صياغته من قبل الإدارة					
12	تدعم الإدارة في الشركة آراء الموظفين والعاملين فيها التي تهدف لتحسين مستوى الجودة					
الرقم	**التحسين المستمر**	منخفض جدًا	منخفض	متوسط	مرتفع	مرتفع جدًا
1	يوجد لدى الشركة تصور لتحسين أساليب العمل لدى الموظفين والعاملين فيها					
2	يتم تغيير وتحسين سياسة الشركة فيما يتعلق بأمور الجودة بالتدريج					
3	تعمل الشركة على تقييم أداء الموظفين والعمال لديها وتتخذ الأجراءات اللازمة لتحسينه					

4	تشجع الشركة الموظفين والعاملين لديها على الإبداع والابتكار في تحسين عمليات إنجاز المشروع					
5	تعمل الشركة على الإعداد الجيد لإنجاز المشاريع بشكل دقيق لتلبية احتياجات وتوقعات زبائنها					
6	تهتم الشركة بتطوير عمليات الإنجاز وذلك بتقليص الوقت والتكلفة اللازم لإنجاز المشاريع بشكل مستمر					
7	تهتم الشركة بإيجاد أسباب خسارة التكلفة والوقت في عمليات إنجاز المشاريع					

الرقم	**إدارة الموردين**	منخفض جدًا	منخفض	متوسط	مرتفع	مرتفع جدًا
1	تأخذ الشركة أداء تسليم المورد بعين الأعتبار في عملية اختيار الموردين					
2	تعتبر الشركة أن معيار الجودة أكثر أهمية من السعر في عملية اختيار الموردين					
3	تعتبر الشركة أن معيار الجودة أكثر أهمية من وقت التسليم في عملية اختيار الموردين					
4	تشترط الشركة على الموردين مواصفات ومتطلبات واضحة للمواد الموردة لتحقيق الجودة					
5	تفحص المواد الموردة قبل الاستخدام بشكل دقيق					
6	تهتم الشركة بإدارة العلاقات والحفاظ عليها مع الموردين وذلك لضمان الاتساق					
الرقم	**إدارة العمليات**	منخفض جدًا	منخفض	متوسط	مرتفع	مرتفع جدًا
1	تتم مراجعة الرسومات والمواصفات قبل المباشرة بأعمال الإنشاءات					

2	يتم إعداد واستخدام المخططات والرسومات التنفيذية للمشاريع					
3	تستخدم الشركة نظام الإشراف الشامل والرقابة المستمرة على مختلف عمليات المشروع					
4	يتم تضمين مقاييس الجودة في مختلف عمليات الانشاء					
5	يتم التأكيد على اتخاذ تدابير الأمن والسلامة في الموقع قبل المباشرة بعمليات الانشاء					
6	تتسم تعليمات العمل المقدمة للموظفين والعاملين في موقع الانشاء بالوضوح					
7	يتم اجراء فحص نهائي ومراجعة وتدقيق مختلف عمليات الانشاء بعد التنفيذ					
الرقم	**تمكين الموظفين وإشراكهم**	منخفض جدًا	منخفض	متوسط	مرتفع	مرتفع جدًا
1	تشجع الشركة الموظفين والعاملين فيها على تقديم اقتراحاتهم المميزة					
2	تشجع الشركة الموظفين لديها على المشاركة في اتخاذ القرارات المتعلقة بالمشاريع					
3	تشجع الشركة العلاقات الاجتماعية بين الموظفين والعاملين فيها					
4	تشجع الشركة ثقافة العمل الجماعي بين الموظفين والعاملين فيها في انجاز المشاريع					
5	تشجع الشركة الموظفين والعاملين فيها على المشاركة في إيجاد الحل المناسب للمشاكل التي تواجهها في إنجاز المشاريع					
6	تعزز الشركة وعي الموظفين والعاملين فيها على المشاركة في أنشطة الجودة المتعلقة بالمشاريع					
7	يعرف جميع الموظفون والعاملون في الشركة أدوارهم ومسؤوليات عملهم حسب وصف الوظيفي لهم من الإدارة					
8	تستخدم الشركة نظام التحفيز والمكافآت للموظفين والعاملين فيها لاقتراحاتهم الممتازة					

