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The Impact of Total Quality Management Practices on Quality of Programs in Palestinian Technical Colleges

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THESIS APPROVAL

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Declaration

I certify that this thesis submitted for the Master`s degree in Quality Management is the result of my own research, except where otherwise acknowledged and that this thesis (or any part of the same) has not been submitted for a higher degree to any other university or institution.

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ABSTRACT

The research's main objective is to explore and examine the impact of the Total Quality Management (TQM) practices and philosophy on the quality of programs in Palestinian Technical Colleges (TCs). To achieve this, a quantitative hypothesis testing research approach was utilized. Based on a sample of 341 employees in Palestinian TCs in the West Bank & Gaza Strip, primary data were collected by generating and designing an electronic questionnaire.

The designed questionnaire is based on the TQM methodology and consists of four parts. The first part is related to the respondent`s characteristics. The second part is related to TQM dimensions (Beneficiary Satisfaction, Continuous Improvement, Employees Satisfaction, Infra-Structure, and Process Management). The third part is related to the quality system in TCs, and the last part is related to the quality of programs in TCs. A five-point Likert scale was used to respond to the questionnaire questions. Both SPSS and Smart-PLS programs were used to analyze the data by applying descriptive, nonparametric tests, and structural equation modeling techniques. The data were used for assessment of both measurements model (convergent and discriminant validity) and structural model (coefficient of determination (R^2), predictive relevance (Q^2), effect size (f^2), path coefficient (β values), and Path Significant (p-value).

Based on the findings, there is a positive relationship between TQM and the quality of programs in Palestinian TCs. The model reveals that governance & leadership, process management, beneficiary satisfaction, and continuous improvement have a stronger impact

on the TQM. Simultaneously, the last two variables (employee satisfaction and infrastructure) are also significant but less than the mentioned ones.

This research contributes to practices by provides insights to top management in the Ministry of Higher Education and Scientific Research (MoHE) to adopt a TQM module to assess and enhance the quality level in Palestinian TCs. Moreover, the research contributes to theory on how to measure quality by developing a holistic view in which it integrates the main TQM practices in a holistic conceptual model to measure and asses the quality in Palestinian TCs.

Some main recommendations are introduced, such as improving and enhancing the TQM culture among the employees in the TCs. The continuous improvement, employee satisfaction, and infra-structure variables should be given more attention in order to improve the TQM practices in Palestinian TCs.

The geographical distance between the West Bank and Gaza Strip, generalization of results, and the Covid-19 pandemic were the main limitations. Future research is recommended to evaluate and assess the programs' quality in Palestinian TCs from other stakeholders' perspectives than the employees, such as students, parents, and experts. Also, future researchers are invited to assess and investigate the quality of programs in Palestinian TCs from viewpoints of other stakeholders such as local community and operators

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List of Abbreviations

TQM	Total Quality Management
TVET	Technical and Vocational Education & Training
TCs	Technical Colleges
MoHE	Ministry of Higher Education & Scientific Research
AQAC	Accreditation and Quality Assurance Commission
HEIs	Higher Educational Institutions
MoE	Ministry of Education
MoL	Ministry of Labor
ISO	International Organization For Standardization
EFQM	European Foundation for Quality Management
MBQNA	Malcolm Bridge National Quality Award
ETF	European Training Foundation
BTC	Belgium Technical Corporation
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
QS	Quacquarelli Symonds
ARWU	Academic Ranking of World Universities
ANSI	American National Standards Institute
ASQC	American Society for Quality Control
DMAIC	Define, Measure, Analyze, Improve, and Control
SQMS	Scottish Quality Management System
AUQA	Australian University Quality Agency
AQTF	Australian Quality Training Foundation
CQI	Continuous Quality Improvement
ENQA	European Association for Quality Assurance
UNESCO	United Nations Educational, Scientific and Cultural Organization
THE	Times Higher Education
QA	Quality Assurance
SoP	State of Palestine
ILO	International Organization Labor
UNRWA	United Nations Relief and Works Agency
HRD	Human Resources Development
SEM	Structural Equation Modeling
CB-SEM	Covariance-Based Structural Equation Modeling
PLS-SEM	Partial Least Square Structural Equation Modeling
HCM	Hieratical Component Model
LOC	Lower –Order Components
HOC	Higher-Order Components
AVE	Average Variance Extracted
CR	Composite Reliability
VIF	Variance Inflation Factor

CHAPTER ONE

INTRODUCTION

1.1 Overview

Total Quality Management (TQM) has become widely demanded to increase the efficiency and performance of institutions and enterprises. Rapid changes in business as well as high level of competition forced institutions to adopt TQM in their internal systems to highlight quality and enhance performance that meets or exceeds customer requirements and establishing a process of continuous improvement and innovation (Baidoun, Salem, and Omran. 2018).

The TQM approach is a systematic, comprehensive management approaches which focus on many dimensions such as strategy, teamwork, leadership, innovation, knowledge to improve quality (Sallis, E. 2014). Others introduced TQM as "the consolidation of all functions and operations within an organization or institution in order to achieve continuous development of the quality of goods and services. The main target is customer satisfaction" (Ross, J. E. 2017).

As TQM is applied and implemented in the manufacturing field and many companies to satisfy the customer, also TQM can be applied and practiced in the educational field such as Universities and TCs to affect positively the output by improving and enhancing the quality of the high education system. Finally, the student & beneficiary satisfaction is one of the ultimate goals of TQM in HEIs since they are the real clients.

Generally, students pay in order to learn and train. So, many models can be used to apply TQM in the higher education system. For example, the European Foundation for Quality

Management (EFQM) is a quality management model that adopts the TQM philosophy and is widely applied by higher education also Malcolm Bridge National Quality Award (MBQNA) (Sadeh, E., & Garkaz, M. 2015).

This research will adopt six variables of the TQM approach applied in the Palestinian HEIs generally, and TCs specifically. Besides, the Palestinian Accreditation and Quality Assurance Commission (AQAC) adopt some of these standards and variables.

The TQM variables are:

1. Continuous Improvement.
2. Governance, Leadership, & Strategic Planning.
3. Beneficiary Satisfaction
4. Employees Satisfaction.
5. Education Infra-structure.
6. Process Management.

The ultimate goal of Higher Educational Institutions (HEIs), including TCs, is to enhance and promote the programs' quality. This can be done and achieved by adopting the TQM approach. So, these colleges try to measure TQM dimensions' reliability and validity to assess the programs' quality.

1.2 Quality of Programs in Higher Education Institutions

Higher education has become a very competitive global market; this generates tremendous pressure on HEIs to improve the outputs, performance and raise the level of quality in the programs they offer (Dwaikat, N. Y. 2020).

Quality in higher education institutions has become of great interest and attention nowadays. Stakeholders, decision-makers, policymakers, local community, parents, operators, researchers, academics, and donors, all those and others pay great attention to quality in higher education institutions (Tasopoulou, K., & Tsiotras, G. 2017).

There are different measures and methodologies for measuring the quality and performance of higher education institutions, one of these measures is the global university rankings, such as Quacquarelli Symonds (QS) ranking, Shanghai rankings which is the same as Academic Ranking of World Universities (ARWU), and Times Higher Education, Academic. At the same time, the other measures are quality assurance processes. Despite its widespread use by higher education institutions as essential marketing tools, university rankings approaches evaluate performance more than overall quality.

The related literature of quality in higher education institutions has suggested many models for measuring quality and experts and stakeholders. However, it is agreed that there is no consensus and a clear roadmap for measuring quality in higher education institutions. Quality has many indicators in higher education institutions, but in theory, it is a complicated matter and difficult to measure. It is challenging and complex to design and generate a model to measure quality in HEIs (Carnerud, D. 2018).

There is a difference in the concept and methodologies of educational programs quality in higher education institutions than in the manufacturing and production lines, the quality in the education is closer to the quality in the service sector. Enhancing quality in higher education institutions enhances an individual's life through acquiring, exchanging, and

developing knowledge and life skills. This requires implementing massive activities and efforts inside and outside higher education institutions and all stakeholders.

As the higher education sector is a service sector, this has led to a multiplicity of viewpoints for measuring higher education institutions' quality. As the higher education sector is a service sector, this has led to a multiplicity of viewpoints for measuring higher education institutions' quality. In contrast, the literature discussed the concept of quality in higher education from TQM as a methodology that seeks to enhance quality in all aspects affecting the quality of programs.

The concept of TQM focuses on the day-to-day operations that take place within institutions, continuous development, governance, leadership, strategic planning, commitment of top management, educational infrastructure, and employee and beneficiary satisfaction. The TQM methodology in higher education institutions provides an overall understanding of all the variables that enhance quality.

Therefore, this research aims to propose a model for evaluating the program quality in Palestinian TCs that are part of Palestinian higher education institutions through in-depth research into the relationships between a set of variables related to TQM.

1.3 The Research Problem

TQM is one of the essential methodologies and motives for enhancing the quality of Technical and Vocational Education & Training (TVET), as TQM represents the incubating environment for all the elements and tools of success and prosperity of TVET. This can be

achieved through a policy at the national level with follow-up at the organizational level (Baraki, A. H., & Kemenade, E. V. 2013).

TQM represents a system with inputs and outputs, and there is interaction and processing between inputs and outputs to achieve the highest level of quality. The educational process attracts students through the quality of the outputs in order to satisfy them as customers. The curricula, students, employees, and members of the academic staff are the inputs, while graduate students who have the competencies and practical skills to meet the labor market needs are the outputs (Al-Daibat, B., & Al-Daibat, M. 2017).

To achieve quality goals, TVET institutions need to implement TQM to encourage educational excellence to reach customer satisfaction. However, regarding the literature reviews mentioned in chapter two, TQM's implementation can create a quality culture and system thinking in Palestinian TVET institutions to capture the customers' voice to meet their needs to enhance program quality.

The field of Education in Palestine is one of the most areas that attract all segments of society because of its importance in bringing about comprehensive and sustainable development. TVET is part of the higher education system in Palestine since TCs provide this type of education under the umbrella of the MoHE (MoHE, 2020).

TVET is considered as the magic solution to reduce the unemployment rate among Palestinian youth, which reached (31%), according to the Palestinian Central Bureau of Statistics (PCBS, 2019), as well as raise the level of comprehensive development.

Therefore, the Palestinian TVET system graduates must have the skills and competencies necessary to meet the needs of the local labor market of high quality and efficiency.

The MoHE is interested in following up the normalization of program quality standards adopted by the AQAC in Palestinian higher education institutions in TCs. Although some HEIs claim to follow TQM principles in the past few years, microscopic research has been conducted to assess this impact at the universities' level (Mahamda, 2019). However, no researches have been conducted to examine the practices of TQM in Palestinian TCs and measure its impact on program quality.

TVET improves students' technical skills to meet the needs of the local and regional market. In Palestine, there are 35 TCs distributed in the West Bank & Gaza strip accredited by the Palestinian AQAC. Some of the institutions are governmental, private, and public. The MoHE control and manage these TCs; more than 230 specializations related to technical education are accredited in these institutions (MoHE, 2020).

The ultimate goal of the Palestinian TCs is to achieve the maximum quality related to TVET programs by different means; most of them are following the AQAC adopted standards which are partially cross-sectional with TQM principles. Despite the vital quality reforms in Palestinian TCs, the wanted and expected performance, and quality programs still cannot be achieved, such as minimum labor turnover, competitiveness, high enrollment rates, employee inspiration and motivation, and conflict within top management. According to Hilal, R. (2019), Palestinian TVET institutions still face many obstacles and challenges related to quality.

On the other hand, the European Training Foundation (ETF) as an international commission that is interested in the Quality of TVET in all over the world, indicated in its annual Torino Process report which is related to the TVET system in Palestine there are many challenges and obstacles that faces the TVET quality system in Palestine. Also, the ETF indicated there is a need for more relevant legislation to ensure quality (Torino Process, 2018-20)

Moreover, the revised TVET strategy indicated that there are a gaps in the Palestinian TVET system that effect negatively on the TVET quality system such as the TVET system fragmentation, lack of financial support, Outdated TVET Programs, limited staff qualifications, limited employality training skills, and negative social image of TVET (Revised TVET Strategy, 2010).

In the Palestinian service context, Dawabsheh, M., Hussein, A., & Jermsittiparsert, K. (2019) confirm a significant and positive TQM effect on organizational performance, excellence, and quality programs. On the other hand, another detailed study related to TQM implementation in Palestinian Universities confirmed that higher education institutions and program quality are improved by TQM effective practices (Mahamda, 2019).

Some studies explore the influence of TQM on Palestinian Universities and quality of program. Also, there are minimal studies that explore the reality of implementing TQM practices in Palestinian TCs in general without investigating the impact of TQM on program quality from one side. On the other side, all the studies that were performed were in West Bank or Gaza strip, not in both simultaneously.

This study's knowledge gap is interested in exploring and investigating the TQM practices in Palestinian TCs in West Bank & Gaza Strip and their effect on quality of program.

1.4 Significance of the Study

The findings of this research will contribute and explore the extent of TQM in Palestinian TCs and the impact on quality of programs through the TQM variables (Continuous Improvement, Governance, Leadership, & Strategic Planning, Beneficiary Satisfaction, Employees Satisfaction, Education Infra-structure, and Process Management).

Moreover, it will provide a gap analysis in the quality dimensions that the TCs physically apply compared to the AQAC standards. The results and conclusions will also define if these dimensions are fit and compatible with TCs or it is possible to redesign or build a new one that is more comprehensive and more oriented to TVET institutions. Finally, this study will provide indicators and scientific information to TCs to analyze and consider for better program quality and performance**.**

The research results will also provide more literature that supports the theoretical proposals on TQM as a strategic approach. On the other hand, the study will be a reference for the public to understand TQM further and focus on the importance of continuous improvement in TVET institutions, to fill the gap between teaching in the Technical College and work on the ground.

1.5 Research Objectives

1.5.1 General Objective of the Study

This study's main objective is to determine the effect of TQM practices on the quality of the programs in Palestinian TCs.

1.5.2 Sub-objectives of the Study

The study was set up upon the following specified objectives:

1. To explore the implementation of TQM in Palestinian TCs.
2. To define the most implemented TQM practices of Palestinian TCs.

1.6 Research Questions

The following research questions are formulated to fulfill the research mentioned above objectives.

1. To what extent do Palestinian TCs implement TQM?
2. What are the most implemented TQM practices in Palestinian TCs?
3. What is the impact of applying TQM practices on the quality of the programs in Palestinian TCs?

1.7 Research Hypothesis

To achieve the research's goals and objectives of assessing the impact of implementing of TQM practices on Palestinian TCs' quality programs (TCs). The following hypotheses and conceptual framework (Figure 1.1) have been formulated based on the literature reviews conducted in chapter two.

H_1: TQM Practices positively affects quality system in Palestinian TCs.

H_2: TQM Practices positively affects quality of programs in Palestinian TCs.

H_3: Quality system positively affects quality of programs in Palestinian TCs.

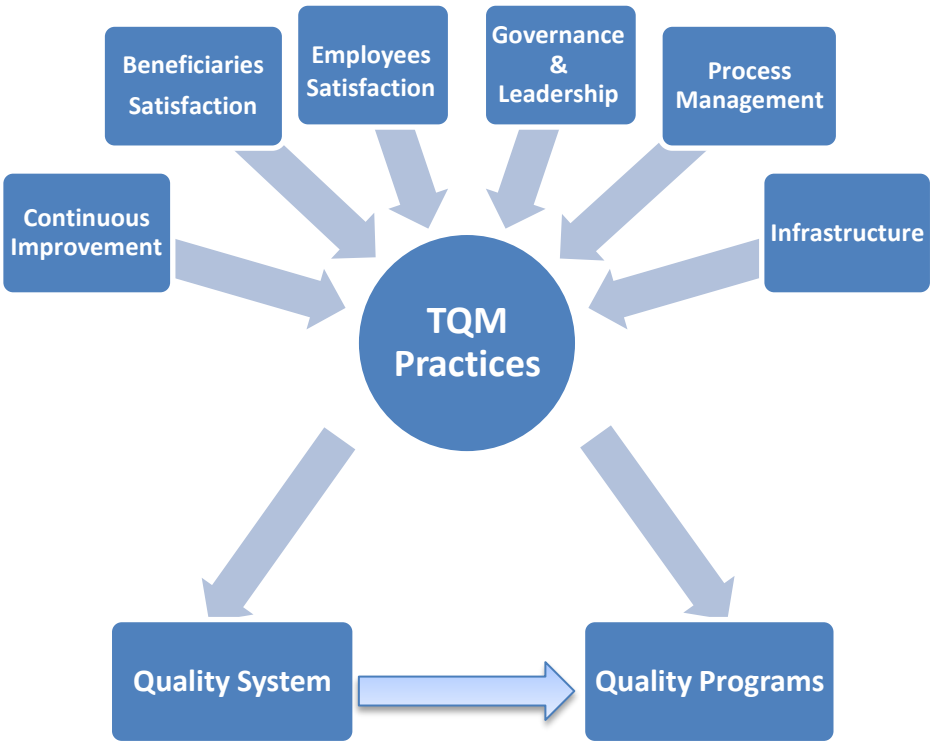

Figure (1.1): Conceptual Framework

1.8 Thesis Structure

This thesis consists of five chapters; each of these chapters contains a group of sections. The first chapter, "Introduction," summarizes the study's significance, research problems, questions, hypotheses, and conceptual framework. The second chapter, "Literature Review," presents previous research on TQM practices and TQM and quality programs relationship.

The third chapter, "Methodology," explains the methods used to conduct this research and presents the methods and tools for data collection and analysis. The fourth chapter, "Data

Analysis," offers an analysis of the data collected during the data collection process from the target population for quantitative data. It also presents the hypothesis testing results and provides a preliminary and summary description of the analyzed data. Also, the same chapter discusses the analyzed data's results and findings and presents the model development. The fifth chapter, "Conclusions and Recommendation," shows the conclusions of this research's findings and results. Moreover, it gives a set of recommendations and future research proposals.

CHAPTER TWO

LITRETURE REVIEW

2.1. Overview

This chapter presents the analysis of the current state and prospects of the quality management system in the management structure of Higher Education and Technical and Vocational Education & Training (TVET) institutions. It is essential to define the history and concept of Quality and the Quality Gurus and how they contribute to this field. The chapter also introduces an overview of the TQM definitions, movements, implementation concepts, and tools. Furthermore, Quality frameworks, dimensions of Quality, managing Quality, challenges, and international Quality management practices in Higher Education were discussed. Finally, the Quality of TVET in the Palestinian higher education context was analyzed.

2.2. Introduction

The word Quality is used in very different aspects of our life; since ancient times and decades, the concept of Quality has got a root, and these roots extend to the present time. The Chinese philosopher, Confucius, has said for decades that the wise public administration relies on the search for Quality and unselfish employees and workers who can carry out their tasks professionally (Gulshan, S. S. 2011).

On the other hand, a group of European public administrators in the period of 1600 to 1800 considered that systematic and quality administration is the strength of any organization. Here it is necessary to mention Fredrick W. Taylor (1900-1930), who is regarded as the spiritual father of scientific management, worked hard to unify the concept of Quality and

direction to improve production and timely manufacturing (Aswathappa, K., & Reddy, G. S. 2009).

If we look at the history of human development during the past few decades, it is worth noting that Quality has always existed alongside development in human society in all its various aspects. The ancient builders and artists could have been more skillful, quality-conscious than we recognize today.

With the beginnings of the industrial revolution, manufacturing activities were divided into small parts, and craftsmen, in turn, became inspectors and gradually began to adopt professional standards. Workers and craftsmen were split into groups according to their skills and competencies (Highly skilled, skilled, semiskilled, and finally unskilled).

Moreover, it was necessary to change the pattern of industrialization later from ordinary automation to mass industrialization, especially after the end of World War II, in almost all areas, mostly technological and engineering. This was followed with Quality becoming a clear and more important concept to ensure unique specifications of high quality in manufacturing. Accordingly, industrial automation was clearly and explicitly introduced, especially in production and equally increasing the scientist's skill.

2.3 Definition of Quality

Quality is one of the most critical concepts in our daily life and all different aspects. This means that there is no clear consensus on the definition of the concept of Quality. Over the past years, Quality contributors have provided reports that may be most comparable to

Quality, but there is no doubt that there has been variation in terms of the ultimate goal of the concept of Quality.

One way to answer the question of what is Quality is to know and explore Mr. Carvin's framework (1984), this framework provides several methodologies to clarify the concept of Quality, and these approaches are: "Value-Based, Production Based, Product Based, User-Based and Transcendent." Through this framework, Mr. Carvin confirms that exploring the concept of Quality must be considered comprehensively for these elements together (Garvin, D. A., & Quality, W. D. 1984).

In his book " Juran`s Quality Hand Book," explained that there are many meanings for the word quality, but two of these definitions are of particular importance in the world of Quality. The first definition is that Quality means meeting customer needs by providing distinctive product features, and the result is customer satisfaction.

The second definition, as Juran explains that Quality means complete freedom from deficiencies. Therefore there is no need to do the work again or re-work or hide errors that may lead to complete failure, and this causes customer dissatisfaction, this means that the meaning of Quality is cost-oriented, and higher Quality is often a "lower-cost" (Juran, J., & Godfrey, A. B. 1999).

On the other hand, defining the concept of Quality is not an easy thing, but rather a difficult concept to clarify; the Oxford American Dictionary defined quality as “a degree or level of excellence." Likewise, the American National Standards Institute (ANSI) defined Quality

as the set of features, attributes, and characteristics of the product or service provided that affect customer needs, and so did the American Society for Quality Control (ASQC).

There is a complete and varied range of concepts to define the concept of Quality; for example, Quality is defined:

- As being related to the value (Feigenbaum, 1983)
- To meets standards, specifications, and requirements (Crosby, 1979)
- As convenient to use (Juran, 1989)
- As excellence and distinction (Peters and Waterman, 1982)
- As meeting or exceeding customer expectations (Parasuraman et al.,1985)
- As customer-pleasing and delighting (Peters, 1989)

2.4 Total Quality Management TQM

Many rapid and successive changes occur worldwide, and these changes extend to all sectors, whether economic or industrial. They are characterized by technological progress, globalization, and intense competition between companies, so the TQM became the need for all organizations to achieve quality dimensions in the services or manufacturing firms.

The concept of TQM constitutes an opportunity for all institution members to participate in the development process (Talib, F., Rahman, Z., & Qureshi, M. N. 2012).

Some experts considered TQM as an administrative philosophy and a modern method of control, which contributes to overcoming technological updates and competitiveness facing all service and industrial institutions (Kumar, R., Garg, D., & Garg, T. K. 2011).

As for Mr. Collins, he has considered the philosophy of TQM as an opportunity to improve quality, whether in the goods produced or services, and benefit from the company's materials (Collins, R. 1996).

The experts do not differ in providing TQM in terms of the concept, as the general framework for it is to apply a set of practices that include all aspects of the institution or the company, to meet the needs and requirements of clients or even exceed them. Applying the principles of TQM in any institution needs time, Long-term efforts, planning, and, most importantly, team commitment (Talib, F., Rahman, Z., & Qureshi, M. N. 2011).

The application of TQM principles has positive effects on the various aspects of the company, such as mutual relations between employees and customer satisfaction and operating procedures and financial returns (Yang, C. C. 2006).

In developing countries such as Palestine, studies indicate an urgent need for indications of the importance of applying TQM in the TVET to improve the outputs of technical education in Palestine and thus achieve growth and development.

2.5 Overview of TQM

TQM started by introducing knowledge by quality "Gurus," beginning with Shewhart, Juran, Crosby, Deming, Feigenbaum, and Ishikawa, where the following figure (2.1) shows the general framework for the TQM system (Besterfield, D. H., et al. 2011).

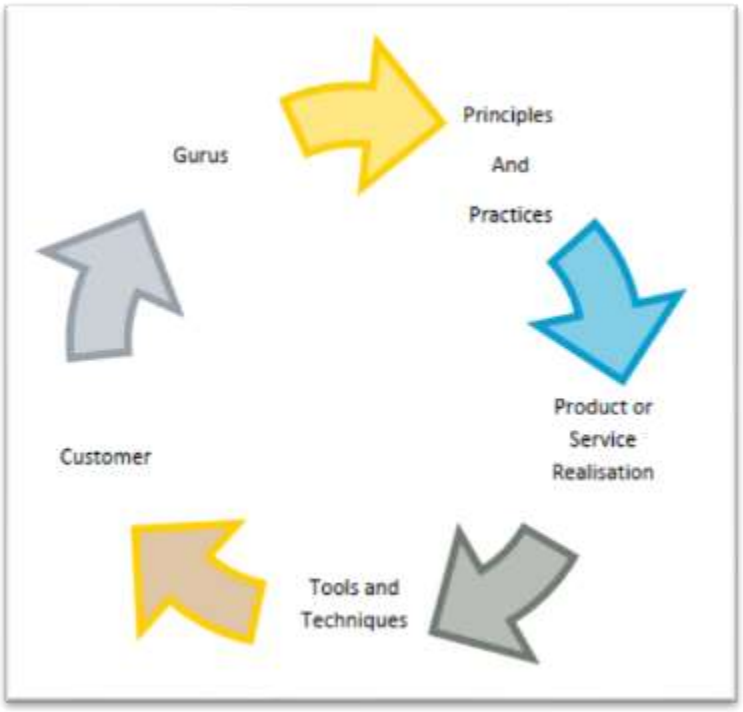

Figure (2.1): Total Quality Management Framework

The TQM philosophy's evolution is due to the many contributions made by quality contributors such as Juran, Crosby, Feigenbaum, and Deming, which constitute the general framework for TQM, which these scholars have recommended.

Many industries and companies have adopted a form of comprehensive quality management. For example, some companies have adopted the Malcolm Baldrige National

Quality Award as a framework or model for TQM to improve Quality and economic return in institutions, and the results were positive (Jung, J. Y., & Wang, Y. J. 2006).

2.5.1 Total Quality Management Definitions

Many interested and experts provided various definitions of the concept of TQM. However, there is no complete consensus on all of these definitions. As was mentioned that the literature covering TQM in the first place has evolved based on philosophies and proposals presented by quality contributors "Gurus," but the definition of TQM still has different dimensions and is seen from several angles, in the following paragraphs other purposes according to what was mentioned in the literature will be mentioned (Reed, R., Lemak, D. J., & Montgomery, J. C. 1996).

Deming, W. E. (2018) presented TQM as an administrative philosophy whose ultimate goal is to improve Quality through a set of practices and principles continuously. Oakland, J. S., & Morris, P. (2013) introduced TQM as a methodology for improving the organization's competitiveness, effectiveness, and resilience.

TQM means that problems must be addressed from a strategic management perspective, not just from a technical or control perspective (Evanas, J. R., & Lindsay, W. M. 1999).

Miller, W. J. (1996) stated that TQM is a flexible and effective method to improve companies and institutions' effectiveness. It is a continuous improvement method that requires the involvement of all institution components such as departments, divisions, and employees at all levels; this requires the integration and complementary of all to work together and everyone is aware that his activity affects others and vice versa.

Gunasekaram, A. et al. (1998) emphasized that TQM is a long-term commitment, not a short-term commitment; an essential step in the transition towards TQM is awareness of the principles concepts TQM.

TQM is a process whose ultimate goal is overall customer satisfaction by improving the structural and infrastructure methods and tactics of the organization, as well as improving behavioral attitudes through continuous improvement in Quality as Zairi, M. et al. (1994) stated.

Figure (2.2): Process of Total Quality Management in Organization

Figure (2.2) depicts the process of TQM in an organization. The analysis of all these previous definitions does not differ from each other; most of them focus on the principle of continuous improvement and development and customer satisfaction, as well as operations management and staff development. In general, the employee engagement and training, the

process of constant improvement, and the commitment of senior management are the most agreed elements of TQM (Curry, A., & Kadasah, N. 2002).

2.5.2 Total Quality Management Implementation Concepts

A set of critical concepts related to TQM must be focused on and understood, which are continuous development, defects prevention, customer orientation, and collective or global responsibility, as shown below.

2.5.2.1. Continuous Improvement

The process of continuous improvement is considered the essence of TQM, and it is the ultimate goal required to achieve Quality related to all activities and operations, as the process of continuous improvement is a culture aimed at sustainable improvement and eliminating waste in production and manufacturing processes as well as costs (Bhuiyan, N., & Baghel, A. 2005).

One of the most important factors for quality improvement is that daily work is considered part of an ongoing process and that obtaining customer satisfaction can be achieved by providing a high-quality product. The continuous improvement in the company's operations' quality undoubtedly enhances its quality and thus obtains customer satisfaction (Fening, F. A., Park, B, & Boatengokrah, E., .2017).

The most crucial component of the continuous improvement process is known as the Six Sigma methodology, which is a summary of the process DMAIC (Define, Measure, Analyze, Improve, and Control).

2.5.2.2 Defect Prevention

The process of preventing the occurrence of defects is a continuation of continuous quality improvement, by controlling the passage of errors to the products, either before they reach the customer. The method of preventing errors consists of four necessary steps, integrated to achieve this goal, which is to identify the reasons that lead to defects. What are the preventive measures and actions, forming a team to implement all preventive measures, working to increase awareness of the importance of quality in all stages of continuous improvement and improvement, and finally collecting relevant data (Mays, R. G., Jones, C. L., Holloway, G. J., & Studinski, D. P. 1990).

2.5.2.3 Customer Orientation

Knowing customers' needs and expectations is the ultimate goal that all companies seek to achieve, as a top priority for any organization. This issue is not easy, as it requires severe clients and a careful follow-up to customer trends, and their division according to various factors, as the success of any company is related to the extent of the satisfaction of its customers (Drucker, P. F. 1994). In TQM, we must listen adequately to customers despite their constant grumbling to reduce errors, and demand improvement in performance, mostly as customer orientation is related to continuous interactions with competitors in the market and the company itself.

2.5.2.4 Leadership Commitment

TQM and leadership must be provided by senior management. (Evans, J. R. 1996) stressed the administration of an organization that supports quality and high performance, as this

leadership has a strategic vision for the long-term and exact values that are the basis for all decisions in the organization and work at all institution levels and are relevant to customers.

The institution's leadership's commitment to apply the principles of TQM is a condition for its success, and otherwise, TQM will fail. Likewise, the participation of senior management members and their commitment to applying the principles of TQM, as well as the dissemination of quality goals and values in line with the company's goals, will encourage employees at all levels to achieve and implement the principles of TQM as well as fulfilling the purposes of the company.

2.5.2.5 Universal Responsibility

The concept of universal responsibility integrates with quality that is quality is everyone's responsibility and not only the responsibility of management or employees. As the quality must be within the system thinking as a whole and be fully spread out, every division and department must consider how it develops quality.

The company's management and decision-makers' responsibility is to encourage employees to assume their responsibilities in improving the quality and services provided within the integrated system (Fening, F. A., Park, B, & Boatengokrah, E. 2017).

2.6 Higher Education Quality Frameworks

The diversity of higher education policies, purpose, and context at the international level has led to making teaching and learning standards less clear. It is intended in the means of higher education to achieve the ambitious goals of knowledge and define the reference points and units of measurement (TEQSA, 2011).

The rationale for the qualifications framework in higher education is finding a bridge and methodology to link national and international frameworks for higher education to achieve transparency and mutual international recognition of academic qualifications that facilitate mobility for students and graduates.

As a result of increasing interest in the higher education quality, much higher education and quality models have been established, some of them are national, and others are international. The concept of Quality in higher education has been defined in various ways such as Quality as excellence or fitness to purpose, Quality as zero errors or Quality as transformation and Quality as continuous improvement (Campell, C., & Rozsnyani, C. 2002).

One of the internationally widely used models of Quality in higher education is the Malcolm Baldrige Quality Award. In general, these awards primarily aim to satisfy the customers in different categories such as healthcare, small business, service, manufacturing, education, and non-profit (Moore, N. 1996).

Rutgers Model as an Organizational Excellence Model incorporating focus on institutional self-assessment focuses on methods, implementation strategies, and results that are transformed into continuously improving strategic plans and action steps. The model's application has also proven its effectiveness in raising performance standards and achieving desired expectations and facilitating communication and integration between universities locally and internationally based on shared understanding, values, and concepts (Mizikaci, F. 2006).

Another model is the program evaluation; program evaluation can be defined as a systematic process consisting of several procedures such as data collection and analysis as well as observations, then the value of the program's Quality is judged by looking at it comprehensively or at one of its components (Rossi, P. H., & Howard, E. Freeman. 1985).

Scotland as an industrial country developed quality model in higher education institutions that is known as the Scottish Quality Management System (SQMS), which is a global system implemented by many countries such as Australia, Poland, Ireland and the United Kingdom, this model is a self-evaluation system aimed at self-evaluation of the educational institution which aims of improving continuous improvement, especially in the field of vocational and technical education, it is a comprehensive, integrated system in the management of higher education institutions, it includes all the processes that take place within Universities and TCs, as this leads to improving the productivity of institutions and meets the needs of the beneficiaries of the educational process such as students, researchers as well as the labor market and the local community, the primary standards that this model is focus on are Strategic Planning, Quality Management, Human Resources Development, Customer Care, Programs Design and Evaluation and Certification accreditation (Marshall, G. H. 2006).

The EFQM is considered one of the most superior Quality and excellent management systems worldwide. Based on a necessary foundation of the comprehensive quality methodology, and linked to the European Union for Quality Management activities, which was established in 1988, and is associated with the European Quality Award established by the Union as well. The EFQM model is the primary reference for all the European

institutions are looking for excellence and Quality. The EFQM is in the city of Brussels, which was established in 1992. It is also produced the European Quality Award, whether educational or industrial, looking for excellence and achieving the highest levels of Quality. The most crucial standard the EFQM model is a take into consideration is leadership that defines policies, strategies, invests relationships, manages various processes in institutions, practices outstanding and professional management in the organization and achieves results that reach the highest levels of excellence (Medne, A., Lapina, I., & Zeps, A. 2020).

Japan also introduced a quality module or what is known as Japanese TQM Models "Deming." The quality movement in Japan has been associated with the American scientist William Deming for more than eighty years, later a foundation was established in Japan as Deming Foundation. Which awards companies and institutions that achieve tangible achievements in the world of Quality; and then Deming Prize was established in 1951, later in 1984, it became a global one. The Japanese model is standing on the 14 Deming's points that focus on continuous development by the PDCA/PDSA cycle to reduce variation and cost, and then improve competitiveness and productivity (Dahlgaard-Park, S. 2015).

In Australia, a national agency called "The Australian University Quality Agency (AUQA)" is an independent, non-profit Australian body established to ensure the Quality of Australian higher education. It was established in 2000 by the Ministerial Council for Education, Training and Youth Affairs. It operates independently of the government side and the higher education sector.

Tertiary Education Quality and Standards Agency (TEQSA) regulate and assure the Quality of the higher education in Australia; it is committed to providing quality and compliance assessments. The Australian quality assurance system is characterized by its rigor and unique components, which is a set of governmental and internal systems in educational institutions. Each educational sector has its quality system; for example, the AUQA, the Australian Quality Training Framework (AQTF) in Technical Education. Furthermore, the Australian model's most important feature is a national framework for qualifications that guarantee the Quality of qualifications and is based on equivalency (Quality, T. E. 2015).

The last model is the SURVQUAL model, one of the most famous models used to measure service quality. This module is used in different fields, including higher education, and is considered the starting point for assessing and enhancing service quality. This model was designed by Parasuraman et al. (1988) to clarify the difference between the perception service and the expected; then, it will be possible to determine the level of service quality. Student satisfaction in Tertiary institutions is an important issue, so the universities became more student-oriented, so this model help the higher education institution to more concentrate on Quality of higher education from the perception of students, this model is consisting of five dimensions: Empathy, Responsiveness, Tangibility, Reliability, and Assurance (Krsmanovic, M. et al. 2014).

2.7 Quality in Higher Education

One of the most vital and critical issues in education and higher education is the quality of the process and outputs. The concept of quality in higher education has been a subject of interest during the past years; interest in this concept has increased significantly during the

past few years, especially in developing countries. The primary goal of attending higher education quality is to increase graduates' efficiency and provide them with the skills needed to enter the labor market and get rid of unemployment. Higher education quality is also to increase competition between higher education institutions as a means of continuous improvement within the methodology of TQM (Tasopoulou, K., & Tsiotras, G. 2017).

Significant changes in higher education methodologies emphasize the need for a culture of quality achieved in terms of the philosophy of continuous quality improvement (CQI) (Selesho, J. M. 2014). Hogg, R. V., & Hogg, M. C. (1995) ensured that TQM also appears to be very commercially oriented and uses elements taken from the business sector to clarify key concepts in higher education. Universities and colleges and all higher education institutions make great efforts to increase excellence through all possible tools and the use of all relevant institutions (Mishra, S. 2007). In all countries of the world, encouraging excellence is an urgent matter to create an economy linked to knowledge and science and achieve sustainable development and reduce unemployment (Joosten, H. 2015).

Quality is assessed through the quality assurance process, as there are models for quality assessment that provide higher education institutions with the capabilities to implement quality on the ground in universities and colleges, as the models are used to define the mechanism for applying the research in an applied or practical way, as well as used for guidance in useful life (Mueller, R. A. 2015).

As mentioned before, the concept of quality has been introduced in different ways, many gurus indeed defined the idea of quality, and it's very known, but its least understood (Mishra, S. 2007).

Among the well-known definitions of the term Quality, Juran defined quality as suitable for use or purpose; Crosby also emphasized that what is meant by quality is conforming to standards, and then Mr. Deming showed that it is the degree of predictability of uniformity and reliability at a low cost (Zabadi, A. M. 2013). Higher education institutions face many challenges in the issue of quality in higher education, mostly dealing with the human factor, as students are considered in this case to be customers and producers at the same time (Venkatraman, S. 2007).

Vlăsceanu, et al., 2004 defines quality in higher education as "multi-dimensional, multi-level, and dynamic concept that relates to the contextual settings of an educational model, to the institutional mission and objectives, as well as to specific standards within a given system, institution, program, or discipline." Higher education institutions quality standards, and performance indicators, are set to achieve higher education main goals and enhance quality (Asif, M. 2015).

On the European level, the Bologna Declaration in 1999 established the basis for enhancing Quality in European higher education institutions and establishing a common framework to ensure quality.

The European Association for Quality Assurance (ENQA) consists of public institutions as well as European higher education institutions and quality assurance agencies, and this

association complies with the incentive of the Bologna process for quality assurance reforms following European standards for quality assurance in higher education institutions (Vukasovic, M. 2014). ENQA promotes cooperation to ensure quality assurance in higher education by disseminating information and exchanging experiences among all members of the association and stakeholders in all European countries (Kettunen, J. 2012).

There is also the International Association of Universities (IAU), which is a high grouping of more than 130 countries worldwide; it forms an international and regional cooperation network with the relevant bodies and also provides a set of services all aimed at ensuring quality in higher education institutions.

2.7.1 Dimensions of Quality in Higher Education

The literature indicates there have been many different efforts to express the dimensions of quality in higher education. Harvey, L., & Knight, P. T. (1996) created a group of quality dimensions that is considered one of the best found in describing the dimensions of quality in higher education institutions; they affirmed that quality in higher education could be divided into five interrelated dimensions:

1. Quality as exceptional and high standards.
2. Quality and consistency (zero defects).
3. Quality, according to suitability for the purpose (customer desire).
4. Quality as a value for money (e.g., efficiency and effectiveness).
5. Quality as transformative (an ongoing process to enhance customer satisfaction).

Owlia, M. S., & Aspinwall, E. M. (1996) clarified that the stakeholders of different types appreciate the importance of varying quality dimensions mentioned above, according to their interests and interests, and interpret them different ways. For example, suppose the quality as value for money was taken into consideration. In that case, the noticed issue will be that there are two foreign judgments on this site; the students, for example, judge quality as value for money according to the tuition fees at the university and the time given to them in lectures and laboratories. As for the dean, he judges the quality with respect to students' use of resources and their preparation.

Accordingly, according to stakeholders, quality in higher education is multi-dimensional and interpreted in different ways. This creates more complexity in managing and measuring quality in higher education institutions because of these complexities in quality management and measurement despite the existence of a set of quality management methods in higher education institutions, there is an urgent need to standardize all practices for quality management and size, and this is what we seek (Becket, N., & Brookes, M. 2008).

2.7.2 Managing Quality in Higher Education

As mentioned earlier, the importance of higher education lies in the fact that it solves economic problems experienced by peoples and contributes to reducing the unemployment rate, and increases the knowledge and experience of peoples and their distinction; this can be achieved through the adoption of strategies to achieve quality in higher education institutions. Higher education also contributes to establishing young leaders who contribute

to the systematic and proper management of state institutions in public (Soomro, T. R., & Ahmad, R. 2012).

In the past, researchers meant that quality in higher education could be viewed in many different ways. There is no global agreement on how to deal with quality in higher education. As mentioned previously, there are a set of models for quality management in higher education, and all of these models have confirmed that quality management in higher education institutions is not an easy process. It is a difficult task because it is difficult to define quality and manage it and measure its impact; this difficulty is related to its definition according to people and cultures and adds to that the difficulty and complexity of the educational product (Bernhard, A. 2011).

Any system in the world consists of inputs that are processed, and then the outputs are formed, and so is the higher education system, which is more complicated as it consists of a set of sub-systems interconnected with each other that has inputs and processes and then outputs and ultimately performs the desired goals (Arjomandi, M., Kestell, C., & Grimshaw, P. 2009).

As the intended inputs are human resources, such as students, material, and non-material resources, which are meant by the selection mechanisms and enrollment requirements in higher education institutions. The operational process is the teaching process, based on the approved standards for quality, as for learning, it is based on the expected and predetermined results that differ from one country to another or from culture to another, this also intended in the treatment process scientific research, according to the capabilities

of higher education institutions. As well as management besides the transforming knowledge and culture and abilities of higher education institutions, these things put together the treatment process that produces outputs.

The last thing is the output of the process, which creates value that may be tangible or intangible, such as employment and student satisfaction, exam results, and the like (Becket, N., & Brookes, M. 2008).

Quality management in higher education institutions can be viewed in different ways. For example, TQM can be used, which is the method that this research focuses on, or through a technique for solving problems. In higher education, the TQM model identifies the trainees as faculty members who are executive officials in their institutions at the intermediate level. The president of the university or the dean of the college is like a high-ranking official, as the role of the faculty members is to provide service to clients who are students and educate them as facilitators, supervised by the head of the department, who also makes formal plans for the facilitators or members of the academic staff (Rana, S. 2009).

Others believe that human resources management has an essential role in quality management in higher education institutions. Also, the mechanism of quality control, decision-making, and educational policies, whether from the upper or middle level or the operational level, all together have an essential role in quality management (Afzal, W., Akram, A., Akram, M. S., & Ijaz, A. 2010).

Culture also has an essential role in quality management in higher education, as faculty members usually provide the best they can according to the existing conditions and the surrounding environment (Jabbarifar, T. 2009).

2.7.3 Quality Challenges

The process of achieving and assuring quality in higher education institutions is not an easy thing, and there are a set of increasing challenges and obstacles in this regard, especially in third world countries. Higher education institutions are making great efforts to face these challenges.

Whereas the World Conference that was held by the United Nations Educational, Scientific and Cultural Organization (UNESCO) on Higher Education in Paris in 2009, the conference concluded that there are eight challenges (COMMONWEALTH, O. L. 2011), they are:

1. Growing demand and mystery.
2. Diversification of service providers and technics.
3. Special provisions.
4. Distance Learning.
5. Higher education across borders.
6. Quality Assurance.
7. Teacher Education.
8. Academic profession.

Several factors affect the challenges that affect the quality of higher education, the first of which is the economic factor, as well as the quality of students enrolled in higher education institutions and local and regional political factors, as well as faculty members, organizational factors (Bunoti, S. 2011).

In addition to what mentioned above, students graduation with low cumulative rates, students ’fear and personality weakness and doubts about the importance of university education to society, all these things combined are challenges that affect the quality of higher education (Al-Atiqi, I. M., & Deshpande, P. B. 2009).

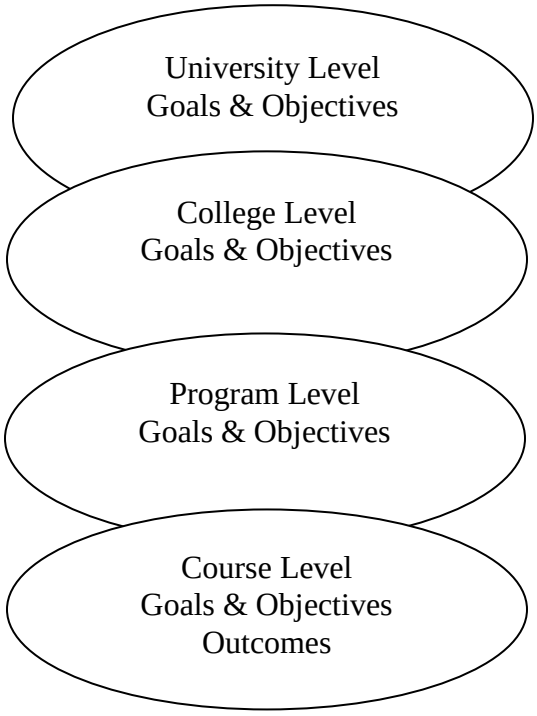

Figure (2.3): Overlap Road Map

In Palestine, all Universities and TCs are under the umbrella of AQAC following the MoHE. The AQAC and Higher Education Institutions are implementing and applying the following road map to achieve the highest quality levels, as in the figure (2.3).

The overlapping figure shows that the outcomes will be in the glass, which can be achieved by accumulating the top to bottom. The course level goals and objectives are linked and mapped with the program level, which in turn is connected with the college-level goals and objectives, which is also linked with the university level goals and objectives. The MoHE participation of the AQAC and HEs is collaborating and integrating to ensure that the quality standards are achieved and implemented in the Palestinian Higher Education Institutions.

2.8 Analysis of Current International Quality Management Practice

Some studies and reviews show that some models for quality management concerning industry have been examined and approved in higher education institutions (Cruickshank, M. 2003). Globally, the tool is used most often is TQM, which is defined as an administrative approach to an organization that focuses on quality. As this approach is based on the participation of all organization members, its ultimate goal is to satisfy customers through long-term success, and then the interest pervades the organization or institution and all its members (Wiklund et al., 2003).

As the definition shows, TQM can standardize quality perspectives for both external and internal stakeholders in an integrated manner; this approach to higher education constitutes a comprehensive management of quality management and facilitating change.

Other models simulate TQM and that have been tested, such as balanced scorecard requires the identification of performance indicators, the EFQM. The SERVQUAL model is different since this model focuses on the service introduced to the customer, who, in turn, assesses the use from his or her perspective.

In addition to TQM, other models have been implemented in the Higher Education Institutions:

1. EFQM Excellence Model: The EFQM was established as a non-profit organization in 1989 in Brussels. It was originally a European model for business excellence, in 1991 it was introduced as an Excellence Model, one year later the first Europe Quality Award (EQA) was awarded. The Excellence Model provides a comprehensive vision for the organization and can be applied to any institution, whether it provides services in education or otherwise, the EFQM model is based on two sets of criteria, the first group is enabler criteria such as leadership, strategy, people, resources, processes, partnerships, services, and products. The second group is the results criteria, which is what the organization achieves, such as the results of customers, individuals, society and businesses. This means that EFQM is a flexible model that seeks to achieve sustainable development and continuous improvement. The EFQM Excellence Model can be successfully applied to higher education institutions, and this is done through adaptation rather than adoption, it will be a tool for improvement and development (Laurett, R., & Mendes, L. 2019).

2. Balanced Scorecard: A performance management system through which the organization transforms its vision and strategy into tangible goals, and provides feedback on ongoing

activities and operations for the sake of continuous evaluation and improvement of implementing strategies (Rošulj, D., & Petrović, D. 2020).

3. Malcolm Baldridge Award: It is a framework of excellence used by institutions to improve their performance, which was founded in 1987. It is used in education, health, manufacturing, and other fields. It encourages students to improve their entrepreneurial and business leadership abilities. It has several criteria, the most important of which are strategic planning, leadership, customer and market satisfaction, human resources, operations management, measurement and analysis, knowledge and results (Dima, A. M., Clodniţchi, R., Istudor, L., & Luchian, I. 2019, May).

4. ISO 9000 Series: It is a set of standards related to quality and aims to assist the organization in developing, implementing and maintaining the effective performance of a quality management system by focusing on preventing errors from occurring in a preventive manner as well as achieving organizational requirements and achieving customer satisfaction (Turkulets, S. E., Listopadova, E. V., & Barei, N. S. 2019, January)

5. Business Process Re-engineering*:* It is a systematic process of analysis, design and then implementation, it can be defines as *"*the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service and speed*"*. In higher education, the results of each learning process must be used to analyze big data so that the results are of value to all parties to the education process, students, teachers, and others. The output will be continuous improvement that based on strategic planning, operations, organization, culture, and technologies (Jha, M., Jha, S., & O'Brien, L. 2019, June).

6. SERVIQUAL: A tool that measures customer expectations regarding the quality of the service provided, and it has five dimensions (Reliability. Tangible. Response; Emphasis, and sympathy), to identify the gap that makes the customer unsatisfied. To locate these gaps, these tools are useful in assessing high education because of the increased competition. As mentioned before, this tool's ultimate goal is to get the student's satisfaction affected by the performance's perceived quality (Gregory, J. L. 2019)

The application of these models is generating different benefits for HEIs; at the same time, there are additional requirements and limitations such as mentioned before.

There are tangible and intangible benefits for these models. Initially, these models are appropriate in a competitive higher education environment because they incorporate students' perspective as clients; also, the mentioned models take into consideration the participation of both the internal and external stakeholders (Navarro, M. M., Iglesias, M. P., & Torres, P. R. 2005). The improvements that are possible to be achieved by using these models are customer service, administrative operations, employee and faculty motivation, budget and medium, and long-term strategic planning. The main benefit of applying these models to measure quality in higher education institutions is the requirement of the institutions themselves to adopt a strategic approach to quality management first and to measure the quality of the educational process outputs based on criteria that are predetermined and subjectively. To achieve these benefits, some requirements must be met, such as senior management commitment and effective leadership is required, human and financial resources must be provided, as well as comprehensive strategic planning and customer service delivery to their satisfaction (Mizikaci, F. 2006).

On the other hand and briefly, these requirements may not be met because of some limitations, such as identifying some challenges related to leadership and level commitment. Moreover, it was reported that the bureaucratic structures of higher education institutions determine the application of models. Also, in some models, the cultural diversity of students is a significant limitation. There is a rooted difficulty in defining the outputs of higher education for self-evaluation purposes; unfortunately, when evaluating the outcomes, it turns out that these models can assess the administrative jobs in the higher education institutions more than the quality of education itself, and this is a big shortage of these models (Shutler, P. M., & Crawford, L. E. 1998).