9	يتلقى الموظفون دورات تدريبية في مهارات تحسين الجودة ومهاراتهم الفنية سواء داخل الشركة او خارجها					
10	يحضر الموظفون في الشركة الاجتماعات الخاصة بالعمل والمشاريع بشكل منتظم					

الرقم	**التركيز على العملاء**	منخفض جدًا	منخفض	متوسط	مرتفع	مرتفع جدًا
1	تهتم الشركة بمعرفة مدى رضا العملاء بعد إنجاز المشاريع					
2	تهتم الشركة والموظفين بمراعاة رغبات العملاء وتوقعاتهم					
3	تنشر الشركة رغبات العملاء وتوقعاتهم بين الموظفين والعاملين فيها وتحرص على فهمهم لها					
4	تهتم الشركة وتتابع بفاعلية شكاوي واستفسارات العميل					
5	تقدم الشركة شكاوي العميل إلى مدير المشروع وذلك لتلبية توقعاته					
6	تنفذ الشركة عدة لقاءات وجلسات بينها وبين العميل حتى وإن كانت غير رسمية لمتابعة رضاه عن عملية إنجاز المشاريع					

القسم الرابع: معلومات عن اداء الموظفين والعاملين في الشركة

الهدف من هذا القسم هو تقييم اداء الموظفين والعاملين في الشركة حسب تصورك, الرجاء وضع إشارة (×) في المربع المناسب حسب اختيارك.

الرقم	**جودة العمل**	منخفض جدًا	منخفض	متوسط	مرتفع	مرتفع جدًا
1	الموظف/العامل قادر على إنجاز المهام الموكلة له حسب معايير الشركة.					
2	الموظف/العامل ملتزم بمسؤولياته كما هو موضح له في الوصف الوظيفي.					

3	الموظف/العامل ملتزم بالإجراءات والسياسات الموضوعة من قبل الإدارة.					
4	الموظف/العامل قادر على ترتيب مهامه وتنظيمها.					
5	الموظف/العامل قادر على إنجاز الاعمال الموكلة اليه بطريقة فعالة وبكفاءة جيدة.					
6	الموظف/العامل قادر على استغلال الأدوات والمعدات والموارد اللازمة بالشكل الأمثل لإنجاز العمل بفاعلية.					
7	الموظف/العامل قادر على إنجاز مهامه بدون أخطاء.					
8	جودة العمل الذي يقوم به الموظف/العامل ممتازة.					
الرقم	**كمية العمل**	منخفض جدًا	منخفض	متوسط	مرتفع	مرتفع جدًا
1	الموظف/العامل ملتزم بإنجاز الاعمال الموكلة له ضمن الجداول الزمنية المحددة بطريقة فعالة.					
2	الموظف/العامل قادر على إتمام الاعمال الموكلة له ضمن الحدود الزمنية المعقولة لهذه المهام.					
3	الموظف/العامل قادر على إنجاز الاعمال بشكل جيد تحت ضغط العمل.					
4	الموظف/العامل مستعد لبذل الجهد الاضافي لإنهاء المهام الموكلة له.					

الرقم	**العمل الجماعي والتعاون**	منخفض جدًا	منخفض	متوسط	مرتفع	مرتفع جدًا
1	الموظف/العامل مستعد لمساعدة الموظفين الجدد.					
2	الموظف/العامل مستعد لمساعدة زملاءه ممن يعانون من عبء العمل الزائد.					