Some researchers mentioned that TQM is not suitable for measuring the extent of quality in higher education institutions; they stated in detail that TQM is of value to measure the quality of service provided within higher education institutions. Where these researchers defended their view that these models are not suitable for academic work, in addition to that the students are considered a customer when they ask administrative services from the institutions of higher education, but they are a part of the educational process in the first place. Moreover, the TQM model does not mention this difference and does not recognize it, so the research advice is to replace these models with a holistic model that is more suitable to evaluate Quality in HEIs (Srikanthan, G., & Dalrymple, J. F. 2002).

2.9 University Ranking Frameworks

The phenomenon of ranking and distinguishing universities is considered global and goes back more than 25 years, and the classification began in 1983 in the United States of

America when the US News and World Report began publishing the annual report of the best colleges in America (Principles, B. P. B. 2006).

The development and publication of ranking tables from many countries worldwide have generated over the past twenty years; higher education ranking tables have emerged from the private sector and professional societies and governments (Cepes, U. 2004).

Universities Ranking goals include (Jesenšek, M. 2006):

1. Directing the expatriate to higher education programs.
2. Evaluating the international phenomena of the higher education markets.
3. Presenting market trends to universities at national levels.
4. Promote competition between students, professors, and HEIs.

University ranking also provides information about the quality of higher education institutions. As higher education is a financial burden on students' parents as well as on institutions that offer scholarships in many countries, and when students are awarded a scholarship, they look for high-quality educational institutions and other supplementary services, which improve their access to future job opportunities.

The institutions interested in publishing the university ranking evaluate each university's quality objectively by collecting all the indicators that are believed to provide indicators and dimensions of quality, then allocate each indicator a different and specific weight, and all weights are accumulated. Which is determines the university ranking. There are various methodologies used in ranking universities, and each classification has a different number of indicators (Enserink, M. 2007).

Studies of ranking systems attract the interests of scholars as the main topic of their research. This is due to differences in indicators and weights that have an impact on the ranking results. These comparative studies began with comparative work on methodologies, indicators, and weights. Bowden, R. (2000) classified indicators into research quality, teaching quality, and educational infrastructure.

Dill, D. D., & Soo, M. (2005) divided indicators into input, processing, and outcomes. Whereas, Usher, A., & Savino, M. (2007) formed a seven ranking indicators categories: starting characteristics, learning inputs - personnel, learning input resources, learning outcomes, financial outcomes, reputation, and scientific research.

There are many global and regional rankings; some of the most famous global rankings are:

1. Times Higher Education World University Ranking.
2. Quacquarelli Symonds World University Ranking.
3. U.S News & World Report Rankings.
4. Academic Ranking of World Universities.
5. National Taiwan University Ranking.
6. University Ranking by Academic Performance.
7. Shanghai Jiao Tong University.
8. Webometrics Ranking of World Universities.

These classifications are characterized by providing information about the methodologies used in the sort. Furthermore, they are spread over a wide range compared to other classifications (Shehatta, I., & Mahmood, K. 2016).

For example, An-Najah National University in Nablus was ranked the first locally, and as the 46 University in the QS Arab Region University rankings 2020, while the same university was ranked second locally and among the top 300 universities worldwide in the field of societal impact, according to Times Higher Education World University Ranking (THE). An-Najah National University was also ranked first locally and in the 20th place in the Arab world in the Webometrics Ranking of World Universities 2020.

Ranking methodologies faced much criticism since some classifications hide some problems, such as each indicator's weight and nature. The evaluation of higher education institutions' performance requires a classification of the university and defining quality standards for the indicators that have been developed (Marginson, S. 2007).

As a result of the mentioned methodological problems and the difference of these indicators, the classifications and ranking tables differs, it is often unclear or justified for choosing a particular indicator, and for whom (Lukman, R., Krajnc, D., & Glavič, P. 2010).

2.10 TVET Quality

Most countries have taken a strategic decision to support their national TVET system; since this system is considered as the magic solution to overcome the increasing unemployment problem. Therefore, the countries that realized this matter are developing their TVET system by implementing and adopting a TVET quality system (Shabir, G., Iqbal, T. A. N. H. N., & Alamgir, I. S. 2014).

TVET quality is related to the learning outcomes such as the competencies, practical skills, and knowledge that the students gain at the end of the training process. But these learning

outcomes, to be useful, must meet the expectations of employers and local society (Ayonmike, C. S., Okwelle, P. C., & Okeke, B. C. 2015).

Currently, TVET quality has become a global trend by setting a strict and severe system to ensure the quality of this type of education and training. Accordingly, concerned countries began to establish frameworks and mechanisms to ensure quality in TVET. This comes within the growing interest, and the reform steps undertaken by international organizations and the related countries (UNESCO-UNEVOC. 2020).

TVET quality is a procedure adopted by TVET providers to evaluate the outputs. This ensuring that quality improvement is achieved and that the outputs are of high quality (Idjawe, E. E. 2020). Trainers, Teachers, inspectors, auditors, accreditation and evaluation commissions, administration, and the local community are the essential tools for quality assurance in TVET (Okoye, K. R. E., & Okwelle, P. C. 2017).

Also, reforming the TVET curricula in line with national qualification frameworks is a very important pre-request to achieve TVET quality this can be done by defining the competencies related to the local and regional labor market's needs and improving trainers and workers' qualifications in the TVET system.

In other words, the quality of competencies and skills acquired during training, low dropout and high employment rates, and the type of outputs obtained are not taken into consideration when assessing quality TVET, this is due to inadequate Monitoring and Evaluation (M&E) systems used to improve quality in TVET, or the M&E systems were replaced by inspection (Seyfreid, E. 2008).

Monitoring and evaluation is a significant issue for TVET quality. It is a field that attracts those interested in quality and its assurance. One of the most critical problems facing quality enhancement is that monitoring and evaluation systems are not used for accreditation or quality classification for TVET institutions. In most countries, some bodies guarantee monitoring and evaluation in TVET, but with different roles and tasks.

In some countries, a recognized body has been established for accreditation, quality assurance, and quality classification and licensing and accreditation of TVET institutions at the national level. The increase in competitiveness was also addressed by emphasizing education and training, as laws, regulations, legislation, accreditation standards, and accreditation bodies were developed, and accreditation and evaluation guides and relevant instructions.

TVET institutions must pay attention to the tremendous demand for enrollment in TVET institutions. This constitutes a quantitative expansion at the expense of qualitative development, and become a primary goal for some TVET providers. As a result, some of TVET institutions evaluate their quality systems according to the input data and do not monitor the output results (ETF-World Bank, 2006).

2.11 The Palestinian Higher Education Sector

The societal, regional, and global changes have affected the higher education sector in the Middle East region and the world that the Palestinian HEIs are part of this system. These changes had various manifestations, such as competition for government support, increased models, and preparation of higher education institutions and the nature of services provided

to students and workers in these universities and colleges (De Jager, J., & Gbadamosi, G. 2010).

Palestinian universities are generally classified as relatively small. But its impact on the lives, welfare, and cause of the Palestinians is undeniable. Palestinian universities and TCs compete to meet the needs of the Palestinian society and the demands of students in the field of higher education as well as TVET at the same time that the quality of higher education and training provided is of high and appropriate quality. The literature review of the higher education sector in Palestine lacks studies concerned with assessing the quality of higher education in general and vocational training and training in particular, whether for the service provider or its recipients (Koni, A., Zainal, K., & Ibrahim, M. 2013).

In recent years, the topic of evaluation of the quality of higher education has become a subject of concern to many institutions and individuals, and more importantly, how to find models applied in higher education institutions to measure Quality (Temizer, L., & Turkyilmaz, A. 2012).

The Palestinian Higher Education Law No. (6) Of 2018 indicates that higher education In Palestine is a right for all Palestinians and that this law governs all higher education institutions in Palestine (West Bank and Gaza Strip).

The Palestinian Higher Education Law of 2018 is aiming to achieve many goals, such as enhancing the Higher Education and Technical & Vocational Education and Training in Palestine but the most important is to improve the Quality of Higher Education in Palestine. The Palestinian Higher Education Institutions are classified into three categories according

to the establishment by the Law of 2018. These categories are Governmental, public, and Private. On the other hand, these institutions are also classified into three categories by the same law according to the degree; these categories are Universities, University Colleges, and TCs (MoHE, 2020).

The MoHE is responsible for managing the HEIs in the State of Palestine (SoP); also, it is responsible for drafting and formulating and legislating regulations and laws for higher education institutions. The MoHE also provides partial financial support and funding for non-governmental HEIs. Despite the HEIs being independent, it follows MoHE and applies the regulations and laws mentioned (RECONOW, 2016).

The Palestinian Higher Education System is a mix of more than one method, such as the American, French, and English approaches (Taweel, H. D. 2007). Nowadays, 52 HEIs are accredited from the AQAC (17 University, 17 University College, and 18 Technical College) in SoP. See Appendix I that shows the distribution of HEIs by Type of institution, region, and supervision point (MoHE, 2020).

2.12 Higher Education Quality System in Palestinian Context

The concept of Quality in Palestinian higher education institutions and the focus on it during the past few years and the rapid development in this regard were caused by the urgent need for such a system, also the challenges facing Palestinian higher education, as well as local and regional competitiveness and the focus on improving higher education outcomes in Palestine.

In the year 2002, the AQAC was established, this commission is an independent governmental body operating under the umbrella of the MoHE, and it follows directly to his excellency Minister of Higher Education & scientific research (Abou-Dagga, S., & Elholy, A. 2014).

See Appendix II, which shows the whole flowchart process for licenses and accreditation, a new program in the HEIs as a roadmap.

2.13 AQAC Quality Standards

The Accreditation and Quality Assurance Commission developed a set of quality standards that the Palestinian Higher Education Institutions follow to ensure a high-quality level. These standards are (AQAC, 2020)

1. Strategic Planning

The Higher Education Institutions must have a clear, publicized, approved, and accurately formulated vision and mission. The HEIs must also be committed to a set of values and ethics; these missions and vision and values must enhance together with the fowling standards such as scientific research, community service, and knowledge.

The Strategic Plan for each institution must be written, accredited, transparent, and its elements must be related strongly. This plan's goals must also be synchronized with the mission, comprehensive, including all the units and departments of the HEIs, both academic and administrative, achievable and can be measure.

The HEIs must review their strategic plans continually; also, they must develop contingency plans as the case of the Covid-19 pandemic when all HEIs in Palestine are forced to move toward E-learning education.

2. Governance

The Higher Education Institutions must issue regulations, laws, and announced policies compatible with the higher education law (6) for 2018. These regulations and laws also must be reviewed and developed continuity by receiving feedback. The HEIs must disseminate these regulations and rules for the employees, students, and community, then these regulations must be documented. There must be an accredited hierarchal structure that is reviewed and developed partially or totally for both academic and administrative staff.

3. Academic Programs

The HEIs must continuously develop the education and learning approaches and methodologies corresponding to its strategic plan. These approaches and methods must also be assessed and valued by the quality assurance unit in the Universities and TCs.

The relationship between all the employees must be determined and clear, and the different councils must perform their roles and follow these actions. The HEIs must disseminate its intended learning outcomes ILOs, and be sure that the academic staff is aware of these ILOs.

The academic plans must be compatible, announced for students and academic staff, show the graduation requirements, and the most important that the educational programs must be in synchronize with the HEI's vision, mission, and goals. At the same time, these plans must be developed and reviewed continuity.

The students and employees must find suitable, safe, and well-preparedhalls, labs, and workshops with a very high technical level. Student exchange programs between local, regional, and international universities in sufficient numbers are offered.

Also, there must be announced procedure for acceptance of the student in different academic levels (Diploma, Bachelor, and Ph.D.), which harmonize with the regulations of the MoHE.

The assessment and evaluation process also must be announced and documented, and statistical operations must be done to analyze the student's results to check if the student's results are achieving the learning outcomes.

On the other hand, the HEIs must assess and evaluate the academic staff at the end of every course and then analyze them. Finally, the intended learning outcomes ILOs must be harmonized with the local and regional labor market needs.

4. Scientific Research

Each Palestinian University and Technical College must enhance the scientific research by developing policies and procedures that support scientific research. The HEIs must offer an internal plan of projects of scientific research. Some Universities have their scientific journals, which is a suitable environment to enhance the academic staff and students to publish their articles. On the other hand, the scientific research priorities must be identified and synchronized with related national strategies and sustainable development.

5. Human & Financial Resources

The strategic financial policies of the HEIs must be compatible with the strategic plan of the institutions, goals, and mission. The HEIs must have identified policies to prepare the annual financial budget that is strong and can fill all the university or technical college needs, the most important issue that the financial resources must be identified and well known.

The HEIs must have plans and policies to efficiently manage the investments, incomes, and expenses by following the general financial laws and regulations without any corruption. The financial resources and fundraising must be a top priority to achieve all and fill full al the strategic goals of the HEIs.

The HEIs should pay attention to offer all the facilities for people with special needs. Also, manuals and guides must be offered for these people. All these regulations, laws, and principles must be reviewed continuously, updated, and developed as a continuous improvement.

On the other hand, the HEIs should have policies for the recruitment and attraction of national and academic staff. Also, there should be clear and enforceable mechanisms for upgrades and promotions. Medical and technical services must also be offered for the students and employees. Maternity leave and privileges must be provided to employees.

6. Student Services

Higher education institutions must educate students about their rights and duties through clear and publicized policies and ensure that Universities and TCs must guide students psychologically, socially, academically, and offer career guldens through specialized counseling units.

HEIs should hold training courses for students in communications and life skills that they need in the labor market later. It is necessary to ensure that career guidance units and councils efficiently carry out their role and duties and review plans for student guidance and counseling on an ongoing basis.

Medical, health, and sports facilities and restaurants, cafeterias, and banks must be available within higher education institutions and offer students good services.

It's imperative the HEIs, in partnership with the MoHE, track and monitor the graduated by a graduated tracking system; the HEIs should contact the employers in the labor market to help the alumni be employed.

7. Community Service & External Relations

The HEIs should develop policies and plans to contact the local community and take part in the studies and research related to sustainable development. Also, continuous training courses and workshops should be held as awareness rising to the local community. HEIs should include participatory initiatives and development projects toward the community in their plans and policies, such as medical and youth activities.

All the components of the HEIs should take part in the local community service, student, and academic staff of the HEIs, at the same time; these activities should be a clean and safe environment.

8. Quality Assurance Management.

This standard is critical in improving the quality in the HEIs; the higher management should be committed and review the quality assurance system in the universities and TCs by establishing a quality unit and taking part in this issue. Also, the higher management should offer the financial and human resources to the quality unit.

Enhancing the quality in the HEIs is a participatory and collaborative work. It needs to disseminate the culture of quality between all the employees, and this a system thinking in the designing of the quality assurance system in the HEIs and offering all the tools and methodologies related.

Getting feedback is a significant indicator of any institution's quality, so the HEIs should develop mechanisms to invest in continuous improvement. The HEIs should monitor its quality assurance system to create and disseminate all the institution's quality level.

The indicators of the quality standards that the HEIs are applying should be synchronized with quality standards accredited in the MoHE; they should also be comprehensive and measured.

The intended learning outcomes ILOs should meet the needs of the local and regional labor market; this can be achieved by coordination with the private sector and the related authorities.

2.14 Palestinian TVET System

The development of societies depends mainly on the quality of human resources and the development of their systems, linking these systems to the local and regional labor market needs, thus reducing unemployment and increasing economic growth as an ultimate goal. In Palestine, the TVET system, based mainly on TCs, vocational schools, and vocational training centers, plays a fundamental role in providing workforce, skilled workers, craftsmen, and technicians. The link between delivering new job opportunities, increasing living growth, and creating an educational and technical system capable of providing students with technical competencies and skills in the context of growing integration between global labor markets represents the most significant challenge and the fundamental gap (Revised TVET strategy. 2010)

In the Palestinian context, the increasing number of Palestinian unemployment universities graduates indicates that the gap between the outcomes of the HEIs and the needs of the

labor market, so this suggests the need to create a TVET that is updated and able to provide the needs of the local and regional labor market with skilled technicians who have acquired the necessary skills and competencies.

In Palestine, there is a formal and informal TVET system, the governmental technical and vocational institutions are related to the education field. Whereas TCs and universities, whether governmental, public and private, offer vocational and technical education programs, and this process is led by the MoHE and Ministry of Education (MoE) through Universities, TCs, and Industrial & Vocational schools (ISs).

On the other hand, the informal TVET in Palestine, which is led by the Ministry of Labor (MoL), private institutions, and NGOs, provides technical and vocational programs that are employment-oriented, targeting all categories such as students who drop out of schools, marginalized groups, and women. In contrast to the formal TVET programs, the informal TVET programs are not systemized. The informal TVET programs are familiarized in the worked based learning, since there is no Palestinian national qualification framework (NQF); the informal TVET programs are not accredited.

2.14.1 Definition of TVET

It's vital in the beginning to define the TVET System. TVET is a second term consisting of technical and vocational education, and it expresses aspects of the educational and training system that provide a field for vocational training, skills acquisition, and adequate scientific competence. Even in academic circles, many have tried to classify this educational system under the slogan: Vocational Education, Technical Education, Technical & Vocational education, and Technical and Vocational Education and Training (Naser. A et al., 2018).

Vocational Education: one of the secondary education tracks, where those enrolled in are subject to the general secondary examination in the vocational branch, entitles who pass it to continue education to higher specific levels specializations in TCs and Universities. This type of education in some Arab countries, also called technical knowledge but in Palestine is called Vocational Education under the umbrella of MoE.

Technical education: preparing the learner or trainee for a work or a non-academic profession, by enabling him to obtain the skills necessary for a particular career or work and to practice this profession. This includes engineering, science, and technology applications for a period ranging from one to three years (GTZ. 2009 P11).

Technical education is also considered education designed to prepare middle-skills from technical workers in middle management in educational institutions between two and three years after high school and below the university level. The technical education curriculum includes general education, theoretical, practical, technical studies, and training in skills related to a specific technical field. Graduates of this education are classified in the hierarchy of employment. At the same time, UNESCO defines TVET as the educational process, which includes, in addition to general education, the study of technologies and related sciences, the acquisition of practical skills, behavior, understanding, and knowledge related to professions in various sectors of economic life (Khial. 2015).

2.14.2 TVET History in Palestine

The establishment of the education and vocational training system in Palestine goes back to 144 years ago when the Ottoman government allowed the population and sects in 1856

to establish schools that it deemed suitable for its subjects, so the spread of private Arab Islamic and foreign missionary schools.

In 1860, the German businessman Schneller established the Syrian Orphanage School, "Schneller School" as the first foreign school concerned with vocational, crafts, and manual training by establishing many training workshops such as sewing, carpentry, blacksmithing, printing, shoe-making, turning, and pottery making. It aimed to enable orphans to support themselves by acquiring a profession. In 1863 the Salesian School was established in Bethlehem as a vocational school with the same goals as the Schneller School.

During the British Mandate era, the Islamic Orphanage House was established in Jerusalem in 1922 as an industrial school (IS) to help orphans and the needy provide a decent life by acquiring a specific profession. Kadoori Agricultural School was established in 1930 in Tulkarm to train Palestinian village students; the graduate's return, as successful farmers, to work in their villages and train other citizens. In 1933, the first public vocational school was established in Haifa. The first training center was established in Jerusalem in 1948 by the Lutheran Union. Most of the students registered in this center were orphans, children of low-income families, and refugees.

In 1958, the TVET system covered secondary education and higher education under the Jordanian Higher Education Ministry's umbrella. The local authorities and the United Nations Relief and Works Agency for Palestine Refugees (UNRWA) launched several Vocational Schools, Vocational Training Centers, and Community Colleges (Wafa, 2020)

During the Israeli occupation era, the TVET sector lacked unified administration and effective legislation, in addition to the deliberate negligence of the occupation authorities. Graduates go back to work in the Israeli settlements as low-skilled workers with low

wages. Thus depleting Palestinian human resources, and with less return to the Palestinian economy.

After establishing the Palestinian National Authority, the TVET system took a fair amount of attention from official and civil institutions. So this sector began to regain its breath again by opening many governmental and private TCs, as well as ISs and Vocational Training Centers. Also, many new technical programs and specializations were introduced that are compatible with the local and regional labor market needs, provide qualified personnel for education and training, and adopt relevant strategies for advancing this sector (Revised TVET Strategy, 2010).

2.14.3 Revised TVET National Strategy

The new version of the TVET national strategy replaced the old version, which was adopted in 1999. The new TVET revised strategy 2010 considers a paradigm shift for TVET in Palestine, as it places the quality TVET at the top of its priorities. The main contents of the old strategy accepted and updated. The new structure follows the internal logic of the coherent and enabling TVET system. Connectivity is integrated into all parts of the TVET system in the labor sector.

Global and regional experience has shown that the TVET programs must meet the labor market's needs and create practical work skills, which are dynamic and can improve the economic process and, later, sustainable development.

The revised TVET strategy was developed by participating of a wide range of related partners from private and public sectors, such as MoHE, MoL, and MoE, and involvement

of the German Technical Cooperation (GIZ), it supported and facilitated the review of the old strategy.

Four main areas were identified for review and developed; they are:

- The organizational development of TVET structure.
- The organizational development of TVET Institutions.
- Human Resources Development (HRD).
- Improving the quality of the TVET sector.

The 2010 revised strategy defines the main principles for developing the TVET sector in Palestine in the coming years. The revised TVET strategy stated that the development of the TVET sector in Palestine depends on a flexible, effective, efficient, easy to enroll, and sustainable TVET system, which provides its obligations to all citizens without exception.

On the other hand, the revised strategy stresses providing the Palestinian workforce with the necessary training aimed at the labor market and quickly adapting to the new circumstances and the changing local and regional market needs.

The 2010 revised strategy indicated the importance of Quality of TVET, comprehensive and continuous training towards trainers and teachers in TVET institutions, developing curricula, and providing ongoing and sustainable financial support. Also, the TVET system must be safe and sustainable and guarantee the participation of all groups in the society, especially women.

2.14.4 Status of TVET in Palestine

The Palestinian TVET system is tiny but growing slowly within the Palestinian government's new trends and the strong international technical and financial support. Key stakeholders and donors are helping the Palestinian to implement a vision for the system, in parallel with a revised TVET strategy, overseen by the MoE and MoHE, and the MoL (ETF, 2018).

The TVET providers in Palestine belong to four bodies, firstly, the Governmental Sector, which includes the MoHE, MoE, MoL, and Ministry of Social Affairs. Secondly, the UNRWA. Thirdly, the Non-Governmental Organizations (NGOs). Fourthly, the private sector. (UNEVOC, 2012).

Our study is related to the TCs and university colleges, which belong to the MoHE; the students who passed the high school exam (Al-Tawjihi) can enroll in the TVET system according to the instructions determined by the Higher Education Council.

Based on the revised TVET Strategy 2010, the adopted TVET in Palestine as in the figure (2.4), it's evident that the TVET system will be able to educate and train the following:

1. Semi-Skilled Worker.
2. Skilled Worker.
3. Craftsman.
4. Technician.
5. Technician Specialist.

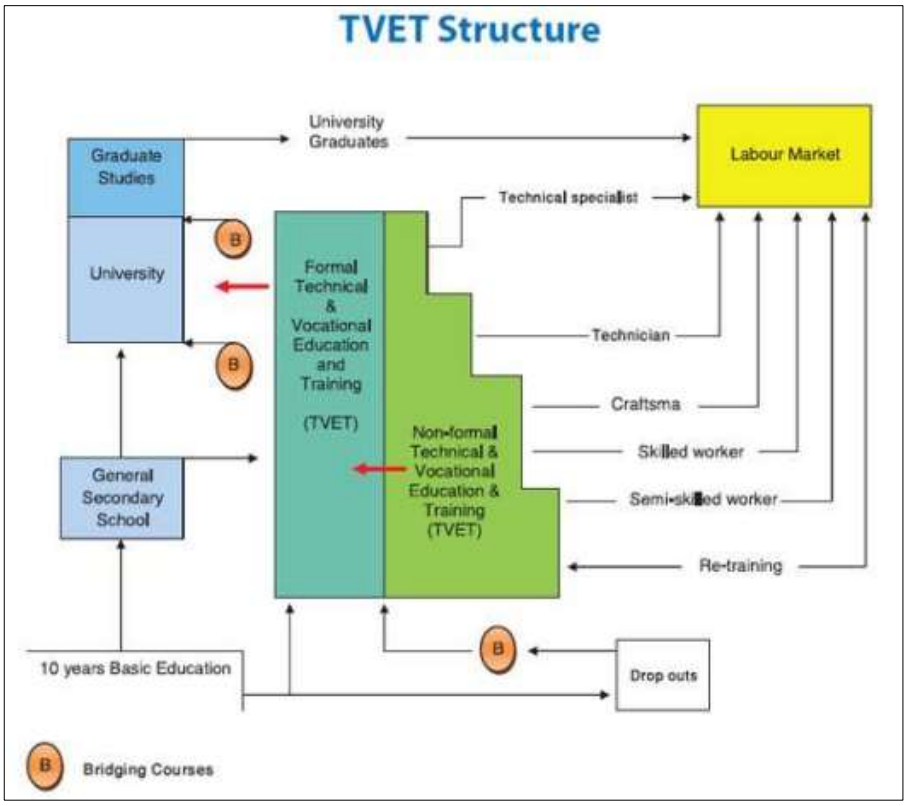

Figure (2.4): Palestinian TVET Structure (Revised TVET Strategy, 2010)

After the students complete ten years of primary education, they can continue their vocational education through one of the Vocational Schools under the umbrella of MoE, which offers two-year vocational programs and graduates skilled craftsmen or level three. After which the student can complete his education in TCs, University Colleges, and universities—provided that they pass the high school exam "Al-Tawjihi" (ETF, 2010).

Students study in Palestinian TCs for two years and after graduation they are called technicians, later they can enroll in universities to obtain a bachelor's degree in what is known as bridging after fulfilling certain conditions. While the University Colleges and

Universities offer more than two-year TVET programs, its outcome will be Technician Specialist or level five (ETF, 2010).

The three levels mentioned before (Craftsman, Technician & Specialists) and introduced by the two Ministries (MoEHE & MoE) are called the formal TVET system. In comparison, the first two levels (Semi-Skilled Workers & Skilled Workers) are called non-formal TVET system. They have introduced the MoL mainly through the Vocational Training Centers (VTCs), Ministry of social affairs, and Non-Governmental Organizations (NGOs) (UNESCO, 2011).

According to the annual statistical report published by the MoHE, there are 35 TCs and university colleges in Palestine (West Bank & Gaza Strip). These TVET institutions offer about 230 specializations in different engineering, medical assistance professions, financial & administrative professions, technology program, and many other programs.

The students who graduated from the TCs and university colleges will have a diploma certification as they finished their training and technical education. There are about 218,126 students in the Palestinian HEIs (Universities, University Colleges and TCs). The new students who enrolled into the TVET system at the beginning of the academic year 2018/2019 about 11768 (Male & Female), while the whole number of new students in the HEIs is 60092 for the same year, so the percentage of the enrollment of the new students in the TVET system in high education institutions is 19.6% as in the figure (2.5).

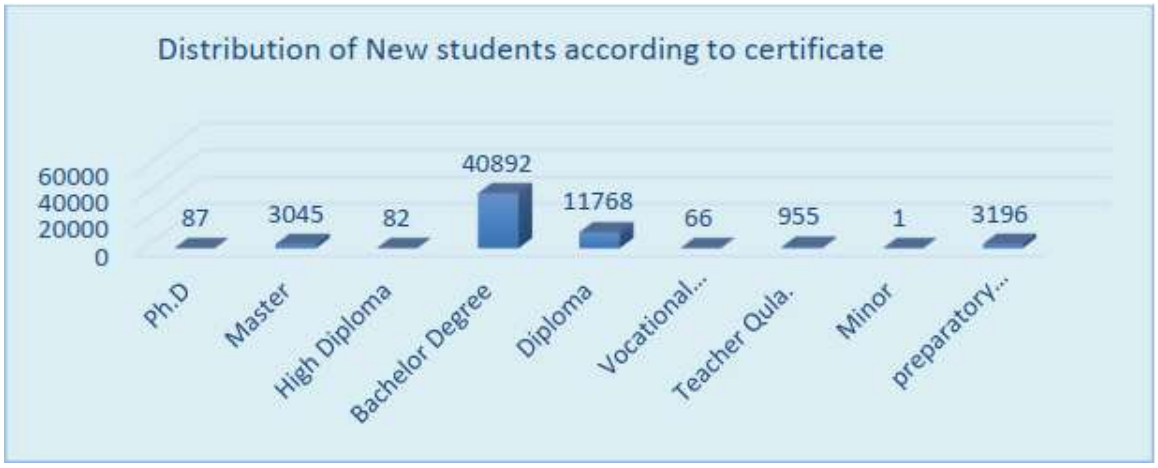

Figure (2.5): Distribution of New Students in Reference to certificate (Palestinian Higher Education Statistical Yearbook, 2018/2019)

According to the same statistical report, there are 218,126 students (Male & Female) studying in Palestinian HEIs; about 25390 belong to the TVET system (TCs and university colleges). This form about 11.6% of the students registered in all HEIs till now, as in the figure (2.6).

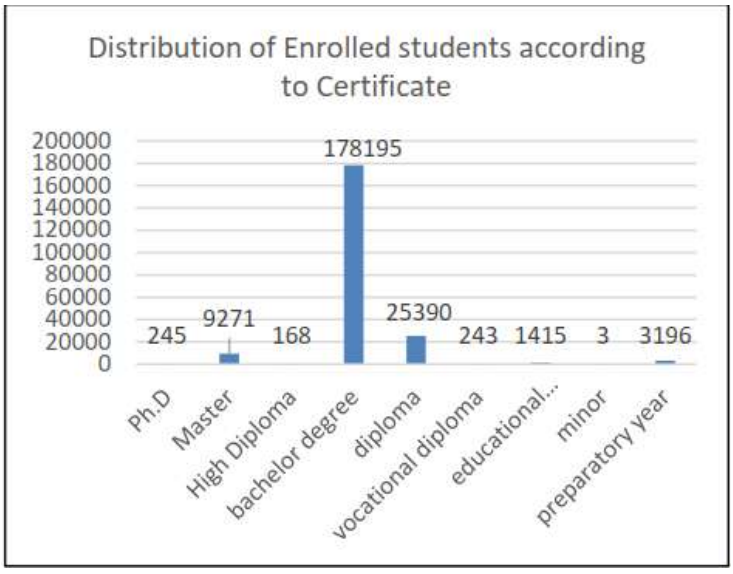

Figure (2.6): Distribution of Enrolled students in Reference to Certificate (Palestinian Higher Education Statistical Yearbook, 2018/2019)

Appendix III shows a list of all Community & University Colleges (CC, UC) in both the West Bank & Gaza Strip and the supervision side (AQAC, 2019).

2.15 Quality Development & Assurances (TVET)

The revised TVET strategy (2010) focused on the importance of quality management and assurance. Quality in technical education is considered one of the most critical expected reforms. Also, it emphasized the importance of a quality system for all components of the TVET system in Palestine to ensure the quality of outputs and internal and external evaluations, link the outcomes with the labor market needs, and improve the employment rates in Palestine.

The strategy document also emphasized the need to establish a national commission to ensure the Quality of TVET in Palestine to develop the system and promote a culture of Quality (TRP Report 2018/18).

The definition of Quality in TVET varies in different ways, but what is familiar to many is that the Quality of TVET revolves around meeting the labor markets vocational and technical education requirements, meeting the expectations of trainees and students, and training providers.

The quality management in the TVET system aims to facilitate and accelerate the continuous improvement and development of the outputs. The Quality of TVET is an essential need, as mentioned previously, seeks to match the TVET system's outcomes with the labor market's needs to achieve the ultimate goal, which is Reducing unemployment and increasing employment by using adequate and available resources following quality standards. The TVET system considers quality as a strategic issue, emphasizing the

commitment of senior management leadership in this regard and continuous improvement and the use of statistical quality control (SQC) and standard practices. On the other hand, since all TVET personnel are responsible for the quality, all workers' efficiency in this system must be raised (Revised TVET strategy, 2010).

The Accreditation and Quality Assurance Committee in Palestinian higher education institutions (AQAC) licenses educational institutions and education and training programs. It accredits qualifications through quality standards in universities and TCs. This leads to spreading the culture of Quality among TCs and providing advisory services on quality issues and their management.

The TVET revised Strategy document indicated a need for a TVET National Accreditation & Quality Assurance Committee, a substitute for all the agencies responsible for Quality in TVET. Still, till now, this national committee does not exist.

The ETF indicated in a thematic study about Quality and Quality assurance in the TVET, especially in the Mediterranean region, that the TVET quality system in this region, generally, is of low quality. This causes a low employment rate within TVET graduates because of the big gap between the skills and competencies needed by the labor market and provided by the TVET providers (MEDA-ETE Project, 2008).

A critical study that was also done by the ETF, which is interested in Mapping the TVET Governance in Palestine, as one of the activities of the GEMM project (Governance for Employability in the Mediterranean). The report indicates that the only quality control that

is taking place in the TVET system in Palestine is auditing and inspection, and there is no defined approach or mechanism to quality assurance (GEMM, 2014).

As a forward step to improve quality in the TVET sector by bridging the gap between the demand and the supply side of TVET in Palestine, a corporation has structured between the private sector and the TVET providers (TCs & ISs) by implemented the Worked-Based Learning (WBL) and apprenticeship system.

2.16 TVET Gap Analysis

The reality of the Technical & Vocational Education & Training system in Palestine is not far from neighboring countries. It suffers from many obstacles. Some of these obstacles are specific to Palestine, as it is still under Israeli occupation. Gap Analysis identification led to seven main gaps that are related to the TVET system in Palestine, generally:

1. Fragmentation of the TVET system & Framework

The TVET system in Palestine is fragmented; since many providers deliver different levels of education and training, and this has arisen because of lack of coordination of multiple formal and non-formal actors, this makes this sector is fragile, dispersed. The actors don't focus on the same goal. As a result of the fragmentation, there is no unified statistical database for the TVET system in Palestine, which is a barrier to development (Kouhail, H 2004).

The effectiveness of the TVET system in Palestine decreases due to this fragmentation, and it reflects negatively. In contrast, the TVET system is inconsistent and not supported by a national political framework. There are no clear regulatory frameworks, such as registering teachers and trainers, accrediting courses, etc.

There is no unified framework for national curricula, and quality assurance provisions are weak. The TVET centers, especially those affiliated with the MoL and Education, do not enjoy independence. They are subject to a strict central system that prevents them from exercising their immediate and flexible decisions, and they have local authority.

Also, the system is separated from the labor market. Competencies and vocational skills development is not implemented in new career paths and is essential for employment in industry and other fields. Accordingly, Palestine's TVET system is unorganized and unified, and there is no clear standard (Revised TVET Strategy, 2010*)*.

2. Poor Collaboration

Internal and external cooperation between the TVET system with partners and employers is weak, uncoordinated, and not continuous; this leads to a fragile relationship with the private sector in general. Therefore the development of TVET programs will be invalid, slow, and chaotic.

The strength of the TVET system in any country is the participation in the industrial sector, as the private sector leads the TVET system and participates in joint planning with policy-making centers for this sector to develop and improve it and fill the needs of the local and regional labor market.

TVET programs are supply-driven, not market-driven, and this is a significant problem as a result of this gap since the link between the Palestinian TVET system with the industrial sector is weak. This has resulted in a complete absence of training packages offered by the industrial providers to this sector (Palestine VET-NGO League GAP Analysis Report).

3. Outdated TVET Programs.

From employers and the private sector, the TVET system's specializations are out- of date, not updated, not comprehensive, and not commensurate with the local and regional labor market. Also, there is no standardized certification system where students are evaluated and certification is awarded for mastery of competencies sets and professional requirements. As mentioned before, this contains an old curriculum and no standard way to develop, the miss-use of technology tools in the training and educational methodologies. Also, the standards used for TVET are outdated. For example, some training sessions exceed in terms of time the relevant international standards by far (Palestine VET-NGO League GAP Analysis Report).

4. Limited Employability Training Skills

During the education and training period, TVET students receive adequate training and skills. Still, when graduates join the labor market, they face a problem that they cannot employ these skills in the fields of work that they have been previously trained in. Moreover, some employers assert that vocational and technical education graduates lack some necessary skills in reading and writing, especially the English language that is technically used in industry, as well as necessary computer skills.

On the other hand, the TVET graduates also lack the leadership and management skills, problem-solving, and development skills. Also, the TVET centers are lacking in programs that are for females and other groups such as disabled people (Jeetawi, H. T. A. A. 2016).

5. Limited Staff Qualifications

One of the most significant gaps in the TVET system is the lack of official qualifications approved for workers in this system teachers & trainers, especially in centers affiliated with the MoL (VTCs), since this is necessary and vital modern vocational and technical education systems.

Also, most of the workers in this system need continuous technical training, especially in areas that require high levels of specialization. There is a constant update in techniques and technology. Most of the trainers join the system immediately after graduating from universities and have not acquired any educational qualifications. So there is a need to fill this gap through educational rehabilitation courses to integrate the technical side with the academic side (Palestine VET-NGO League GAP Analysis Report).

6. Financial Resources

One of the primary problems facing the development of TVET in Palestine and the narrowing of its extension is the financial issues and funding, as the governmental financial system for financing the technical education institutions is a rigid and inflexible. Therefore governmental financing of this sector is limited and not at the top of the priorities list. The TVET sector relies heavily on funding from donors such as the GIZ, Belgium Technical Corporation (BTC), and the ETF. It's important to mention that the revised TVET strategy 2010 listed the funding of TVET as one of the top priorities (Arig, 2019).

7. Social Believes

Like other Arab communities, the Palestinian community still looks down on the graduates of the TVET system; thus, a low percentage of the Palestinian youth enroll in the TVET system, especially the females. Despite the great efforts that done to increase the enroll

percentage such as vocational and career guidance, still the enrollment percentage no more 8%; this ominous image of TEVET into Palestinian consideration due to the low level of the social image and the meager daily wages of some professions (MAS, 2010).

Also, their lack of governance and legislation for the TVET system till now to develop this field, the only laws that exist Higher Education Law (6) 2018, the labor law, and nowadays, there is a committee that is working hardily to develop a national qualification framework (NQF) that facilitates the bridging between the different training and education levels and tracks.

2.17 Proposed Model

As mentioned before the main aim of this study is to assess and examine the quality of programs in Palestine TCs. This can be supported by designing a model based upon the main TQM constructs applied in the TCs.

The process of creating and testing hypotheses about models and reviewing designs has its foundation. Likewise, scientists use modeling to analyze complex problems to predict specific action (Shiflet, A. B., & Shiflet, G. W. 2014).

Models can be classified in to static or dynamic. In static models there is no consideration to time while in dynamic ones there is consideration to time. Also, dynamic models can be continuous if the time is changing rapidly or discrete if time is changing incrementally.

The process of modeling is continuous and cyclic, this means that revision of any step is probably happen at any time. The first step of modeling is analyzing the problem; and the objective of the problem is determined and classified. The second step is formulating the model, this step is consists of many tasks such as collecting data, simplify and document

the assumptions, determine dependent and independent variables, establish relationships among variables, and identify functions and equations.

The third step is very important, it's related to solving the model, the fourth step is verification and interpretation the model, and make sure that the model is solving the main problem. The fifth step is reporting the model, this step is consist of several components that are going in parallel with the modeling steps such as analyze the problem, design the model, and conclusions. The last step is maintaining the model, this step also is very important to enhance, improve the model.

The proposed model is consists of six independent variables that are together formulate the TQM practices in Palestinian TCs, and two dependent variables which are quality system and quality of programs.

The TQM practices are:

1. Employees Satisfaction.
2. Beneficiaries Satisfaction.
3. Continuous Improvement.
4. Governance, Leadership & Strategic Planning.
5. Infrastructure.
6. Process Management.

According to literature the mentioned constructs are affect the TQM positively and directly or indirectly affect the quality of programs. Mahamda, M. (2019) confirmed that process management, leadership, strategic planning, student focus, and employees focus are together positively affect the TQM in Palestinian HEIs and the level of quality.

On the other hand, Dale, B. G., et al. (1999) illustrated that continuous improvement on of the main philosophy of TQM principles, and there is a need for continuous improvement in any operation and process in every day activity such as education and business.

On the other hand, Dwaikat, N. Y. (2020) found that input based factors of educational process such as infrastructure has a significant positive impact on the quality of programs.

Zabadi, A. M. (2013) emphasized that the education and training provided in institutions that have high indicators of TQM will be of good quality. Also, if higher education institutions apply the principles of TQM, this leads to more accurate planning, perform and compete better.

Dawabsheh, M., et al. (2019) indicated that TQM practices have an obvious positive relationship and impact on the quality of programs, as well as the relationship of TQM practices with institutional excellence, which in turn also has a positive impact on the quality of programs. All the mentioned literature reviews are towards the hypotheses set by the researcher.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Overview

This chapter discusses research methodology using a comprehensive data collection plan. The plan takes an exploratory research approach to answer specific research questions by testing specific hypotheses. The chapter also discusses methods of collecting required data and methods and techniques for data analysis, in addition to research types and approaches and population. The outline of the research methodology is presented. This chapter also discusses reliability and validity as well as limitations that may affect the study.

3.2 Research Type

Research is defined as proper research of a specific interest or problem conducted using scientific tools and methods. The American researcher in sociology Earl Babbie defined research as "Research is a systematic inquiry to describe, explain, predict and control the observed phenomenon. There are mostly two types of research methods: the inductive research method and the deductive research method. Whereas a specific phenomenon is analyzed after it is monitored, here deductive research is used. As for deductive research, it is used to verify the indicators of the observed phenomenon. One of the research's essential features is the numbers and statistics, as well as the results and conclusion, which ultimately lead to an understanding of the phenomenon that has been researched (Abdul Wahid, F. S., Rilukshika, S., & Sajiharan, S. 2019).

This study is an explanatory research, since the researcher is trying to build causal relationships between variables related to a specific phenomenon, to understand the

changes in the standard procedures an explanatory research is conducted. Experimental procedure is one of the most common explanatory research examples (Ragab, M. A., & Arisha, A. 2018). Cohen, L., Manion, L., & Morrison, K. (2013) suggested that explanatory research helps determine the root causes for a specific phenomenon. Explanatory research explains a situation or problem in the form of casual relationships that help the researcher create a new vision, build a new theory, develop an existing one, or evaluate it. The fundamental objective of explanatory research is to differentiate the exceptional cases and variables in a specific research problem.

While exploratory research is a tool or means to discover what is happening and search for new insights without looking into the causes, in exploratory research, a set of questions are explored, but no answers or final analyzes of the perceived problem are provided. Exploratory research is used to deal with new emergent problems that have not been researched before, or few studies were conducted on this issue. This method of research forms the basis and platform for more in-depth research and data collection (Ragab, M. A., & Arisha, A. 2018).

3.3 Research Approach

The research approaches are the main hypothetical steps for detailed data collection methods, analysis, and interpretation mechanisms, or they are general mechanisms that researchers keep track of when regulating a study. The research approach has two main categories: the data collection approach and the data analysis approach (Kankam, P. K. 2020).

According to the nature of the research type, researchers can determine the research approach, quantitative, qualitative, and mixed (Hughes, J. A., & Sharrock, W. W. 2016).

3.3.1 Quantitative Approach

The use of quantitative methods in research dates back to the 1930s. The definition of quantitative methods is based on the principle of using them to define the research approach, which aims to rearrange the dependent and independent variables associated with data collection (Conrad, C., Serlin, R., & Harwell, M. 2014). Bryman, A. (2008) emphasizes that the quantitative research approach focuses on numbers and statistics in analyzing and collecting data.

The conducted results of data collection are of experiments, measurements, and observations. So, quantitative research is the method that produces discrete values; this requires good planning and enough time. This approach is considered as analytical. The quantitative approach is split into experimental and non-experimental research designs; both are drive-by applying statistical and mathematical procedures (Asenahabi, B. M. 2019).

3.3.2 Qualitative Approach

The historical background of qualitative research attributed to sociology, anthropology, and the humanities. Creswell, J. W., & Creswell, J. D. (2017) confirm that the qualitative approach is "an approach for exploring and understanding the meaning individuals or groups ascribe to a social or human problem." Qualitative approach seeks the phenomenon in its natural environment to understand the phenomenon and explain it more clearly in terms of the meanings people perceive (Kankam, P. K. 2020).

Qualitative research is concerned with exploring and understanding the meaning of a social problem based on understanding the individual or society. In qualitative research, open-ended questions are used, and the result is non-quantifiable data. This approach enables researchers to investigate specific issues and then understand them in the context in which individuals and society understand (Asenahabi, B. M. 2019).

Qualitative research takes the form of texts that include accounts, descriptive and narrative methods (Gulati, P. M. 2009). In general, qualitative research methods include ground theory, phenomenological studies, case studies, and content analysis. One of the most critical flaws in qualitative research methods is the inability to generalize a particular study's results (Burke Johnson, R., & Onwuegbuzie, A. J. 2004).

3.3.3 Mixed Approach.

The mixed-search approach combines qualitative and quantitative approaches into one approach, where the researcher combines the elements of qualitative and quantitative research methods for more in-depth understanding (Asenahabi, B. M. 2019). The quantitative approach deals with closed-data within the mentioned mixed research components, while the second component (qualitative research) is concerned with detailed open data without previously known responses (Creswell, J. W., & Creswell, J. D. 2017).

The mixed research approach resulted from an idea that both quantitative and qualitative research has weaknesses; these weaknesses will disappear if combined, leading to more understanding and a broadening of the scope of knowledge. After the researcher collects quantitative and qualitative data, he analyzes it either concurrently or in sequence, according to the research's nature and philosophy.

The quantitative research approach's ultimate goal is to examine a specific phenomenon by publishing a specific survey. Nowadays, surveys are given great interest, due to the ease of publishing them in various ways, as it is easy to send them via e-mail to the target group or different ways. Whereas the researcher designs a questionnaire that includes the most relevant ended questions on the topic to be researched, such as a questionnaire which will mainly be built based on the literature review, and semi-structured interviews with focus groups of local Palestinian experts.

3.4 Methodology Flow Chart Diagram

The study was conducted from the beginning of March 2020 to the end of March 2021. Furthermore, the Palestinian TCs that meet the research objectives were the research population and sample.

Identifying the scope and objective of the study was the first phase. It followed by looking deeply into the prior literature about the concept of TQM and Quality practices in Palestinian Higher Education Institutions generally, and the TVET system especially to formulate research questions and hypotheses. The next phase started with defining the research population and sample. Semi-structured interviews were then conducted to formulate a general view regarding the primary TQM practices that will form the questionnaire's main pillars. The questionnaire as a data collection tool was developed and tested before the data collection was conducted.

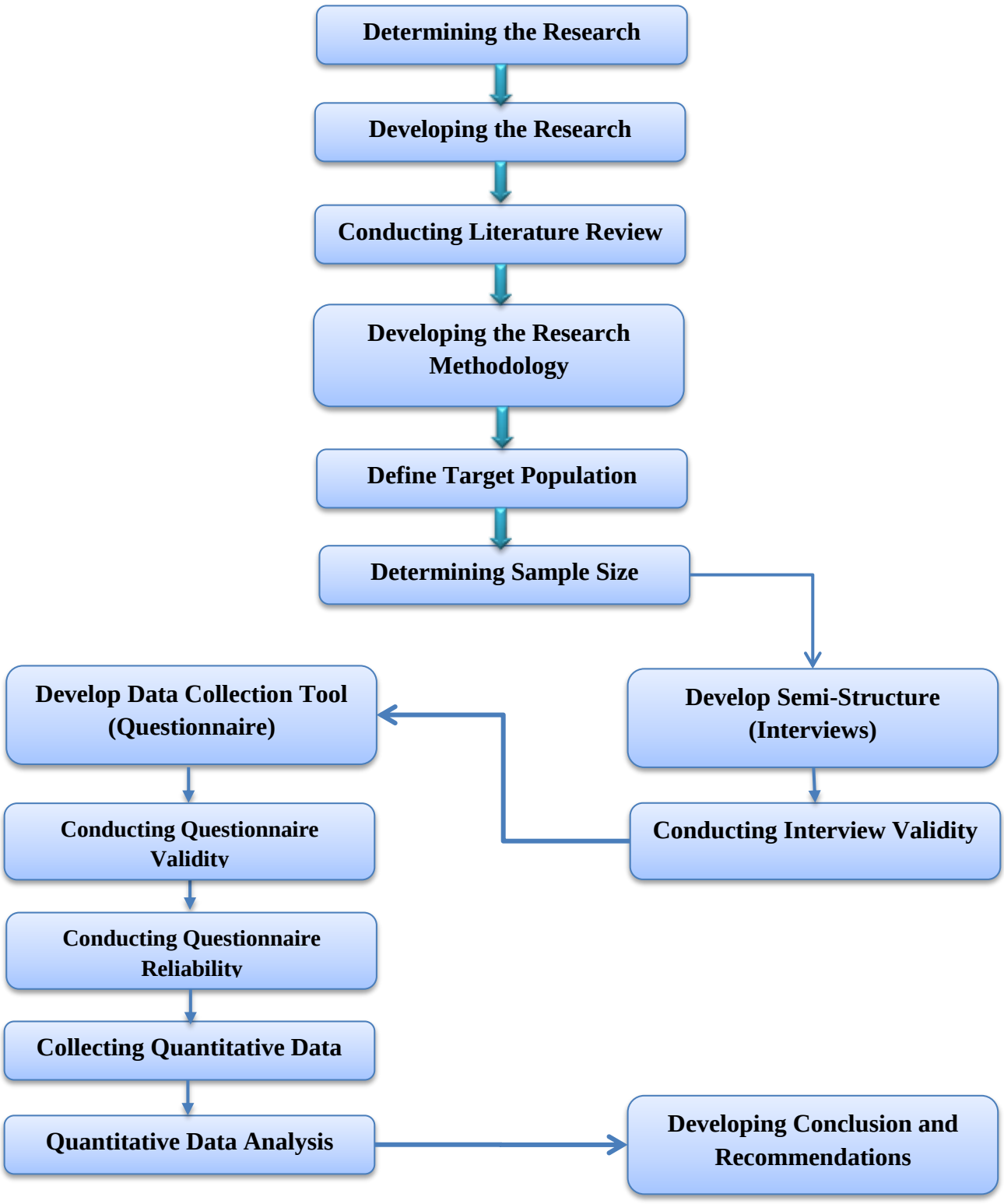

Figure (3.1): Research Methodology Flow Chart Diagram.

The third stage was related to analyzing the collected data using Partial Least Squares (Smart-PLS) to test the hypotheses and answer the research questions. The last phase is to conduct the conclusions and recommendations. Figure 3.1 shows more explanation about the research study methodology.

3.5 Data Collection Tools

More than one tool was used to collect data related to the research; some were primary and others secondary. The main tools used to collect the data as primary tools are the questionnaire, semi-structured interviews. Simultaneously, the secondary data are the literature reviews since this type provides more additional data to support the primary (Asenahabi, B. M. 2019).