3	الموظف/العامل قادر على التكيف والعمل ضمن فرق العمل الاخرى.					
4	الموظف/العامل متقبل لتعليمات المهندس المشرف.					
5	الموظف/العامل مستعد لاستبدال زملاءه في العمل ممن يعانون في تنفيذ المهام.					
6	يتواصل الموظف/العامل بشكل فعال مع زملاءه ورؤساءه.					
7	الموظف/العامل مستعد لإبلاغ المشرف عن أي خطأ في تنفيذه للمهام الموكلة له.					
الرقم	**المبادرة والقدرة**	منخفض جدًا	منخفض	متوسط	مرتفع	مرتفع جدًا
1	الموظف/العامل قادر على تطوير أفكار جديدة وطرق بديلة واقتراح اجراءات مختلفة في مواجهة تحديات العمل.					
2	العامل لديه القدرة الجسدية على اداء الجوانب الشاقة من العمل.					
3	الموظف/العامل قادر على إنجاز المهام بطريقة مقبولة وضمن الجداول الزمنية.					
4	الموظف/العامل قادر على تحسين مستوى العمل من تلقاء نفسه حسب مقتضيات العمل في الموقع دون الحاجة لتوجيه.					
5	الموظف/العامل قادر على العمل بفعالية وكفاءة مع الحد الادنى من الاشراف.					
6	الموظف/العامل قادر على العمل على تحليل التحديات التي يواجهها وتقديم حلول بديلة.					
7	الموظف/العامل مستعد لتحمل مسؤليات اضافية.					
8	الموظف/العامل قادر على اجراء تغييرات على جدول الاعمال حسب الاولويات.					
9	الموظف/العامل لديه المعرفة او المهارة اللازمة لاداء مهامه.					
10	الموظف/العامل مدرك بشكل كامل وواضح لطبيعة اداء وظيفته.					

الرقم	**عادات العمل**	منخفض جدًا	منخفض	متوسط	مرتفع	مرتفع جدًا
1	يلتزم الموظف/العامل بانتظام الحضور للدوام وعدم الغياب دون الحصول على إذن.					
2	يلتزم الموظف/العامل بالحضور للدوام في الوقت المحدد.					
3	يلتزم الموظف/العامل بالوقت المحدد للاستراحة وفق انظمة الشركة.					
4	يلتزم الموظف/العامل بالتقيد بساعات العمل الرسمية وعدم المغادرة دون الحصول على إذن.					
5	يلتزم الموظف/العامل بقواعد وإجراءات الإدارة المنصوص عليها.					
6	يلتزم الموظف/العامل بممارسة قواعد السلامة في موقع العمل لحماية انفسهم والآخرين.					
7	يلتزم الموظف/العامل في الشركة في العناية بالمعدات ويستخدمها بشكل صحيح.					
8	يلتزم الموظف/العامل بالمواعيد النهائية لتسليم مهامه					
9	يستغل الموظف/العامل اوقات العمل بفعالية وكفاءة.					
10	يتبع الموظف/العامل التعليمات سواءً كانت مكتوبة او شفهية, ولديه قدرة على اداء الاعمال بشكل جيد حسب التعليمات.					
11	ينظم الموظف/العامل ويرتب انشطة العمل بانسجام مع عمل الآخرين لتحقيق أفضل النتائج الممكنة للجميع.					
12	ينظم الموظف/العامل ويرتب انشطة العمل لاستغلال الوقت والموارد بشكل فعال لتحقيق أعظم النتائج بأقل قدر من الوقت والجهد.					

القسم الخامس: معلومات عن اداء المشاريع الانشائية في الشركة

الهدف من هذا القسم هو تقييم اداء المشاريع الإنشائية في الشركة حسب تصورك, الرجاء وضع إشارة (×) في المربع المناسب حسب اختيارك.

الرقم	**الوقت**	منخفض جدًا	منخفض	متوسط	مرتفع	مرتفع جدًا
1	عادة ما يكون الوقت الذي تم تخصيصه لكل مهمة ونشاط داخل المشروع مناسبا لها					
2	عادة ما يتم اتخاذ الإجراءات التصحيحية اللازمة في الوقت المناسب, في حال حدوث أي تأخيرات او مشاكل تؤثر على جدول المشروع					
3	في العادة ما يتم تحقيق أهداف المشروع وغاياته دون تأخير أو إرهاق.					
4	عادة ما يتم تنفيذ وتسليم كل جزء من نطاق المشروع حسب الخطة المحددة					
5	عادة ما تنتهي الشركة من تنفيذ المشروع وتسليمه ضمن الجداول الزمنية للمشروع					
الرقم	**التكلفة**	منخفض جدًا	منخفض	متوسط	مرتفع	مرتفع جدًا
1	يتم اتخاذ الإجراءات التصحيحية اللازمة في الوقت المناسب, في حال حدوث أي تجاوزات او مشاكل تؤثر على ميزانية المشروع					
2	في العادة ما يكون نطاق المشروع المحدد مناسبا لحجم وطبيعة وميزانية المشروع					
3	عادة ما يتم تنفيذ المشروع وتسليمه في حدود الميزانية المتوقعة للمشروع واي انحراف يكون له تبرير بشكل مقبول					
الرقم	**الجودة**	منخفض جدًا	منخفض	متوسط	مرتفع	مرتفع جدًا
1	في العادة ما يتم تنفيذ جميع الاختبارات والفحوصات اللازمة لضمان جودة المشروع					