3.5.1 Interviews

Semi-structured interviews were used as a pre-tool to design the questionnaire and to have an overview of the TQM practices in Palestinian TCs. Researcher resort to this type of interview to understand a particular person's subjective perspective towards a particular phenomenon so as not to fall into the line of generalization. In research interviews, the ethical side must be taken in terms of time for the people the researcher seeks to interview; this is done by selecting participants according to the need for research and having experience and vision about the phenomenon. The interviews are classified according to their formality level as follows: (McGrath, C., Palmgren, P. J., & Liljedahl, M. 2019). The three types of interviews are:

- Structured Interviews: This type of interview is very similar in style to the method of questionnaires but aims to collect qualitative data, not quantitative, as identical questions are prepared in advance and are presented to the respondents in a pre-determined order**.**
- Unstructured Interviews: contain only main headings and do not contain standard and fixed questions. The interview questions may change from one respondent to another so that the respondent is given more space to express his or her opinion, and it is very similar to open discussions.
- Semi-Structured Interviews: Semi-structured interviews are located in the middle area between the two previous types, as there are predefined questions, but there is a kind of flexibility to ask new questions and ignore some of them without maintaining a specific arrangement.

The researcher chose the semi-structured interviews to have an overview of the most important TQM practices, which will be independent variables in the questionnaire. The semi-structured interview methodology begins with a focus on the study's scope and then the development of questions and the interview protocol to obtain more information about TQM practices in the Palestinian TCs based on the literature reviews.

A one-page letter was attached at the beginning of the semi-structured interview pages to explain its objectives. The semi-structured interview included two parts: the first part about the interviewee's general information, such as the nature of his work and years of experience. In contrast, the second part contained eight questions about TQM practices, and the impact of these practices effects on quality of programs.

Eight semi-structured interview was conducted with deans of TCs in the Gaza Strip and West Bank and lecturers and local experts. Some of the interviews were made using visual communication technologies such as Microsoft Teams and Zoom. At the start of the interview, a transcript of the questions is presented to the interviewee. The average interview time is about 30 minutes, with notes taken, and after the interview was completed, a short transcript was prepared for each, see appendix IV and V.

3.5.2 The Questionnaire

The questionnaire is one of the data collection tools, which is the most widely used by researchers since it is characterized by collecting data from a large sample that may be scattered and provides various statistical analysis options. Besides, the questionnaire's response is comfortable by answering various questions that are will-prepared in advance and in a specific order to collect the enormous amount of information (Ragab, M. A., & Arisha, A. 2018).

Questionnaires are used for either descriptive to describe the population's characteristics or even explanatory purposes to test a hypothesis. The descriptive questionnaires aim to count the proportions of the population who have specific tendencies or characteristics without knowing the reasons or explanations. While the explanatory questionnaires include a more in-depth analytical perspective in terms of researching the relationship between more than one variable, this means that the variables that the researcher wants to examine must be determined before designing the questionnaire (Pervez, G. 2005).

In questionnaires, there are three types of variables, the variables that represent the respondents' opinion and what they think, variables related to the respondents' actions, and

variables related to demographic data such as gender. The researcher should be aware of the types of variables related to choosing the type of questions, whether closed or open. The questions' order is also essential, as the questions' writing should start from general to specific and from easy to difficult. Questionnaires are administered in different ways, including face-to-face through an interview, by phone, they can be sent through e-mail, regular mail, or open via Internet sites and forums (Leung, W. C. 2001).

The questionnaire is the primary tool for collecting data in this study. It was developed based on literature reviews, interviews, and previous Master theses related to the research topic. Then the questionnaire was designed based on updating the gaps and best practices for TQM in the Palestinian TCs. A five-point Likert scale was used to respond to the questionnaire questions. Likert scale is a psychological scale that includes different categories; respondents choose one of these categories to indicate their positions or opinions on an issue. It is an ordered, one- dimensional from which respondents choose one option from strongly disagree, disagree, neutral, agree, and strongly agree according to the best aligns with their view (Nemoto, T., & Beglar, D. 2014).

After the questionnaire was designed, it was validated by four experts in this field; who have more than 15 years' experience in the field of TVET. The questionnaire was developed and improved after receiving feedback to be in the final version.

The questionnaire contained three main sections. The first section represents the descriptive aspect, it is about the respondents' demographic characteristics, and this section contained 10 items such as age, gender, and work experience years. The second section is about

(TQM) practices in TCs. This section contained 30 items; it measures the extent to which TCs apply TQM practices to improve overall quality and performance. The third contained nine items; it measures the extent to which quality of programs in Palestinian TCs.

An introduction was added at the beginning of the questionnaire to clarify its title and objectives, emphasize that it is for scientific research, and respect the respondent's privacy. See Appendix No VI and VII.

Finally, the questionnaire was sent to all employees of the Palestinian TCs using various communication tools such as e-mail, WhatsApp. Then it was followed up by phone, especially in the Gaza Strip, with the top management to ensure that the questionnaire was filled out correctly and to answer the respondents' inquiries.

3.6 Population and Sampling Techniques

As mentioned in chapter one, the Palestinian TCs is the targeted group of this research, there are 35 in West Bank & Gaza strip, see Appendix III, All of these TCs are accredited and certified by MoHE, about 230 specialization related to TVET are offered for teaching and training after being licensed by AQAC the TCs are offering about 230 specializations in the field of TVET (AQAC, 2020).

It is difficult to collect data from all employees of Palestinian TCs. Instead, the researcher collects the data from a group of the employees who are forming the sample. The sample is defined as the group of individuals who will truly take part in the research and collect data from. The selected sample will represent the whole population of the study. The population

is defined as the whole group that the research wants to extract conclusions about (Singh, A.S. and Masuku, M.B., 2014)

For the conclusions to be valid and well representative of the population, the sample must be chosen in a way that represents the population as a whole. Generally, there are two main sampling methods, probability and nonprobability sampling. This researcher is interested in the probability sampling method, since this type contributes strongly to obtaining conclusions about the whole population. The probability sampling method has different subsampling methods, such as simple random sampling, cluster sampling, stratified sampling, and systematic sampling. The researcher chased the simple random sample, simple random sampling refers to a limited group selected from a population that has the same chance of selection as a sample from that population; in the sense that all members of the population have a chance to be selected within the sample. The reason for this is that if a homogeneous population is selected from it in any way, it can represent it and show all its characteristics (McCombes, S. 2019).

The study population is the employees of the Palestinian TCs in the Gaza Strip & West Bank. According to the statistical report of the MoHE, the number of employees in the Palestinian TCs is approximately 2100. After developing the questionnaire, it was transformed to online Google form. The electronic link was sent formally to TCs deans through the E-mail and WhatsApp group that is generated and administrated by the MoHE. The TCs deans, in turn, published and distributed the questionnaire randomly to the employees, and they were contacted.

The researcher collected 341 responses, which is a little more than the minimum sample size. The minimum sample size of this research is calculated using the Taro Yamane formula (Oyigbo, et al. 2017) based on the population of TCs employs is equal to 337 responses.

The calculation formula of Yamane is presented as follows:

$$\mathbf{n} = \frac{\mathrm{N}}{\mathrm{Ne}^2 + 1}$$

$$\mathbf{n} = \frac{\mathbf{2100}}{(\mathbf{2100} * .\mathbf{05}^{\mathbf{2}}) + \mathbf{1}} = 336 \text{ sample as minimum}$$

Where,

$\mathbf{n} =$ sample size

$\mathbf{N} =$ Population size

$\mathbf{e}^2 =$ Sampling of error

3.7 Data Validity & Reliability

One of the most critical issues that must be paid attention to with great caution is the extent of validity & reliability of the researcher's tools to collect data; this constitutes assurance of the validity of the data collected from the respondents.

Validity is essential to the extent to which the researcher's data covers the field in which the researcher is investigating. Validity means "measure what is intended to be measured." There are different validity types such as content validity, face validity, construct validity, and criterion validity. On the other hand, reliability is related to consistency of results, and related to repeatability. This means that if the same conditions and circumstances are

present, the same result will appear if the data are collected many times (Taherdoost, H. 2016).

3.7.1 Interviews Validity

Literature reviews were the primary source on which the interview questions were developed, covering their content, the most crucial TQM practices, and their impact on quality of programs. The interview questions were judged by a committee of four arbitrators who have academic background and sufficient experience in TVET. Some of them work in the MoHE, see Appendix XI.

The arbitrators' comments emphasized the importance of the interview questions collect qualitative data that support the quantitative data for more integration and strengthen the research. Also, they clarified the questions should be more detailed, targeted, and free of any interference.

3.7.2 Questionnaire Validity

As mentioned before, after the questionnaire was designed as a first draft, the researcher decided to use the face validity approach. The questionnaire was sent to four Palestinian experts in TVET; who have more than 15 years' experience to validate.

The arbitrator's feedback and recommended to merge some of the TQM practices in the same dimension, such as leadership and governance and strategic planning. Also, some indicators in some dimensions were modified to be more fit to the Likert scale. Finally, the questionnaire was developed and improved to be in the final version.

3.7.3 Pilot Testing Study

The pilot testing study is conducted on a narrower and smaller scale than the main study. It is used to improve and develop the main study and improve its outcomes. It helps build the researchers' experience in terms of study methods as well as sample size determination. This helps the researcher to decide whether go ahead in the study or not. The pilot testing study helps discover shortcomings that the respondent may face or the researcher may have made during the questionnaire preparation (In, J. 2017).

The researcher conducted a pilot testing study by selecting an independent random sample from the TCs of 22 respondents working in top management, lecturers and faculty members.

3.7.4 Questionnaire Reliability

The researcher should carry out the reliability test through the pilot test to ensure the results' stability and consistency. The scale is considered reliable in internal consistency if the internal scale elements are welded together and measure the same structure (Huck, S. W., Cormier, W. H., & Bounds, W. G. 1974).

If the Likert scale is used, the most recommended measure of reliability and internal consistency used by researchers is the Cronbach's alpha (Brown, J. D. 2002). There is no agreed absolute value for the internal consistency factor, but the value 0.7 is defined as the agreed acceptable minimum value (Hinton, P. R. 2014). Hinton also suggested four main reliability cut off point, excellent reliability if α value is bigger than 0.9, high reliability if $0.7 < \alpha < 0.9$, moderate reliability if $0.5 < \alpha < 0.7$, and low reliability if $\alpha < (0.5)$.

Reliability must be combined with validity, which means for a questionnaire to be reliable; it must also be valid (Wilson, J. 2014).

Table 3.1 shows the values of Cronbach's Alpha for each variable of the questionnaire by using the SPSS application, which was carried out through the pilot test. All the survey variables are above 0.8, while the total is 0.876. Thus, the questionnaire is reliable tool.

Table (3.1): Cronbach's Alpha

#	Variable	No. of Item/s	Cronbach's Alpha
1	**TQM Practices**	**30**	**0.868**
1.1	Beneficiary satisfaction	5	0.870
1.2	Employee satisfaction	5	0.805
1.3	Continuous Improvement	5	0.853
1.4	Governance, leadership, & Strategic planning	5	0.920
1.5	Infrastructure	5	0.861
1.6	Process management	5	0.896
2	**Disciplines Quality**	**9**	**0.884**
2.1	Quality System	4	0.893
2.2	Quality of programs	5	0.876
3	**Overall**	**48**	**0.876**

3.8 Data Analysis Techniques

Both inferential and descriptive and statistics were used in data analysis. Statistical Package for Social Sciences (SPSS) was used to analyze the descriptive statistics. The respondent`s characteristics were described, including both percentages and frequencies.

TQM practices, quality systems, and program quality were evaluated and assessed using descriptive analyses about means and standard deviations.

The inferential statistics were used to perform Shapiro-Wilk and Kolmogorov-Smirnov tests, which are used to test the data normality. Furthermore, the variance analyses were

tested by nonparametric tests of Kruskal-Wallis and Mann-Whitney in case of non-normal data distribution. The analyses of variance are conducted to test if there are significant differences in the levels of TQM practices, programs & system quality.

On the other hand, the smart-PLS application was used to analyze the relationships between the primary constructs and variables. This app works based on the principle of Structural Equation Modeling (SEM), which is a statistical approach that enables researchers to integrate unobservable variables weighted indirectly by item variables. They also simplify the measurement error in observed variables (Chin, W. W. 1998).

Structural Equation Modeling (SEM) is consisting of two types. The first one is covariance-based SEM (CB-SEM); the second one is the Partial Least Squares (PLS-SEM).

There are several reasons for conducting PLS-SEM in this study. First of all, PLS-SEM is working more efficiently even the sample size is small and limited. Furthermore, PLS-SEM is fit to assess and evaluate both measurement and structural models and analyze the non-normal distributed data. Finally, PLS-SEM is a statistically powerful tool; this means that PLS-SEM's conducted significant relationship is significant (Hair, J. F., Sarstedt, M., Pieper, T. M., & Ringle, C. M. 2012).

In the next chapter, more explanation and exploration are related to the PLS-SEM technique analysis.

CHAPTER FOUR

DATA ANALYSIS AND RESULTS

4.1 Overview

This chapter is related to data analysis and the results of the qualitative and quantitative data collected. Data screening, demographic, and descriptive analyses were discussed. In addition to reliability and validity, and hypotheses were tested using statistical techniques via Smart PLS and SPSS for minor analysis related to demographic analysis.

4.2 Data Screening

Data screening is the process of treating and assessing data before performing statistical analysis to ensure that the data is clean, usable, valid, and reliable. This milestone is significant and sensitive in the SmartPLS application (DeSimone, J. A., Harms, P. D., & DeSimone, A. J. (2015). After completing the data collection using the questionnaire, some systematic problems may appear that must be addressed, such as missing data, extreme answers, data distribution, and suspicious data as in figure (4.1).

The study applied a visual screening technique for the missing data assessment by running the PLS, which showed no missing data. In the electronic questionnaire, all the respondents are forces to answer all the questions.

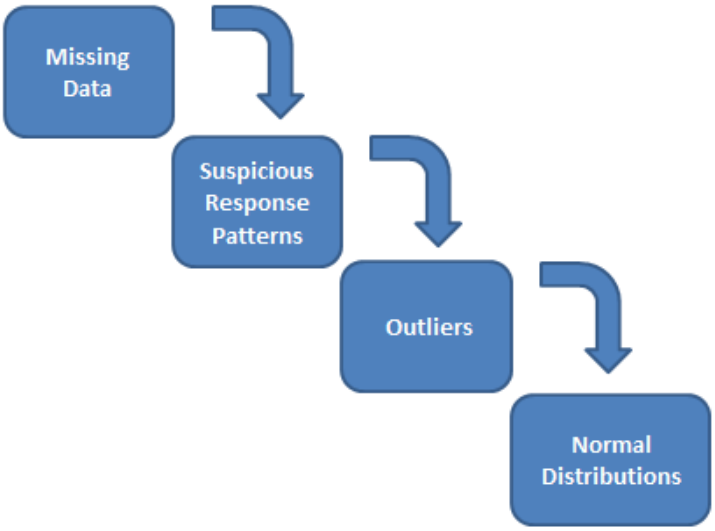

Figure (4.1): Data Screening & Examination

To assess the unengaged data or suspicious response patterns such as straight or diagonal lining, the standard deviation assessment technique (SD) was used. As the SD value is high, the respondent answers are diverse from the mean value, and there is adversity in the data. The two threshold values that are common to SD are (0.3 & 0.5). In this study, the 0.3 value was applied. Based on the 0.3 SD value, no respondent's answers were deleted.

The normality test was performed by applying the Shapiro-Wilk test. The result shows that the data is not normally distributed since the p-value less than 0.05, as in table (4.1).

Table (4.1): Normality Test

Variables	**Shapiro-Wilk**		
	Statistic	**Df**	**Sig.**
Quality System	0.935	341	0.000
Programs Quality	0.939	341	0.000
Beneficiary Satisfaction	0.922	341	0.000
Continuous Improvement	0.953	341	0.000
Governance, Leadership & S. Planning	0.946	341	0.000
Infra-Structure	0.956	341	0.000
Process Management	0.941	341	0.000
Employees Performance	0.958	341	0.000

But in the case that the Smart-PLS application is used, the skewness and kurtoses in the data play an essential role in deciding if the data is exceptionally non-normal distributed. In our case, both skewness and kurtoses are small values, plus minus no more than one absolute as in table (4.2). So, the researcher can proceed and start data analysis after evaluating the health and accepted collected data.

Table (4.2): Skewness & Kurtosis

		QS	PQ	BS	CI	GLS	EI	PM	ES
N	**Valid**	341	341	341	341	341	341	341	341
	Missing	0	0	0	0	0	0	0	0
Skewness		-.810	-.819	-.918	-.653	-.634	-.553	-.591	-.737
Std. Error of Skewness		.132	.132	.132	.132	.132	.132	.132	.132
Kurtosis		0.919	1.375	1.932	.803	0.547	0.311	1.129	0.855
Std. Error of Kurtosis		0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263

4.3 Collinearity Assessment

Collinearity indicates that two indicators are entered in the same construct and have perfect linear combinations, and introduce the same information. So, it's essential to evaluate the formative measurement models in terms of collinearity. In PLS-SEM, collinearity is considered and estimated in terms of the VIF variance inflation factor. VIF of 5 measures and above is an indicator of potential collinearity problem (Hair, J. F., Ringle, C. M., & Sarstedt, M. 2011).

The collinearity assessment results using the VIF are shown in table (4.3). All the VIFs values are below the threshold value 5, so then there are no collinearity problems.

Table (4.3): Collinearity Results

Item	VIF	Result	Item	VIF	Result
BS1	1.988	Acceptable	IS1	2.411	Acceptable
BS2	1.827	Acceptable	IS2	2.504	Acceptable
BS3	2.562	Acceptable	IS3	2.042	Acceptable
BS4	2.956	Acceptable	IS4	2.157	Acceptable
BS5	1.954	Acceptable	IS5	2.091	Acceptable
CI1	2.065	Acceptable	PM1	2.412	Acceptable
CI2	2.063	Acceptable	PM1	3.023	Acceptable
CI3	2.665	Acceptable	PM2	3.563	Acceptable
CI4	2.72	Acceptable	PM3	2.13	Acceptable
CI5	1.649	Acceptable	PM4	2.884	Acceptable
ES1	2.324	Acceptable	PM5	1.866	Acceptable
ES2	2.203	Acceptable	PQ1	1.815	Acceptable
ES3	1.815	Acceptable	PQ2	1.944	Acceptable
ES4	2.43	Acceptable	PQ3	1.946	Acceptable
ES5	2.243	Acceptable	PQ4	2.517	Acceptable
GLS1	3.013	Acceptable	PQ5	2.497	Acceptable
GLS2	2.922	Acceptable	QS1	1.951	Acceptable
GLS3	2.623	Acceptable	QS2	2.713	Acceptable
GLS4	2.905	Acceptable	QS3	3.107	Acceptable
GLS5	3.679	Acceptable	QS4	3.071	Acceptable

4.4 Descriptive Analysis

In the coming sections, respondents` profiles, the level of TQM practices, and the level of program quality are analyzed in a descriptive approach.

4.4.1 Respondents' Profile

This study's population is all the employees in the Palestinian TCs in West Bank and Gaza strip; the randomly distributed questionnaire took place in 34 various TCs. 341 sample were collected, which satisfy the needed minimum sample size.

Appendix VIII reviews the summary data of the respondents` characteristics in terms of gender, age, work, academic qualification, years of experience, college classification in terms of establishment and AQAC, number of programs, college location, and number of students.

The gender feature has two main categories; the first group is the males with a percentage of 60.4% as a majority. The other group is the females, with a ratio of 39.6% as a minority. The age feature also has three groups, 20-34 years, 34-44 years, and more than 44 years old. The last group is the majority of 43.1%, the second group form 36.4% percentage, and the first group is the minority of 20.5% percentage. The college feature's work classification has two categories: the academic field, which is the majority with a percentage of 74.2%, and the other, is the administrative, which represents 25.8% as a minority.

Regarding the educational qualification of the respondents, this feature has two categories. The majority of the respondents are postgraduates (Master or PhD) with a percentage of

64.5%. In comparison, the respondents with an academic degree (Intermediate diploma or Bachelor) represent a minority with 35.5%.

The years of experience feature have three categories, up to 5 years, 5-15 years, and more than 15 years. The second category represents the majority with a percentage of 41.6%. The first one is the minority, with a percentage of 25.5%. The third and the last one represent a percentage of 32.8%.

46.9% of the respondents are employees in public TCs as the majority. While 26.7% of them are working in private TCs, 26.4% of the respondents work in governmental TCs as the minority. Besides, 55.1% of the respondents work in university colleges, while 54.9% are working in intermediate colleges. On the other hand, the number of programs feature in TCs that the respondents belong to has three categories, 3-5 programs, 6-10 programs, and more than ten programs. The last category is the majority with an a62.1% percentage, the first category is the minority with a 27.9% percentage, and the first category has a 10% percentage.

81.8% of the respondents work in TCs in West Bank as the majority, while 18.8% of respondents work in TCs in Gaza Strip as a minority. That last feature is the number of students in TCs those respondents belongs to; this feature has three categories, less than 300 students, 300-1000 students, and more than 1000 students. 47.2% of the respondents are working in TCs have 300-1000 students as the majority, 9.1% percentage of the respondents are working in TCs have less than 300 students as a minority, and 43.7% percentage of respondents are working in TCs have more than 1000 student.

4.4.2 Level of TQM Practices

The mean values elaborate the respondent's answers' evaluation for each variable's constructs and items. In this section, implementing TQM practices in the Palestinian TCs is evaluated and analyzed descriptively.

Dimension 1: Beneficiary Satisfaction (BS)

The Beneficiary Satisfaction construct has the mean value of (4.05 + 0.80) on the Likert scale. This indicates that the respondent's answers are positive and more than 3.0 of the plate with 81.0%, classified as an excellent evaluation. Table (4.4) represents the Beneficiary Satisfaction construct and the associated items. All the related items are above 3.0, with values between 3.85 and 4.26 (77% to 85.2%).

Table (4.4): Descriptive Statistics of Beneficiary Satisfaction Construct

Items	N	Minimum	Maximum	Mean	Std. Deviation
BF1	341	1	5	3.96	.752
BF2	341	1	5	3.85	.931
BS3	341	1	5	4.04	.805
BS4	341	1	5	4.14	.792
BS5	341	1	5	4.26	.723
Beneficiary Satisfaction				**4.052**	**0.800**

The maximum two associated items of the Beneficiary Satisfaction construct are:

- Students are guided and advanced regarding their interests.
- The college top management is keen to follow up on the complaints of students and employees.

Dimension 2: Continuous Improvement (CI)

The Continuous Improvement construct has the mean value of (3.90 + 0.87) in the Likert scale. This indicates that the respondent's answers are positive and more than 3.0 of the scale with a 78.0%, classified as a fair evaluation. Table (4.5) represents the Continuous Improvement construct and the associated items.

All the related items are above 3.0 with values between 3.61 and 4.05 (72.2% to 81.0%). The maximum two associated items of Continuous Improvement construct are:

- Feedback contributes to improving the outcomes.
- Monitoring and evaluation processes are carried out periodically.

Table (4.5): Descriptive Statistics of Continuous Improvement Construct

Items	N	Minimum	Maximum	Mean	Std. Deviation
CI1	341	1	5	3.93	0.805
CI2	341	1	5	3.87	0.927
CI3	341	1	5	4.04	0.807
CI4	341	1	5	4.04	0.775
CI5	341	1	5	3.61	1.064
Continuous Improvement				**3.899**	**0.875**

Dimension 3: Governance, Leadership, & Strategic Planning (GLS)

The Governance, Leadership, & Strategic Planning construct has the mean value of (3.88 + 0.87) in the Likert scale. This indicates that the respondent's answers are positive and exceed 3.0 on the scale with a 77.6%, classified as a fair evaluation. Table (4.6) represents the Governance, Leadership, & Strategic Planning construct and the associated items.

All the related items are above 3.0, with values between 3.74 and 4.04 (74.8% to 80.8%). The maximum two associated items of Governance, Leadership, & Strategic Planning construct are:

- The college's top management shows interest in achieving the goals of the TVET National Strategy.
- Actual application of laws and regulations integrated with approved regulations.

Table (4.6): Descriptive Statistics of Governance, Leadership, & Strategic Planning

Items	N	Minimum	Maximum	Mean	Std. Deviation
GLS1	341	1	5	3.86	0.878
GLS2	341	1	5	3.94	0.769
GLS3	341	1	5	4.04	0.820
GLS4	341	1	5	3.74	1.008
GLS5	341	1	5	3.85	0.881
Governance, Leadership, & S.Planning				**3.886**	**0.870**

Dimension 4: Infra-Structure (IS)

The Infra-Structure construct has the mean value of (3.96 + 0.87) in the Likert scale. This indicates that the respondent's answers are positive and more than 3.0 of the scale, with 79.1%, classified as a good evaluation. Table (4.7) represents the Infra-Structure construct and the associated items.

All the related items are above 3.0 with values between 3.63 and 4.25 (72.6% to 85.0%). The maximum two associated items of the Infra-Structure construct are:

- The college administration works to provide classrooms, laboratories, workshops, and technical equipment.
- The college administration works to provide technical communication tools.

Table (4.7): Descriptive Statistics of Infra-Structure Construct

Items	N	Minimum	Maximum	Mean	Std. Deviation
IS1	341	1	5	4.25	.759
IS2	341	1	5	4.21	.700
IS3	341	1	5	3.78	.922
IS4	341	1	5	3.93	.935
IS5	341	1	5	3.63	1.051
Infra-Structure				**3.958**	**0.873**

Dimension 5: Process Management (PM)

The Process Management construct has the mean value of (3.99 + 0.78) on the Likert scale. This indicates that the respondent's answers are positive and more than 3.0 of the scale, with 79.8%, classified as a good evaluation. Table (4.8) represents the Process Management construct and the associated items.

All the related items are above 3.0, with values between 3.72 and 4.10 (74.4% to 82.0%). The maximum two associated items of Process Management construct are:

- The operations and daily work that takes place in the college are continuously monitored.
- The college top management makes every effort to prevent errors.

Table (4.8): Descriptive Statistics of Process Management Construct

Items	N	Minimum	Maximum	Mean	Std. Deviation
PM1	341	1	5	4.10	.746
PM2	341	1	5	4.05	.773
PM3	341	1	5	4.02	.747
PM4	341	1	5	4.06	.776
PM5	341	1	5	3.72	.883
Process Management				**3.991**	**0.785**

Dimension 6: Employees Satisfaction (ES)

The Employees Satisfaction construct has the mean value of (3.96 + 0.81) in the Likert scale. This indicates that the respondent's answers are positive and more than 3.0 of the scale, with 79.0%, classified as a good evaluation. Table (4.9) represents the Employees Satisfaction construct and the associated items. All the related items are above 3.0 with values between 3.18 and 4.30 (63.6% to 86.0%).

Table (4.9): Descriptive Statistics of Employees Satisfaction Construct

	N	Minimum	Maximum	Mean	Std. Deviation
ES1	341	1	5	4.25	.647
ES2	341	1	5	4.30	.637
ES3	341	1	5	3.18	1.124
ES4	341	1	5	3.96	.846
ES5	341	1	5	4.09	.821
Employees Satisfaction				**3.957**	**0.814**

The maximum two associated items of the Employees Satisfaction construct are:

- The college staff performs the functional tasks assigned to them.
- College staff follows the laws and regulations.

The analysis results indicate the high implementation of TQM practices in Palestinian TCs, with the overall mean of the performance being 3.95/5 as seen in table (4.10). Beneficiary Satisfaction, Infra-Structure, Process Management, and Employees Satisfaction are the most TQM practices that are most applied. While, Governance - Leadership - Strategic Planning and Continuous Improvement are the least implemented TQM practices.

Table (4.10): Descriptive statistics of TQM practices in Palestinian TCs

TQM Practices	**N**	**Min**	**Max**	**Mean Value**	**Std. Deviation**	**Implementation Level**
Beneficiary Satisfaction	341	1.00	5.00	4.0522	.65222	Very Good 81%
Continuous Improvement	341	1.00	5.00	3.8997	.69868	Good 78%
Governance, Leadership, & Strategic Planning	341	1.00	5.00	3.8862	.76031	Good 77.6%
Infra-Structure	341	1.20	5.00	3.9589	.70624	Good 79.2%
Process Management	341	1.00	5.00	3.9912	.65891	Very Good 80%
Employees Satisfaction	341	1.40	5.00	3.9578	0.61269	Good 79%
Total				**3.9576**	**0.68150**	**Good 79.1%**

On the other hand, the level of program quality in Palestinian TCs is evaluated in table (4.11). The results indicate that the academic quality level in Palestinian TCs is high, with an overall level of 3.93/5. Programs Quality variable is higher than Quality system in the TCs variable.

Table (4.11): Quality of Programs Descriptive Statistics

	N	Minimum	Maximum	Mean Value	Std. Deviation	Implementation Level
Quality System	341	1.00	5.00	3.8130	.79432	High
Programs Quality	341	1.00	5.00	4.0434	.67753	High
Total				**3.9282**	**0.73592**	**High**

To examine the overall level of TQM practices varies due to the respondents` characteristics, the nonaromatic Kruskal-Wallis and Mann-Whitney tests are used because the TQM practices data are not normally distributed, as seen in table (4.12). P-value is higher than 0.05, so the programs quality data are not normally distributed since the p-value is less than 0.05.

Table (4.12): TQM Practices Normality Test

Kolmogorov-Smirnova			**Shapiro-Wilk**		
Statistic	Df	Sig.	Statistic	Df	Sig.
0.064	341	.002	0.966	341	0.000

Level of TQM Practices by Gender

As mentioned before, since the data are not normally distributed, the Maan-Whitney test is used. This test is nonparametric used to compare the outcomes between two dependent groups. Table (4.13) represents the mean ranks of TQM practices by gender. The mean ranks of males are higher than of females.

Table (4.13): Mean Ranks of TQM Practices by Gender

Gender	N	Mean Rank	Sum of Ranks
Male	206	172.10	35452.50
Female	135	169.32	22858.50

The statistics results of the Mann-Whitney test are represented in table (4.14). Since the p-value is more significant than 0.05, the level of TQM practices in Palestinian TCs doesn't significantly vary at the 0.05 level between males and females perceptions.

Table (4.14): Mann-Whitney Test (TQM by Gender)

Test Statistics	
Items	**Values**
Mann-Whitney U	13,678.5
Wilcoxon W	22,858.5
Z	-0.25400
Asymp. Sig. (2-tailed)	0.79900

Level of TQM Practices by Age

To examine TQM practices' level varies in TCs about the employee's age, the Kruskal–Wallis test is applied. This nonparametric test compares two or more independent samples with different or equal sample sizes if the data are not normally distributed. Table (4.15) represents the mean ranks of TQM practices level by age; the employees who are 20-34 years have the highest mean rank, while the ones who are over 44 years have the lowest mean rank.

Table (4.15): Mean Ranks of TQM Practices by Age

Ranks		
Age	**Sample Size**	**Mean Rank**
20-34	70	201.44
34-44	124	167.10
Over 44	147	159.80

According to the different age groups, the Kruskal-Wallis test results as in table (4.16) indicate that TQM practices' level significantly varies at level 0.05 according to the other age groups because the p-value is shorter than 0.05.

Table (4.16): Kruskal-Wallis Test (TQM by Age)

Items	**Values**
Chi-Square	8.769
Df	2,000
Asymp. Sig.	0.012

Level of TQM practices by Work classification

To examine TQM practices' level varies in TCs in reference to the employee's work classification, the Mann-Whitney test is used. Table (4.17) represents the mean ranks of TQM practices level by work classification; the administrative employees mean rank is higher than the academic ones.

Table (4.17): Mean Ranks of TQM Practices by Work Classification

Work Classification	Sample Size	Mean Rank	Sum of Ranks
Academic	253	163.12	41268.50
Administrative	88	193.66	17042.50

The statistics results of the Mann-Whitney test are represented in table (4.18). Since p-value is shorter than 0.05, the level of TQM practices in Palestinian TCs significantly varies at the 0.05 level between academic and administrative staff perceptions.

Table (4.18): Mann-Whitney Test (TQM by Work Classification)

Test Statistics	
Item	**Values**
Mann-Whitney U	9137.50
Wilcoxon W	41268.5
Z	-2.50500
Asymp. Sig. (2-tailed)	0.01200

Level of TQM Practices by Employees Academic Degree

To examine TQM practices' level in TCs in reference to the employee's academic degree, the Mann-Whitney test is used. Table (4.19) represents the mean ranks of TQM practices level by the employee's academic degree; the employees who have Master & PhD degree mean rank is higher than the ones who have Bachelor & intermediate diploma.

Table (4.19): Mean Ranks of TQM Practices by Academic Degree

Academic Degree	Sample Size	Mean Rank	Sum of Ranks
Intermediate Diploma & Bachelor	121	170.01	20571.50
Postgraduate (Master & PhD)	220	171.54	37739.50

The statistics results of the Mann-Whitney test are represented in table (4.20). Since the p-value is more significant than 0.05, the level of TQM practices in Palestinian TCs significantly doesn't vary at the 0.05 level between TCs employees' perceptions of those who have Master & PhD degree and those who have Bachelor & intermediate diploma.

Table (4.20): Mann-Whitney Test (TQM Practices by Employees Academic Degree)

Test Statistics	
Items	**Values**
Mann-Whitney U	13,190.5
Wilcoxon W	20,571.5
Z	-0.13700
Asymp. Sig. (2-tailed)	0.89100

Level of TQM Practices by Employees Work Experience

To examine the status of TQM practices varies in TCs in reference to the respondent's work experience; the Kruskal–Wallis test is applied. Table (4.21) represents the mean ranks of TQM practices level by work experience; the employees who have 5-15 years of work experience have the highest mean rank, while those who have up to 5 years of work experience have the lowest mean rank**.**

Table (4.21): Mean Rank of TQM Practices by Employees Work Experience

Work Experience Years	Sample Size	Mean Rank
Up to 5 Years	87	205.22
5-15 Years	142	172.38
More than 15 Years	112	142.67

The statistics results of the Kruskal-Wallis test are represented in table (4.22). Since p-value is lower than 0.05, TQM practices in Palestinian TCs significantly vary at the 0.05 level between different groups of employees' work experience perceptions.

Table (4.22): Kruskal-Wallis Test (TQM Practices by Work Experience)

Test Statistics	
Item	**Values**
Chi-Square	19.777
Df	2.0000
Asymp. Sig.	0.0000

Level of TQM Practices by College Classification in Reference to Establishment

To examine TQM practices' level varies in TCs in reference to the college's classification according to establishment, the Kruskal–Wallis test is applied. Table (4.23) represents the mean ranks of TQM practices level by college classification regarding establishment; the private TCs have the highest mean rank, while the governmental TCs have the lowest mean rank**.**

Table (4.23): Mean Ranks of TQM practices by Colleges Classification

College Classification	Sample Size	Mean Rank
Governmental	90	144.38
Public	91	166.31
Private	160	188.64

The statistics results of the Kruskal-Wallis test are represented in table (4.24). Since p-value is more than 0.05, the level of TQM practices in Palestinian TCs significantly varies at the 0.05 level between different groups of TCs employee's perceptions in reference to the college's establishment.

Table (4.24): Kruskal-Wallis Test (TQM practices by Colleges Establishment)

Test Statistics	
Item	**Values**
Chi-Square	11.899
Df	2,0000
Asymp. Sig.	0.0030

Level of TQM Practices by College Classification in Reference to AQAC

To examine the level of TQM practices varies in TCs in reference to the college classification according to AQAC; the Mann-Whitney test is used. Table (4.25) represents the mean ranks of TQM practices level by college classification; the university colleges mean rank is higher than the intermediate ones.

Table (4.25): Mean Rank of TQM practices by Colleges Classification (AQAC)

Item	Sample Size	Mean Rank	Sum of Ranks
University College	188	171.76	32290.00
Intermediate College	153	170.07	26021.00

The statistics results of the Mann-Whitney test are represented in table (4.26). Since the p-value is more significant than 0.05, TQM practices in Palestinian TCs significantly don't vary at the 0.05 level between the employees' perceptions of working in university colleges and intermediate colleges.

Table (4.26): Mann-Whitney Test (TQM Practices by Colleges Classification)

Test Statistics	
Item	**Values**
Mann-Whitney U	14240.0
Wilcoxon W	26021.0
Z	-0.15700
Asymp. Sig. (2-tailed)	0.87500

Level of TQM Practices by Number of Disciplines

To examine TQM practices' level varies in TCs in reference to the number of disciplines, the Kruskal–Wallis test is applied. Table (4.27) represents the mean ranks of TQM practices level by the number of disciplines; the colleges with more than ten disciplines have the highest mean rank, while the colleges with 3-5 disciplines have the lowest mean rank**.**

Table (4.27): Mean Rank of TQM Practices by Number of Disciplines

Item	Sample Size	Mean Rank
3-5 disciplines	34	169.10
6-10 disciplines	95	166.81
More than 10 disciplines	212	173.18

The statistics results of the Kruskal-Wallis test are represented in table (4.28). Since the p-value is more significant than 0.05, the level of TQM practices in Palestinian TCs significantly doesn't vary at the 0.05 level between different groups of TCs with varying numbers of disciplines.

Table (4.28): Kruskal-Wallis Test (TQM Practices by Number of Disciplines)

Test Statistics	
Item	**Values**
Chi-Square	0.289
Df	2,000
Asymp. Sig.	0.866

Level of TQM Practices by TCs Location

To examine TQM practices' level in TCs in reference to the college location (West Bank & Gaza Strip), the Mann-Whitney test is used. Table (4.29) represents the mean ranks of TQM practices level by college location; the TCs in Gaza Strip mean rank are higher than those in West Bank.

Table (4.29): Mean Rank of TQM Practices by TCs location

Item	Sample Size	Mean Rank	Sum of Ranks
West Bank	277	163.97	45420.00
Gaza Strip	64	201.42	12891.00

The statistics results of the Mann-Whitney test are represented in table (4.30). Since p-value is lower than 0.05, TQM practices in Palestinian TCs significantly vary at the 0.05 level between the TCs in West Bank and Gaza Strip ones.

Table (4.30): Mann-Whitney Test (TQM Practices by TCs location)

Test Statistics	
Item	**Values**
Mann-Whitney U	6,917.00
Wilcoxon W	45,420.0
Z	-2.74000
Asymp. Sig. (2-tailed)	0.00600

Level of TQM Practices by Number of Students

To examine the level of TQM practices varies in TCs in reference to the number of students; the Kruskal–Wallis test is applied. Table (4.31) represents the mean ranks of TQM practices level by number of students; the colleges with 300-1000 students have the highest mean rank, while the colleges with less than 300 students have the lowest mean rank**.**

Table (4.31): Mean Rank of TQM by Students Number

Item	Sample Size	Mean Rank
Up to 300 Students	31	156.45
300- 1000 Students	161	173.98
More than 1000 students	149	170.80

The statistics results of the Kruskal-Wallis test are represented in table (4.32). Since the p-value is more significant than 0.05, the level of TQM practices in Palestinian TCs significantly doesn't vary at the 0.05 level between TCs with different numbers of students.

Table (4.32): Kruskal-Wallis Test (TQM Practices by Students Number)

Test Statistics	
Item	**Values**
Chi-Square	0.824
Df	2,000
Asymp. Sig.	0.662

4.4.3 Level of Quality Programs

The Programs Quality construct has the mean value of (4.04 + 0.82) in the Likert scale. This indicates that the respondent's answers are positive and more than 3.0 of the scale, with 80.8%, classified as an excellent evaluation. Table (4.33) represents the program Quality construct and the associated items.

All the related items are above 3.0, with values between 3.85 and 4.19 (77% to 83.8%). The maximum two associated items of Programs Quality construct are:

- Programs are accredited according to studies of labor market needs.
- Academic and study plans are reviewed and updated periodically.

Table (4.33): Quality of Programs Descriptive Statistics

Item	Sample Size	Minimum	Maximum	Mean	Std. Deviation
PQ1	341	1	5	4.13	0.815
PQ2	341	1	5	4.19	0.839
PQ3	341	1	5	4.11	0.753
PQ4	341	1	5	3.94	0.836
PQ5	341	1	5	3.85	0.897
Programs Quality				**4.044**	**0.828**

As in the previous section, it's essential to explore the overall level of program quality in Palestinian TCs; Kruskal-Wallis and Mann Whitney are used. Since the p-value is less than 0.05, the results indicate that the program's quality data are not normally distributed as in table (4.34).

Table (4.34): Normality Test (Quality of Programs)

Kolmogorov-Smirnov			Shapiro-Wilk		
Statistic	**Df**	**Sig.**	**Statistic**	**Df**	**Sig.**
0.132	341	0.000	0.939	341	0.000

Level of Quality of Programs by Gender

Since the data are not normally distributed, the Maan-Whitney test is used. Table (4.35) represents the mean ranks of program quality by gender. The mean ranks of males are higher than males.

Table (4.35): Mean Ranks of Programs Quality by Gender

Gender	Sample Size	Mean Rank	Sum of Ranks
Male	206	172.67	35570.00
Female	135	168.45	22741.00

The statistics results of the Mann-Whitney test are represented in table (4.36). Since the p-value is more significant than 0.05, the level of program quality in Palestinian TCs doesn't significantly vary at the 0.05 level between males and females perceptions.

Table (4.36): Mann-Whitney Test (Quality of Programs by Gender)

Test Statistics	
Items	**Values**
Mann-Whitney U	13,561.0
Wilcoxon W	22,741.0
Z	-0.38900
Asymp. Sig. (2-tailed)	0.69700

Quality of Programs Level by Age

To examine the level of program quality varies in TCs in reference to the respondent's age, the Kruskal–Wallis test is applied. Table (4.37) represents the mean ranks of programs quality level by age; the employees who are 20-34 years have the highest mean rank, while the ones who are between 34-44 years have the lowest mean rank.

Table (4.37): Mean Ranks of Quality of Programs by Age

Ranks		
Age	**Sample Size**	**Mean Rank**
20-34	70	194.18
34-44	124	163.35
Over 44	147	166.41

According to the different age groups, the Kruskal-Wallis test results, as in table (4.38), indicate that program quality significantly doesn't vary at level 0.05. According to the different age groups, a p-value is more significant than 0.05.

Table (4.38): Kruskal Wallis Test (Quality of Programs by Age)

Test Statistics	
Items	**Values**
Chi-Square	5.001
Df	2,000
Asymp. Sig.	0.082

Level of Quality Programs by Work classification

To examine the level of program quality varies in TCs in reference to the employee's work classification; the Mann-Whitney test is used. Table (4.39) represents the mean ranks of program quality by work classification; the administrative employees mean rank is higher than the academic ones.

Table (4.39): Mean Ranks of Quality of Programs by Work Classification

Work Classification	Sample Size	Mean Rank	Sum of Ranks
Academic	253	165.85	41,959.5
Administrative	88	185.81	16,351.5

The statistics results of the Mann-Whitney test are represented in table (4.40). Since the p-value is more significant than 0.05, the level of program quality in Palestinian TCs significantly doesn't vary at the 0.05 level between academic and administrative staff perceptions.

Table (4.40): Mann-Whitney Test (Programs Quality by Work Classification)

Test Statistics	
Item	**Values**
Mann-Whitney U	9,828.50
Wilcoxon W	41,959.5
Z	-1.64800
Asymp. Sig. (2-tailed)	0.09900

Level of Programs Quality by Employees Academic Degree

To examine the level of program quality varies in TCs in reference to the employee's academic degree; the Mann-Whitney test is used. Table (4.41) represents the mean ranks of programs quality level by the employee's academic degree; the employees who have Master

& PhD degree mean rank is higher than the ones who have Bachelor & intermediate diploma.

Table (4.41): Mean Ranks of Programs Quality by Academic Degree

Academic Degree	Sample Size	Mean Rank	Sum of Ranks
Intermediate Diploma & Bachelor	121	169.35	20,491.00
Postgraduate (Master & PhD)	220	171.91	37,820.00

The statistics results of the Mann-Whitney test are represented in table (4.42). Since the p-value is more significant than 0.05, the level of quality system in Palestinian TCs significantly doesn't vary at the 0.05 level between TCs employees' perceptions of those who have Master & PhD degree and those who have a Bachelor & intermediate diploma.

Table (4.42): Mann-Whitney Test (Programs Quality by Employees Academic Degree)

Test Statistics	
Items	**Values**
Mann-Whitney U	13,110.00
Wilcoxon W	20,491.00
Z	-0.231000
Asymp. Sig. (2-tailed)	0.817000

Level of Programs Quality by Employees Work Experience

To examine the level of program quality varies in TCs in reference to the respondent's work experience; the Kruskal–Wallis test is applied. Table (4.43) represents the mean ranks of program quality level by work experience; the employees who have less than five years of

work experience have the highest mean rank, while those who have more than 15 years' work experience have the lowest mean rank**.**

Table (4.43): Mean Rank of Programs Quality by Employees Work Experience

Work Experience Years	Sample Size	Mean Rank
Up to 5 Years	87	194.20
5-15 Years	142	170.58
More than 15 Years	112	153.51

The statistics results of the Kruskal-Wallis test are represented in table (4.44). Since the p-value is less than 0.05, the level of program quality in Palestinian TCs significantly varies at the 0.05 level between different work experience perceptions.

Table (4.44): Kruskal-Wallis Test (Quality of Programs by Work Experience)

Test Statistics	
Item	**Values**
Chi-Square	8.461
Df	2.0000
Asymp. Sig.	0.0150

Level of Programs Quality by College Classification in Reference to Establishment

To examine the level of program quality varies in TCs in reference to the college's classification according to establishment, the Kruskal–Wallis test is applied. Table (4.45) represents the mean ranks of program quality by college classification in reference to

establishment; the private TCs have the highest mean rank, while the governmental TCs have the lowest mean rank**.**

Table (4.45): Mean Ranks of Programs Quality by Colleges Classification

College Classification	Sample Size	Mean Rank
Governmental	90	140.58
Public	91	166.05
Private	160	190.93

The statistics results of the Kruskal-Wallis test are represented in table (4.46). Since the p-value is less than 0.05, the level of program quality in Palestinian TCs significantly varies at the 0.05 level between different groups of TCs employee's perceptions in reference to the college's establishment.

Table (4.46): Kruskal-Wallis Test (Quality of Programs by Colleges Establishment)

Test Statistics	
Item	**Values**
Chi-Square	15.542
Df	2,0000
Asymp. Sig.	0.0000

Level of Programs Quality by College Classification in Reference to AQAC

To examine the level of program quality varies in TCs in reference to the college classification according to AQAC, the Mann-Whitney test is used. Table (4.47) represents

the mean ranks of program quality by college classification; the university colleges mean rank is higher than the intermediate ones.

Table (4.47): Mean Rank of Programs Quality by Colleges Classification (AQAC)

Item	Sample Size	Mean Rank	Sum of Ranks
University College	188	172.04	32344.00
Intermediate College	153	169.72	25967.00

The statistics results of the Mann-Whitney test are represented in table (4.48). Since the p-value is more significant than 0.05, the level of program quality in Palestinian TCs significantly doesn't vary at the 0.05 level between the employee's perceptions of working in university colleges and intermediate colleges.

Table (4.48): Mann-Whitney Test (Quality of Programs by Colleges Classification)

Test Statistics	
Item	**Values**
Mann-Whitney U	14,186.0
Wilcoxon W	25,967.0
Z	-0.21800
Asymp. Sig. (2-tailed)	0.8270

Level of Programs Quality by Number of Disciplines

To examine the level of program quality varies in TCs in reference to the number of disciplines, the Kruskal–Wallis test is applied. Table (4.49) represents the mean ranks of program quality by the number of disciplines; the colleges with more than ten disciplines

have the highest mean rank, while the colleges with 3-5 disciplines have the lowest mean rank**.**

Table (4.49): Mean Rank of Programs Quality by Number of Disciplines

Item	Sample Size	Mean Rank
3-5 disciplines	34	146.81
6-10 disciplines	95	166.14
More than 10 disciplines	212	177.06

The statistics results of the Kruskal-Wallis test are represented in table (4.50). Since the p-value is more significant than 0.05, the level of program quality in Palestinian TCs significantly doesn't vary at the 0.05 level between different groups of TCs with varying numbers of disciplines.

Table (4.50): Kruskal-Wallis Test (Quality of Programs by Number of Disciplines)

Test Statistics	
Item	**Values**
Chi-Square	3.121
Df	2,000
Asymp. Sig.	0.210

Level of Programs Quality by TCs Location

To examine the level of program quality varies in TCs in reference to the college location (West Bank & Gaza Strip), the Mann-Whitney test is used. Table (4.51) represents the

mean ranks of program quality by college location; the TCs in Gaza Strip mean rank is higher than those in West Bank.

Table (4.51): Mean Rank of Programs Quality by TCs Location

Item	Sample Size	Mean Rank	Sum of Ranks
West Bank	277	165.51	45,847.50
Gaza Strip	64	194.74	12,463.50

The statistics results of the Mann-Whitney test are represented in table (4.52). Since the p-value is less than 0.05, the level of program quality in Palestinian TCs significantly varies at the 0.05 level between the TCs in West Bank and Gaza Strip.

Table (4.52): Mann-Whitney Test (Quality of Programs by TCs location)

Test Statistics	
Item	**Values**
Mann-Whitney U	7,344.50
Wilcoxon W	45,847.50
Z	-2.15200
Asymp. Sig. (2-tailed)	0.03100

Level of Programs Quality System by Number of Students

To examine the level of program quality varies in TCs in reference to the number of students, the Kruskal–Wallis test is applied. Table (4.53) represents the mean ranks of program quality by the number of students; the colleges with 300-1000 students have the

highest mean rank, while the colleges with less than 300 students have the lowest mean rank**.**

Table (4.53): Mean Rank of Programs Quality by Students Number

Item	Sample Size	Mean Rank
Up to 300 Students	31	141.58
300- 1000 Students	161	179.52
More than 1000 students	149	167.91

The statistics results of the Kruskal-Wallis test are represented in table (4.54). Since the p-value is more significant than 0.05, the level of program quality in Palestinian TCs significantly doesn't vary at the 0.05 level between TCs with different numbers of students.

Table (4.54): Kruskal-Wallis Test (Quality of Programs by Students Number)

Test Statistics	
Item	**Values**
Chi-Square	4.167
Df	2,000
Asymp. Sig.	0.124

4.5 Hierarchical Component Model

The proposed PLS path model consists of two main parts. The first part is called the measurement model (Outer Model), representing the relationship between the variables and

indicators. In contrast, the second is called the structural model (Inner Model), which means the primary constructs as in figure (4.2).