2	يتم اتخاذ الإجراءات التصحيحية اللازمة في الوقت المناسب, في حال اكتشاف أي عيوب او مشاكل تؤثر على جودة المشروع					
3	في العادة ما يتم تنفيذ المشروع حسب المواصفات والمعايير المطلوبة					
4	في العادة ما يتم تسليم المشروع بأفضل جودة وأقل أخطاء.					
5	في العادة ما يتم تحقيق الاهداف والمخرجات المتفق عليها في المشروع					

جـامعـــة النجاح الوطنية

كليـــة الدراســـات العليـــا

أثر أداء العاملين كمتغير وسيط على العلاقة بين ممارسات إدارة الجودة الشاملة وأداء مشاريع البناء في فلسطين

إعداد

أيسر أشقر

إشراف

د. معاوية رمضان

قدمت هذه الرسالة استكمالا لمتطلبات الحصول على درجة الماجستير في الإدارة الهندسية، من كلية الدراسات العليا، في جامعة النجاح الوطنية، نابلس– فلسطين.

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إشراف

د. معاوية رمضان

الملخص

تناولت هذه الدراسة أثر ممارسات إدارة الجودة الشاملة على أداء المشاريع الإنشائية في قطاع الإنشاءات الفلسطيني، كما بحثت في دور أداء الموظفين كمتغير وسيط في العلاقة بينهما. ومن خلال مراجعة الأدبيات والدراسات المتعلقة بمفاهيم وأبعاد إدارة الجودة الشاملة وأداء الموظفين وأداء المشاريع الإنشائية في هذا المجال، طرح الباحث أربع نظريات. وتم استخدام المنهج الوصفي التحليلي. وتم جمع البيانات النوعية والكمية لهذه الدراسة ميدانياً وعبر الإنترنت من خلال استبيانات من 100 شركة. وتم تحليل البيانات التي تم جمعها من الاستبيانات باستخدام أسلوب المربعات الجزئية الصغرى (PLS-SEM) من خلال برنامج Smart PLS. وأظهرت النتائج وجود تأثير إيجابي كبير لممارسات إدارة الجودة الشاملة على أداء المشاريع والموظفين في شركات المقاولات والاستشارات، كما يوجد تأثير إيجابي لأداء الموظفين على أداء المشاريع الإنشائية. كما أوضحت الدراسة الدور الوسيط لأداء الموظفين في العلاقة بين ممارسات إدارة الجودة الشاملة وأداء المشاريع الإنشائية. تساهم الدراسة في سد الفجوة في الأدبيات البحثية من خلال تقديم واختبار دراسة نموذجية مقترحة، كما تساهم في نشر الوعي بين المديرين والموظفين في قطاع الإنشاءات الفلسطيني حول ضرورة إدخال وتطبيق ممارسات إدارة الجودة في سياسات شركاتهم بهدف تحسين أداء كل من الموظفين والمشاريع، حيث قدمت دليل تجريبي على ذلك. واقترحت الرسالة أن تسعى الشركات إلى تبني ممارسات

إدارة الجودة الشاملة بشكل أكثر شمولاً وأفضل، والاهتمام بالموظفين وأدائهم وعملهم لإشراكهم وتمكينهم في القرارات المتعلقة بالجودة، ومن أهم محددات الدراسة والتوصيات للدراسات المستقبلية.

الكلمات المفتاحية: إدارة الجودة الشاملة، ممارسة إدارة الجودة الشاملة، أداء الموظفين، أداء مشاريع الإنشاءات، قطاع الإنشاءات الفلسطيني.