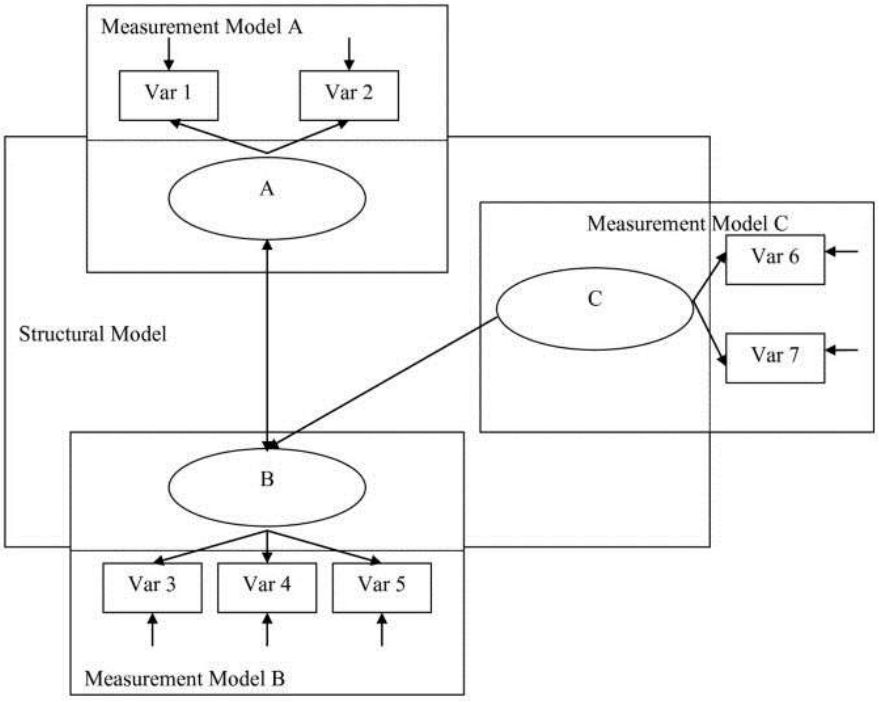

Figure (4.2): Measurement & Structural Model

Data analysis using Smart-PLS is a 2 step approach, the first step is building and testing the measurement model, and the second step is building and testing the structural model.

The proposed PLS path model in this study is not a single layer of constructs. It's a higher-order model or Hierarchical Component Model (HCM) known in the PLS-SEM context (Lohmöller, J. B. 1989). The main advantage of using the HCM approach is to reduce the number of structural model relations.

The main two elements that form the HCM are the low Order Components (LOCs) and Higher-Order Components (HOCs), as seen in figure (4.3).

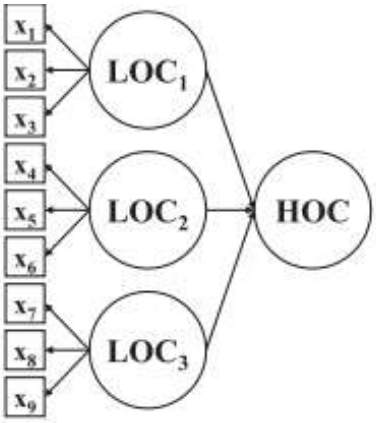

Figure (4.3): The HCMs Elements

Generally, there are two different measures of PLS-SEM indicators, which are reflective and formative outer model. The reflective measurement model is known in the social sciences and is based on the classical test theory. This theory is considering measures as indicators of an underlying construct. In contrast, Formative indicators are not prepared to calculate observed variables, Formative measurement models are established on the hypothesis that causal indicators mange the construct by wherewithal of linear combinations. Generally, researchers point out to this measurement model as being a formative (Nunnally, J. C., & Bernstein, I. 1994).

Each indicator of a formative construct holds a certain aspect of the construct's field. The items as whole determine the concept of the construct, which means that skipping an indicator potentially changes the scope of the construct. So, expansion of covering of the

construct domain is very important to assure that the content of the construct is sufficiently captured (Diamantopoulos, A., &Winklhofer, H. M. 2001). The reflective model's assessment involves testing and checking the internal consistency of the Indicators and the reliability of each individual construct.

To explain the HOC's model, the LOCs indicators are appointed in the HOCs in a new form called the repeated indicators approach. This approach is one of several techniques that researchers propose to define HOCs in PLS-SEM. (Sarstedt, M., Hair Jr, J. F., Cheah, J. H., Becker, J. M., & Ringle, C. M. 2019).

One of the key issues associated to the repeated indicator approach is that the R^2 that explains the variance in the HOCs by the LOCs is very close or equal to 1.0 (Ringle, C. M., Sarstedt, M., & Straub, D. W. 2012). To overcome this issue, a two-stage approach analysis is used. This approach consists of two main steps. In the first step, the repeated indicator path is applied to get the latent variables' values for the LOCs. In the second step, the LOCs values are employed as apparent variables in the HOCs (Henseler, J., & Chin, W. W. 2010). It is essential to say that in the case that the sample number is large, there are no significant differences in the results for both approaches SEM (Sarstedt, M., Hair Jr, J. F., Cheah, J. H., Becker, J. M., & Ringle, C. M. 2019).

Continuous improvement, beneficiary satisfaction, infra-structure, employs satisfaction, and process management are the TQM practices constructs that form the lower order components LOCs or first-order stage. The second-order phase or the HOC consists of TQM primary construct (Father), as in figure (4.4).

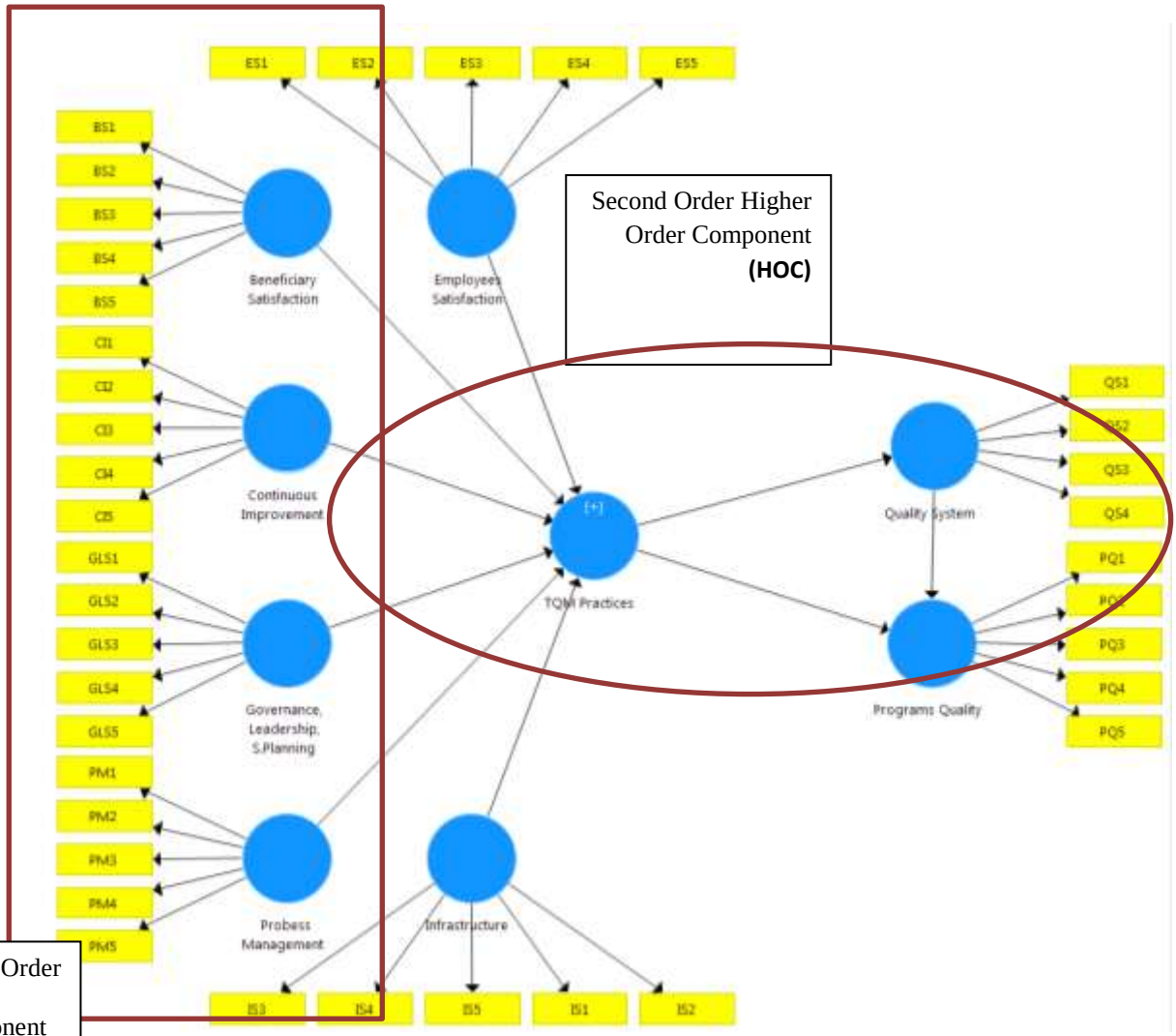

Figure (4.4): Second-Stage Approach

Figure (4.5) represents the results of the estimated partial least squares structural equation model PLS-SEM.

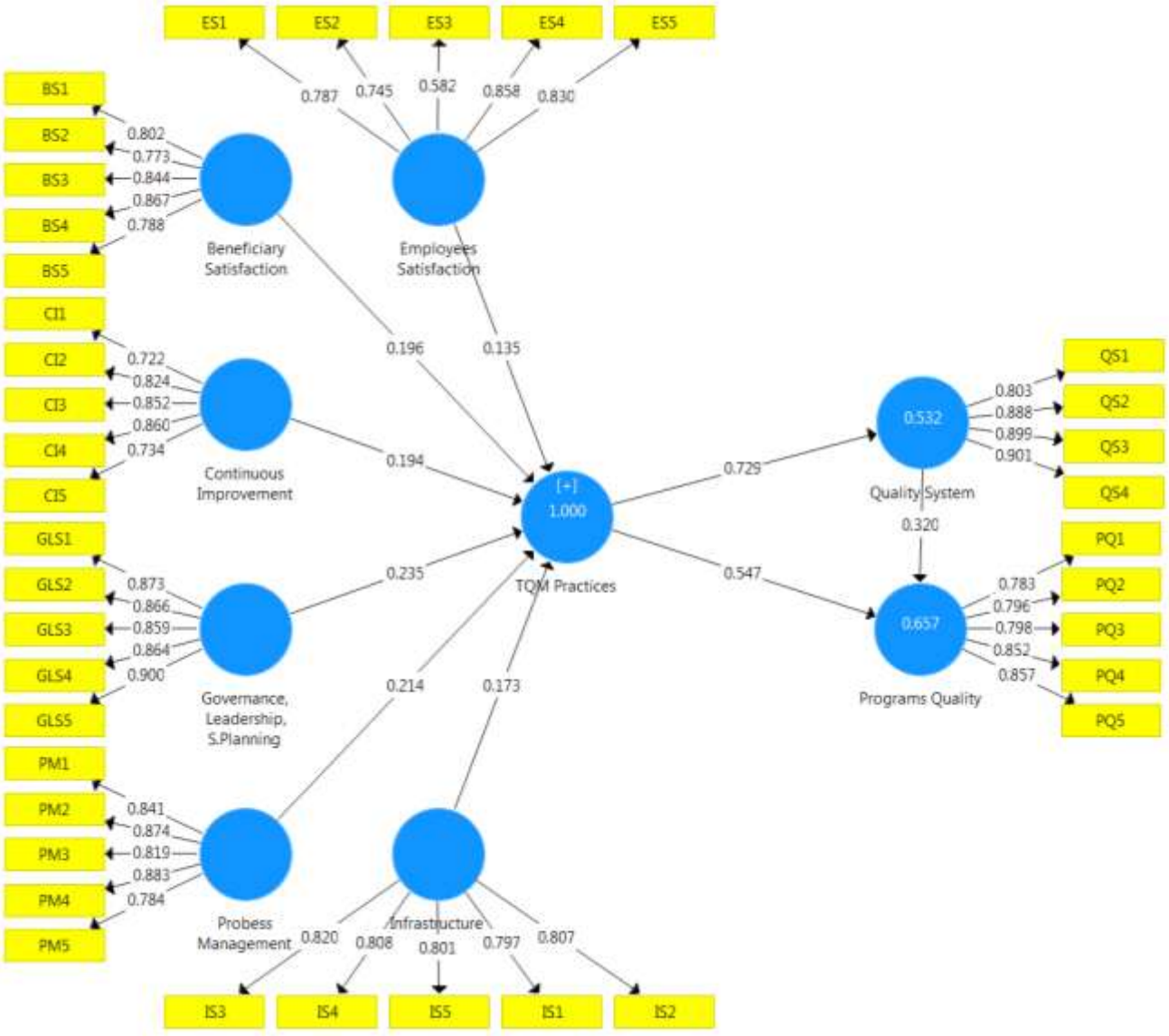

Figure (4.5): Results of Estimated Structural Model

Figure (4.6) represents the Bootstrapping results of the estimated partial least squares structural equation model PLS-SEM.

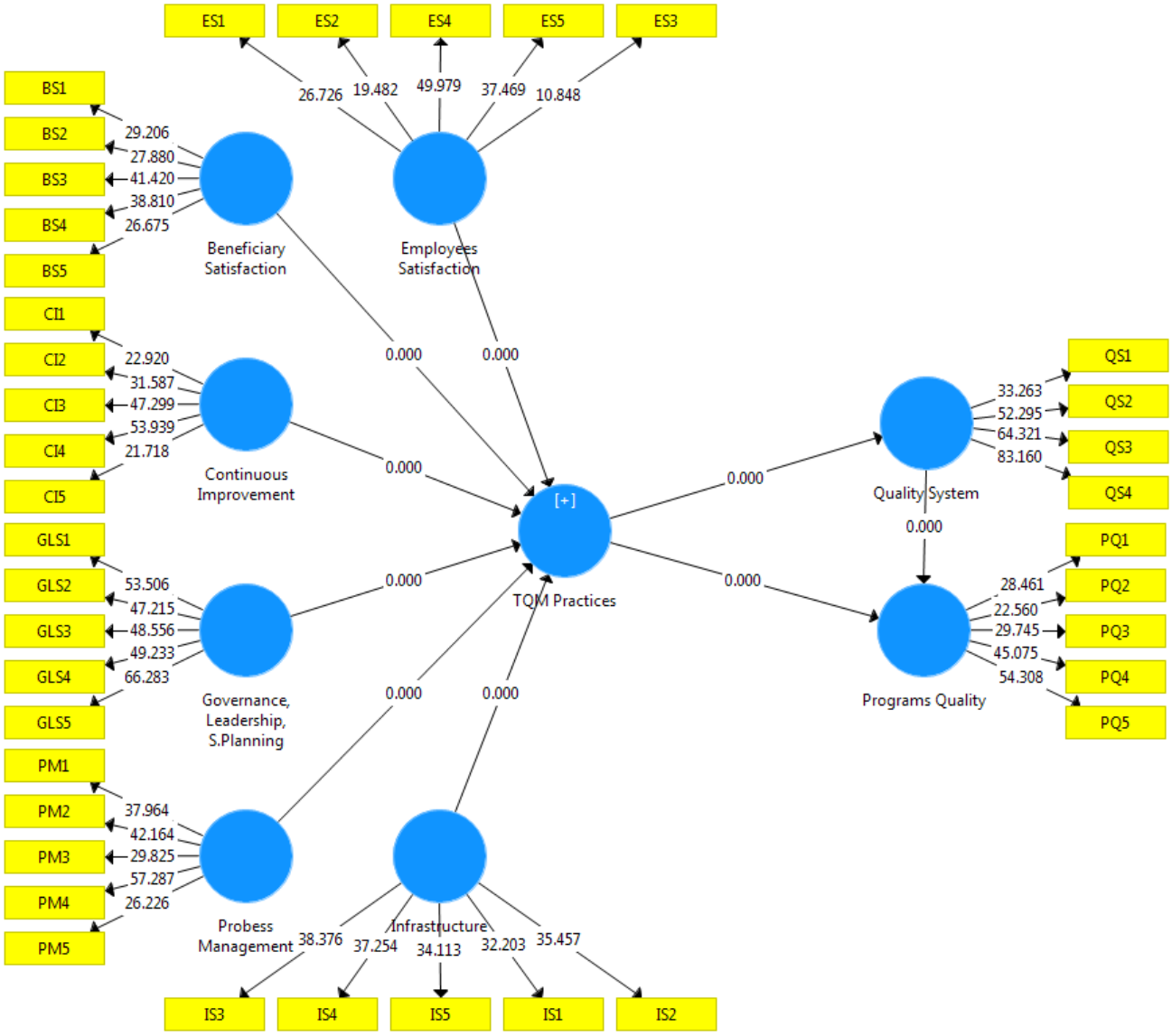

Figure (4.6): Bootstrapping Results of Estimated Structural Model

4.6 Assessment of the Measurement Model

Data analysis using PLS-SEM is starting by evaluating and testing the measurement model and structural model. Each model has its tests that differ from the other. Figure (4.7) represents the test for each one.

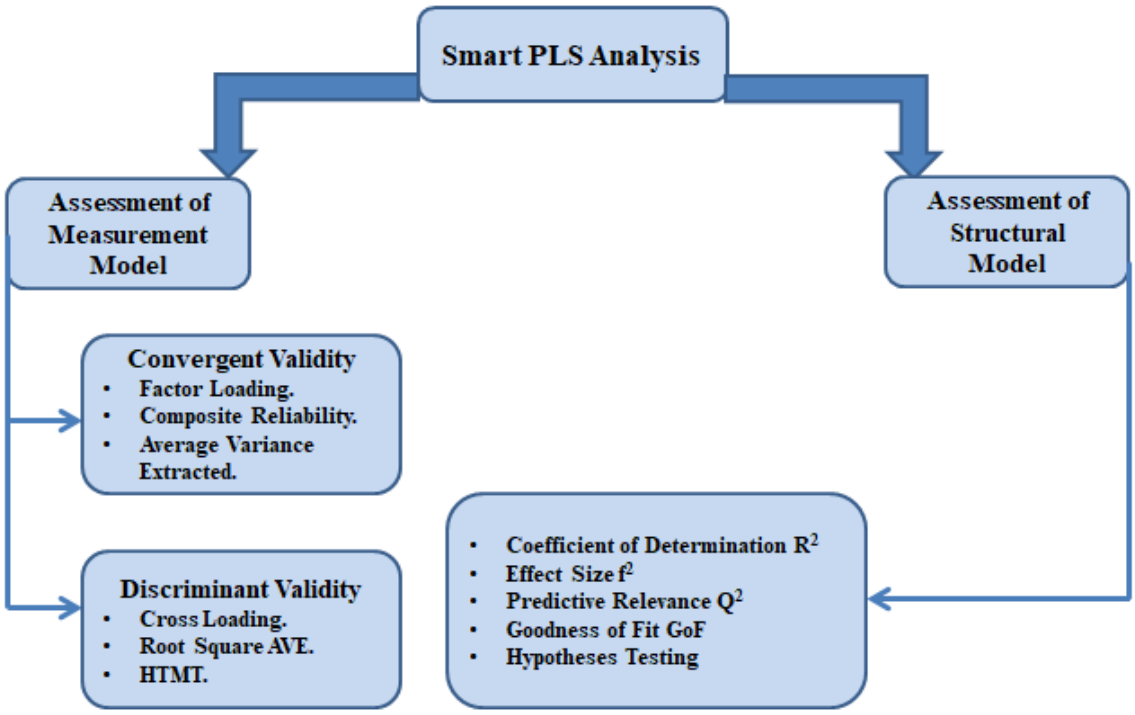

Figure (4.7): Assessment of Measurement & Structural Model

4.6.1 Convergent Validity

Convergent validity expresses the extent to which items are related to each other in the same domain or variable (Cheah, J. H., Sarstedt, M., Ringle, C. M., Ramayah, T., & Ting, H. 2018). Researchers consider the main three tests or standards, external loads of the

items, extracted mean contrast (AVE), and the composite reliability to assess the reflective variables' converging viability.

A widespread measure to set up convergent validity is the average variance extracted AVE; this standard is defined as the excellent mean value of the squared loadings of the items related to the construct. So, the AVE is functioning as the commonality of a construct. The AVE's acceptable threshold values are above 0.5 (Bagozzi, R. P., & Yi, Y. 1988).

Researchers also consider the variables' internal consistency reliability to check the convergent validity; internal consistency means that variable items must represent the same concept. Composite reliability is added to the traditional criterion measure of reliability Cornbrash's Alpha since some limitations related to the last measure, and composite reliability consider the variables' outer loading. For both of the two measurements (Composite Reliability & Cornbrash's Alpha), any value above 0.7 is accepted in exploratory research (Hair Jr, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. 2016).

The outer loading indicates that the construct items have much in common; external load volume is also called reliability indicator—the outer loading to be statistically significant. The main rule is that the outer loads value should be 0.708 or high.

Researchers should be cautious and sensitive in the deletion and retention of values under the threshold value of 0.708. If the loading value is less than 0.4, it must be deleted as a thump of rule. But if it's more than 0.4 and less than 0.7, removing indicators should be considered only this leads to increase the average variance extracted or the composite reliability above the threshold values 0.5 & 0.7, respectively (Bagozzi, R. P., Yi, Y., &

Phillips, L. W. 1991). In our case, the item ES3 related to employee satisfaction is less than 0.708, but the AVE is above the suggested threshold value, which leads to retaining the item.

The first part of the measurement model assessment, which is related to the convergent validity, see Appendix IX. The results indicate that all items related to all different constructs have outer loadings according to mentioned criteria before the structural equation model is estimated. All the constructs have ensured the minimum AVE and CR threshold value of 0.5 & 0.7, respectively. This indicates that all the convergent validity values are successful and show items internal consistency.

4.6.2 Discriminant Validity

Discriminant validity is the degree to which construct is diverse from other constructs by experiential standards. Thus, set up discriminant validity means that a construct is unrivaled and holds phenomena not stated by other constructs in the same model. Researchers have believed in two frameworks of discriminant validity (Hair Jr, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. 2016). The cross-loadings are the main tactic to evaluate the discriminant validity of the indicators. Specifically, an item's outer loading on the related construct should be maximal than any of its cross-loadings on other constructs. The discriminant validity evaluation of the measurement model using the cross-loadings approach is presented in Appendix X. As seen, all the items capturing higher loads on their constructs than other construct. So, the cross-loading discriminant validity is established.

The second path to assessing discriminant validity is the Fornell-Larcker criterion. This approach compares and matches the square root of the average variance extracted values with the construct correlations. The square root of each construct's average conflict extracted should be greater than the construct's highest correlation with any other construct. This criterion's logic is based on the concept that a latent variable shares more variance with its related indicators than any other construct. Table (4.55) represents the Fornell-Larcker criterion of the measurement model.

Table (4.55): Fornell-Larcker criterion of the measurement Model

	BS	CI	ES	GLS	IS	PM	PQ	QS
BS	**0.815**							
CI	0.75	**0.834**						
ES	0.563	0.545	**0.766**					
GLS	0.746	0.827	0.554	**0.873**				
IS	0.684	0.676	0.492	0.697	**0.807**			
PM	0.768	0.777	0.643	0.82	0.731	**0.841**		
PQ	0.715	0.688	0.564	0.728	0.609	0.705	**0.818**	
QS	0.619	0.671	0.508	0.703	0.566	0.664	0.719	**0.874**

The diagonal entries represent each AVE construct's square root; the other entries are the correlations between separate entries. The results indicate that each AVE construct's square roots are more significant than its correlations with other constructs. So, the discriminant validity is conducted to the measurement model.

Another tacit may be used as an alternative to the previous two mentioned paths is Heterotrait-monotrait ratio (HTMT). This test is one of the best measurements to assess the discriminant validity. HTMT is the proportion of the between trait correlations to the within trait correlations, the threshold value of HTMT is 0.9, any value more than 0.9 is indicates to lack of discriminant validity (Henseler et al., 2015).

Table (4.56) shows the HTME test values, the HTMT values of the constructs are less than the cut value (0.9). So, this indicates that the discriminant validity is archived also.

Table (4.56): HTMT Assessment

	Quality of Programs	**Quality System**	**TQM Practices**
Quality of Programs			
Quality System	0.806		
TQM Practices	0.843	0.776	

4.7 Assessment of the Structural Model

In this section, the structural model is evaluated and tested in terms of coefficient of determination R^2, effect of size f^2, predictive relevance Q^2, and goodness of fit of the model, collinearity, and hypothesis testing.

4.7.1 Coefficient of Determination (R^2)

The coefficient of determination is the most frequently used measure to evaluate the structural model. The predictive power of the model is captured and calculated by the R2 coefficient. This coefficient clarifies the amount of variance in the dependent constructs

explained by independent constructs related to it (Hair, J. F., Sarstedt, M., Ringle, C. M., & Mena, J. A. 2012).

The R^2 values are in the range from 0 to 1. As this value becomes closer to 1, this indicates that the model predictive power is accurate. The research complexity and the research field are the main factors that determine the acceptable R^2 threshold value.

Experts gave more than one judgment regarding the coefficient of determination value to be acceptable, Chin (1998) suggested the following scale: R^2 values of more than 0.67 are considered as substantial, values between (0.33) to (0.67) are considered as moderate. Values between (0.19) to (0.33) are considered weak. Cohen (1988) also introduced another scale: R^2 values of more than 0.26 are regarded as substantial, values between (0.13) to (0.26) are considered moderate, and values between (0.02) to (0.13) are considered weak.

On the other hand, Falk, R. F., & Miller, N. B. (1992) suggested that the minimum acceptable level of R^2 is 0.1. The R^2 results are shown in table (4.57).

Table (4.57): R^2 Evaluation

Dependent Variable	**R^2**	**Result (Cohen 1988)**	**Result (Chin 1992)**
Quality System	0.53	Substantial	Moderate
Programs Quality	0.66	Substantial	Moderate (Very close to Substantial)

The results indicate that the quality system has an R^2 value of 0.53. This means that 53% of the quality system's variation is explained by the TQM practices as the independent

variable. According to Cohen (1988), this value is considered substantial and moderate according to Chin (1992).

In the same way, program quality has an R^2 value of 0.66. This means that 66% of the programs' quality variation is explained by the two independent variables (i.e., TQM practices & quality system). According to Cohen (1988), this value is considered substantial and moderate according to Chin (1992).

4.7.2 Effect Size (f^2)

The effect size f2 is also another important indicator of the quality of the structural model. This criterion illustrates the relative effect of the specific independent variable on another dependent one regarding the changes and variations of the R2 (Chin, W. W. 1998).

Cohen, J. (1988) suggested the following scale regarding the effect size: f^2 values equal and more than 0.35 are considered significant, f2 values in the range 0.15 to 0.35 are medium, f^2 values in the range 0.02 t0 0.15 are small, and less than 0.02 are rejected. The f^2 results are shown in table (4.58). The results indicate that TQM practices have a significant effect size of 1.135 and 0.409 on quality system variable and program quality variable. Simultaneously, the quality system has a medium effect size of 0.140 on the program quality variable.

Table (4.58): f^2 Evaluation

Path	f^2	Result (Cohen 1988)
TQM → Quality System	1.135	Large
TQM → Program Quality	0.409	Large
Quality System → Program Quality	0.140	Medium

4.7.3 Predictive Relevance (Q^2)

The predictive relevance measure Q^2 is an indicator of the predictive capability of the structural model. When a PLS path model displays predictive power or relevance, it strictly forecasts data not used in the model assessment. Blindfolding is the primary process used to obtain the Q^2 values. The predictive relevance can be calculated using two approaches, the cross-validated redundancy, and the cross-validated communality. Q^2 values greater than zero indicate that the model has predictive relevance for a particular construct. While values equal to zero and below point to a loss of predictive relevance (Hair Jr, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. 2016). Table (4.59) represents the predictive relevance values.

Table (4.59): Q^2 Evaluation

Dependent Variable	Sum of Squared Observations	Sum of squared Errors	Q^2= (1-SSE/SSO)
Quality System	1705	976.705	0.427
Program Quality	1364	817.16	0.401

The phrase (1-SSE/SSO) is used to estimate the Q^2 value. The results indicate that the quality system-dependent variable has a Q^2 value of 0.427, and the program's quality dependent variable has a predictive relevance Q^2 value of 0.401. Thus, the estimated PLS-SEM model has a predictive relevance since the Q^2 is more than zero.

4.7.4 Goodness of Fit (GoF)

It's the global fit of model and it intergrade both the Measurement model and Structural model together (Henseler, J., & Sarstedt, M. 2013) .The statistical equation that represents this index is:

GoF= Square Root (R2 average X The average of AVE)

GoF= $\sqrt{}$(0.71*0.59)

GoF=0.42

(Wetzels et al., 2009) suggested the following scale regarding the GoF values, GoF values equal and more than 0.36 are considered large, GoF values in the range 0.26 to 0.36 are medium, GoF values in the range 0.1 to 0.25 are small, and less than 0.1 are considered not fit. The GoF result 2 which considered as large fit.

4.7.5 Item Loadings

Outer loadings are an essential method for evaluating the contribution of a reflective indicator and are used to examine if a dimension contributes to form a certain measure or not. The table (4.60) represents the outer loadings.

Table (4.60): The Outer Loadings

Path	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
BS → TQM	0.196	0.195	0.007	29.465	0.000*
CI → TQM	0.194	0.194	0.006	30.837	0.000*
ES → TQM	0.135	0.136	0.011	12.429	0.000*
GLS → TQM	0.235	0.234	0.007	31.861	0.000*
IS → TQM	0.173	0.172	0.007	25.130	0.000*
PM → TQM	0.214	0.213	0.006	33.916	0.000*
TQM→QS	0.729	0.730	0.030	24.572	0.000*
TQM→PQ	0.547	0.552	0.055	9.895	0.000*
QS→PQ	0.320	0.315	0.060	5.306	0.000*

(Significant at P*< 0.05, T- Statistics >1.96)

The conducted results indicate that the six TQM dimensions of beneficiary satisfaction, continuous improvement, employee satisfaction, governance and leadership, infrastructure, and process management have significant weights at level 0.05. This ensures that the six dimensions contribute to forming the leading construct TQM practices. The same thing to the other two dimensions that reflect the quality programs variable and items that reflect the quality system variable contributes to forming the two constructs at level 0.05.

4.7.6 Hypotheses Testing

The Hypothesis testing by the PLS-SEM is a very trivial process, but it's essential to recall the previously developed hypothesis.

H1: TQM Practices positively affects quality system in Palestinian TCs.

H2: TQM Practices positively affects programs quality in Palestinian TCs.

H3: Quality system positively affects programs quality in Palestinian TCs.

Hypothesis tests, including the structural relationship between the main constructs, will be only as reliable as the measurement models are clarifying how these constructs are measured. The PLS-SEM bootstrapping was run 300 iteration to conduct the hypothesis testing results as in table (4.61).

The results indicate that the path coefficient between the TQM father construct and system quality is equal to 0.729; this coefficient is considered significant at level 0.05. This means that the TQM practices positively affect the quality system in Palestinian TCs. As a final result, the developed hypothesis is accepted. This conclusion corresponds to previous studies that ensured a direct positive impact of TQM practices on quality systems in HEIs.

Otherwise, the results indicate that the path coefficient between the TQM practices and program quality is equal to 0.547; this coefficient is considered significant at level 0.05. This means that the TQM practices positively affect the quality of the programs in Palestinian TCs. Thus, the developed hypothesis is accepted. This conclusion corresponds to previous studies that ensured a direct positive impact of TQM practices on program quality in HEIs. This harmonizes with the previous studies that confirmed a direct positive effect of TQM practices on quality systems in HEIs (Mahamda, M. 2019).

Table (4.61): Path Analysis

	Path Coefficient	STDEV	T-Values	P-Values	Result
TQM Practices →Quality System	0.729	0.031	23.851	0.000*	Supported
TQM Practices → Programs Quality	0.547	0.060	9.117	0.000*	Supported
Quality System → Programs Quality	0.320	0.065	4.941	0.000*	Supported

P*< 0.05, T- Statistics >1.96)

Finally, the results indicate that the path coefficient between the quality system and program quality is equal to 0.320; this coefficient is considered significant at level 0.05. This means that the quality system positively affects the quality of the programs in Palestinian TCs. Thus, the developed hypothesis is accepted. This conclusion is on compatibility with previous studies that ensured a direct positive impact of quality systems on program quality in HEIs.

The indirect effect of the TQM practices on program quality through quality systems can also be tested; the expected indirect total effect is presented in table (4.62).

Table (4.62): Indirect Effect of TQM Practices

Path	Path Coefficient	STDEV	T-Values	P-Values
TQM Practices →Quality System	0.233	0.047	4.921	0.000

The final results indicate that the TQM practices positively impact program quality with a coefficient of 0.547 and have an indirect effect with a coefficient of 0.233. So, the final total effect has a coefficient of 0.780.

As a summary of the hypothesis testing process, the main three main hypotheses are tested and accepted within the different paths.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1. Overview

This chapter is the last one, representing the study's conclusions; the main recommendations are introduced and summarized. Future research directions are discussed, and the main obstacles and limitations are declared. Finally, contributions to theory and practices also were discussed.

5.2. Discussion of Findings

This research explored the extent of application of the TQM dimensions in the Palestinian TCs through adopting a logical and comprehensive quality assessment model.

The proposed model provides a comprehensive understanding of the variables based on employee's and beneficiary's satisfaction and top management commitment, day-to-day operations, educational TVET infrastructure, and the pursuit of continuous improvement and development. All together affect the quality system in Palestinian TCs, which virtually affects the program's quality.

The total level of implementation TQM practices in Palestinian TCs is equal to 79.1%, this percentage is considered a good and highly acceptable. The beneficiary satisfaction implementation level is equal to 81%, continuous improvement is equal to 78/%, Governance, Leadership, & Strategic Planning is equal to 77.6%, educational infrastructure is equal to 79.2%, process management is equal to 80%, and employees satisfaction is equal to 79%. All of these results answer the research first question.

Moreover, the results reveal that Beneficiary Satisfaction, Process Management, and Infra-structure are the main three dimensions of the highest level of TQM among the six dimensions of TQM practices. While, Employees Satisfaction, Governance - Leadership - Strategic Planning, and Continuous Improvement are the lowest implemented TQM practices in Palestinian TCs.

These results can be interpreted in the Palestinian context as that higher education institutions seek primarily to gain students' and employee's satisfaction as internal customers, by meeting their needs as well as pursuing solutions to the problems they face.

On the other hand, Palestinian TCs show a remarkable interest in providing and developing educational infrastructure, such as laboratories, workshops, tools and consumable materials, which is essential in order to ensure the quality of technical vocational education and training. Since, this type of education and training depends mainly on providing students with technical skills to join the labor market.

Also, since this type of education is linked to partnership with the labor market and the follow-up of students and graduates in workshops, the daily operations in it extend beyond the walls of the college itself, this explains to the practices of following up the daily operations is of high implementation, As well as the daily operations that take place within the college itself in terms of following up the daily operations. While the low level of implementation of governance and strategic planning is interpret by the lack of some regulations, laws and regulations that manage and control TCs operations. As well as a lack of central laws by the MoHE, as the basic law of governmental higher education

institutions that was released in the middle of last year. Also, some institutions have regulations and laws that were approved years ago and have not been updated or reviewed to suit the rapid changes.

As for the low level of implementation of continuous improvement practices, it is explained by the lack of quality and development departments in Palestinian TCs. Also, some colleges do not have a quality system or procedures manual, moreover there is no dissemination of a culture of continuous improvement.

Finally, the low level of satisfaction of beneficiaries can be explained by not meeting expectations of employees such as promotions, incentives, participating in scientific conferences, as well as scholarship.

Based on the findings, there is a positive relationship between TQM and the quality of programs in Palestinian TCs. The model reveals that governance & leadership, process management, beneficiary satisfaction, and continuous improvement have stronger impact on the TQM. Simultaneously, the last two variables (employee satisfaction and infrastructure) are also significant but less than the mentioned ones.

This result highlights the importance of strategic planning and top management commitment in applying TQM practices (Dubey, R., Gunasekaran, A., Childe, S. J., Papadopoulos, T., Hazen, B. T., & Roubaud, D. 2018).

On the other hand, the TQM practices substantially impact program quality either directly or indirectly. Maybe this result is not in line with the traditional orientation that the teaching process is the focal point in the program's quality (Dwaikat, N. Y. 2020).

The results also indicate that the TQM practices have a more substantial impact on the quality system in Palestinian TCs, while the same TQM practices have less impact on the programs' quality but still significant.

The coefficient of determination R^2, which is the program quality model's predictive power, is equal to 0.66, which point to 66% is explained by the two main variables of TQM and QS. Besides, the R^2 of the Quality system is equal to 0.53, which means the TQM dimensions explain 53% of the variance in the quality system. According to what is mentioned above, the structural model is rated as substantial and more than moderate since the coefficient of determination R^2 values more than 50% (Hair et al. 2011).

On the other hand, the effect size of TQM alone on the quality of programs variable is described as large since the effect size coefficient value f^2 is 0.409 (Chin, W. W. 1998). So, the research third question also is answered.

5.3. Conclusions

The TQM practices proved to be an excellent tool and valid scale to assess and evaluate the programs' quality in the Palestinian context. The overall TQM Practices implementation in Palestinian TCs ranges between 3.96±0.68 so that 79.2% of the respondents perceive that the TQM practices range between 3.28 (Acceptable) and 4.64 (Very High). The level of TQM practices in Palestinian TCs significantly varies due to age, work certification of respondents, work experience, TCs classification about establishment, and TCs location.

The private TCs are more oriented and pay attention to TQM practices, while the governmental ones are less oriented and attractive toward the TQM practices. The same applies to TCs in Gaza Strip, as they follow the culture of the TQM approach more than the TCs in the West Bank. Also, the administrative employees and those ages between (20) to (34) years are more interested and adoption to TQM practices than the others.

The overall level of adoption of a quality system in Palestinian TCs ranges between 3.81±0.91 so that nearly 76.2% of the respondents perceive that the quality system adoption ranges between 2.9 (Acceptable) and 4.72 (High). The level of quality system in Palestinian TCs significantly varies due to respondents' age, work experience, TCs classification about establishment, and TCs location.

This means that the private TCs adopt quality systems more than the governmental ones. The same thing applies to TCs in Gaza Strip, where TCs adopt quality systems more than TCs in West Bank. Also, the respondents who are between 20-34 years and have work experience of less than five years are more interested and attractive toward quality systems adoption than the others.

The overall level of program quality in Palestinian TCs ranges between 4.04±0.82 so that nearly 80.8% of the respondents perceive that the program's quality ranges between 3.22 (Acceptable) and 4.86 (High). The level of program quality in Palestinian TCs significantly varies due to work experience, technical college's classification about establishment, and technical college's location.

This means that level of program quality in private TCs is higher than in the governmental ones. The same is in the TCs in Gaza Strip, as its quality level is higher than in TCs in West Bank.

The TQM in Palestinian TCs is positively affected by Employees Satisfaction, Beneficiary Satisfaction, Continuous improvement, Infrastructure, Process Management, and Governance & Leadership.

On the other hand, TQM Practices positively affect the quality system at Palestinian TCs. Also, TQM Practices positively affect, directly and indirectly via quality system, programs quality at Palestinian TCs. Finally, the quality system at Palestinian TCs positively affects program quality.

5.4. Contribution to Theory

This research contributes to theory on how to measure quality level by developing a holistic view in which it integrates the main TQM practices in a conceptual model to measure and asses the quality in Palestinian TCs.

Some of them are related to management, and others are related to education infrastructure and environment; others are related to quality systems. The conceptual model aims to evaluate the quality of academic programs at the Palestinian TCs. This can be done by reviewing the related literature and then designing the proposed theoretical model.

The model is empirically examined using the PLS-SEM technique; 341 responses were collected from top management, lecturers, administrative, and trainers in Palestinian TCs

5.5. Contribution to Practice

This research contributes to practices by provides insights to top management in MoHE to adopt a TQM module to assess and enhance the quality level in Palestinian TCs by guiding decision-makers and all relevant stakeholders in an in-depth understanding of the quality of academic programs in the Palestinian TCs, and all the relationships between the variables that affect academic programs. This draws a visionary future and roadmap for the top management to adopt a clear and comprehensive approach to raise and enhance the quality of programs and evaluate them. This will be an added value since there is no clear and explicit quality management system in some of Palestinian TCs

5.6. Recommendations

Based on the conclusions in the previous section, the following recommendations are introduced:

1. Palestinian TCs in West Bank & Gaza Strip must periodically measure and inspect the TQM practices they adopt combined with the AQAC standards. This is very important since measuring the quality level is the basis of continuous improvement.
2. Palestinian TCs must adopt the TQM approach as a culture and integrate this approach with the primary TVET system. TQM practices should ensure that the results of TVET are linked to the labor market requirements to ensure the employment of TVET graduates through the effective and efficient use of available resources following TQM practices. The TVET system presents TQM as a strategic issue focusing on senior management leaders, continuous improvement, and finding standard solutions to problems using statistics to ensure program quality and develop indicators for best

practices. On the other hand, since all TVET personnel are responsible for implementing quality, it is imperative that Quality training is available to all.

3. Palestinian TCs should show interest in the process of continuous improvement. The philosophy of continuous improvement is one of the TQM methodology pillars, which needs the top management's support and encouragement through appropriate material and moral incentives. Every technical college must develop a continuous improvement team that is consisting of multi-tasks employees. This team must be trained on developing and applying development methodologies, such as Six Sigma. The improvement process must be comprehensive, includes both the physical and human resources. Human resources development is a critical issue in this field. Developing the employees' skills, both academic and administrative staff is one of the main pillars of the continuous improvement process, such as participating in scientific conferences and enhancing them to participate in scientific research. On the other hand, Palestinian TCs should pay attention to the fundraising since the financial resourcing is significant in continuous improvement.

   The monitoring and evaluation process is an entire system in continuous improvement; TCs must establish and initialize such a system. The monitoring and evaluation process is complimentary with Diming's cycle (Plan, Do, Check, Act), which is the core of the continuous improvement process.

4. Palestinian TCs must be characterized by organizational agility and keep in line with developments by adopting flexible and responsive governance model to all surrounding interactions and adopt a lean management approach. Altbach, P. G., & Salmi, J. (Eds.). (2011) stated that successful colleges worldwide are distinguished by

characteristics such as leadership, government policies, financing, the ability to continually focus on a specific and clear set of institutional and strategic goals and policies, and the development of a sober academic culture the efficiency of the staff.

Trakman, L. (2008) proposed four models for higher education institutions' governance through his study of the British, Australian, and American models: the academic model, the corporate model, the trustee's model, and the representative model.

The top management of the Palestinian TCs must show a strong commitment to achieving the college's strategic goals and involve employees in developing strategic and operational plans and updating the regulations and instructions.

This leads the TCs to be more creative and innovative so that the graduates of these colleges can compete in the local and regional labor market and contribute to achieving the sustainable development national goals.

5. Palestinian TCs must show strong interest in employee satisfaction, follow up their needs and obtain loyalty, as this constitutes an essential factor in raising their human capabilities and increasing their commitment to the applicable laws and regulations. This also encourages them to be more committed to their tasks and enhances their entrepreneurial spirit. The incentives and promotions are vital issues to satisfy them.
6. The MoHE should consider integrating the Accreditation and Quality Assurance Commission AQAC with the TQM standards.
7. The governmental decision-makers in the MoHE must pay more attention to the TQM practices in Governmental TCs. Despite providing material, financial and logistical support by donors and the Ministry of planning and finance, the level of TQM practices, quality system, and program quality in these institutions are shorter than in

private ones. Since the Palestinian government has taken a decision to establish the National Commission for TVET in Palestine as a body affiliated to the Council of Ministers, and it was approved by an official decision. Also, it was approved as a political partner with donors and supporters. One of the most important main tasks of the unified commission is to approve and license technical programs and enhance the quality of TVET system outputs through enabling the labor market leading the TVET sector with the National TVET commission.

5.7. Limitations

Since the study's findings depend on the views of the employees in Palestinian TCs, who are working in different positions, special attention should be given to the generalization of results. On the other hand, despite the West Bank and the Gaza Strip's geographical distance, the researcher obtained data from TCs in Gaza Strip and included it in his research, but it was relatively few.

Finally, due to the emergency state in Palestine regarding the Covid-19 pandemic, this limited the researcher's movement and mobility.

5.8. Suggestions for Future Research

Future research is recommended to evaluate and assess the programs' quality in Palestinian TCs from other stakeholders' perspectives than the employees, such as local community and labor market operators. Also, future researchers are invited to study more variables that influence TQM and program quality.

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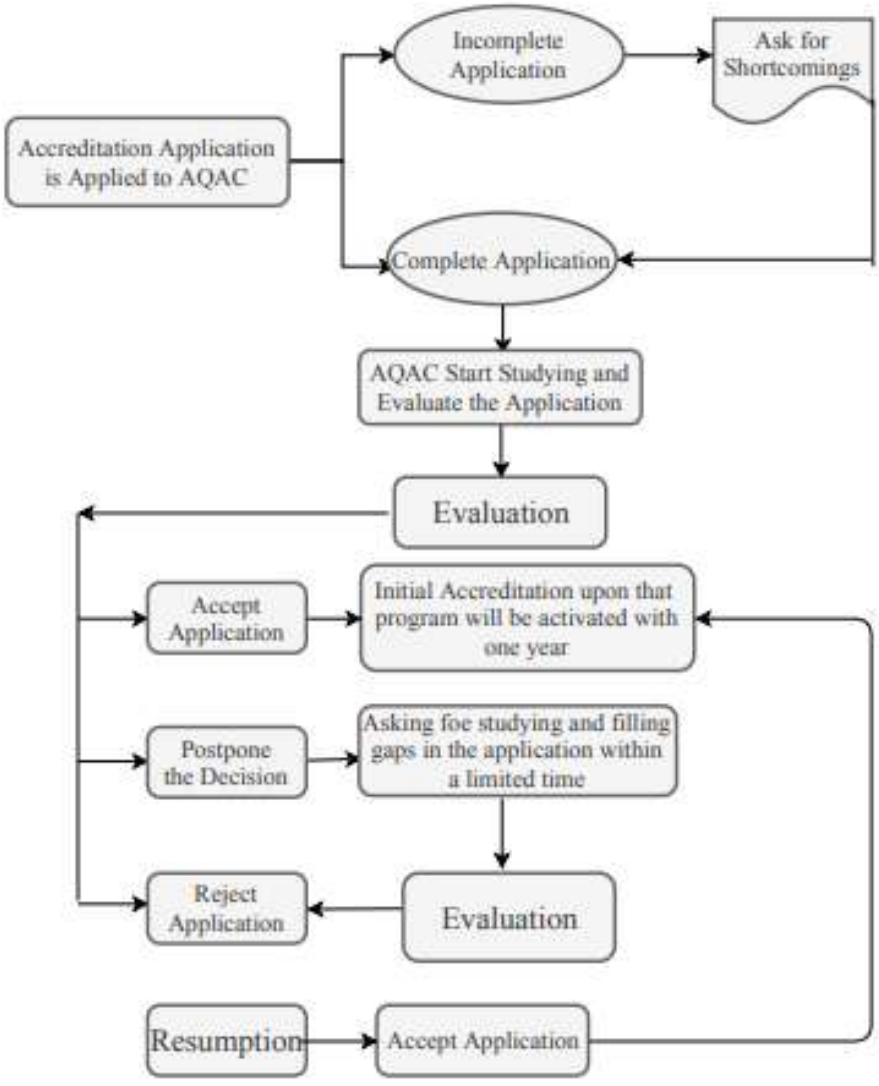
Appendix I: Distribution of HEIs, MoHE Annual Statistical Report 2020

Institution Type	Supervision	West Bank (W.B)	Gaza Strip (G.S)	Total
Traditional Universities	Governmental	2	1	3
	Public	6	2	8
	Private	2	2	4
	Sub-Sum	**10**	**5**	**15**
University Colleges	Governmental	4	3	7
	Public	1	--	1
	Private	5	3	8
	UNRWA	1	--	1
	Sub-Sum	**11**	**6**	**17**
Technical Colleges	Governmental	1	1	2
	Public	6	1	7
	Private	4	2	6
	UNRWA	1	2	3
	Sub-Sum	**12**	**6**	**18**
Open Education (2 Universities)	Public	2 Universities, one of them is private, located in West Bank, and the other is public, situated in the West Bank and Gaza Strip		1
	Private			1
The total Sum		**35**	**17**	**52**

Appendix II: Accreditation Program Flow Chart Process



Appendix III: Palestinian Technical Colleges List

	TG Name	City	Community/ Universal College	Classification
1	Palestine Technical College/Palestine Technical University-Kadoori	Tulkarem	CC	Governmental
2	Hisham Hijjawi College of Technology	Nablus	CC	Public
3	An-Najah National Community College	Nablus	CC	Public
4	Alrawda Community College	Nablus	CC	Private
5	Andaleebamad Community College	Nablus	CC	Private
6	Ramllah Women's Training Centre	Ramallah	CC	UNRWA
7	Palestine Technical College/Palestine Technical University-Kadoori/ Ramallah Branch	Ramallah	CC	Governmental
8	Modern University College	Ramallah	UC	Private
9	Inash Alosra Community College	Ramallah	CC	Public
10	College of Community Health	Ramallah	CC	Public
11	Al-Ummah University College	Jerusalem	UC	Governmental
12	Al-Ibrahimieh Community College	Jerusalem	CC	Private
13	Hebron Nursing Community College	Hebron	CC	Public
14	Palestine Technical College/Palestine Technical University-Kadoori/ Al-aroub Branch	Hebron	UC	Governmental
15	Applied Professions College/Palestine Polytechnic University	Hebron	CC	Public
16	Applied Professions College/Hebron University	Hebron	CC	Public
17	Talitha Kumi Community College	Bethlehem	UC	Private
18	Dar Al-Kalima University College	Bethlehem	UC	Private
19	Bethlehem Bible University College	Bethlehem	UC	Private

20	University College for Applied Science	Gaza Strip	UC	Public
21	University College for Science & Technology –Khanynis	Gaza Strip	UC	Governmental
22	College of Intermediate Studies/Alazhar University	Gaza Strip	CC	Public
23	Gaza Community Training College	Gaza Strip	CC	UNRWA
24	Arab College for Applied Science	Gaza Strip	CC	Private
25	Gaza Community College for Tourism Studies	Gaza Strip	CC	Private
26	Alaqsa Community College	Gaza Strip	CC	Governmental
27	Khan Younis Training College	Gaza Strip	CC	UNRWA
28	Palestine Technical College Dair Al-balah	Gaza Strip	CC	Governmental
29	Palestine Nursing College-Khanynis	Gaza Strip	UC	Governmental
30	University College of Ability Development	Gaza Strip	UC	Private
31	Intermediate Community College/ Gaza University	Gaza Strip	CC	Private
32	Applied Professions College/Palestine Ahliya University	Bethlehem	CC	Private
33	Intermediate Community College/ Palestine University	Gaza Strip	CC	Private
34	Intermediate Community College/ Al-israa University	Gaza Strip	CC	Private
35	Applied Professions College /Jerusalem University	Jerusalem	CC	Public

Appendix IV: Interview Questions (English)

الجامعة العربية الأمريكية
ARAB AMERICAN UNIVERSITY

INTERVIEW QUESTIONS

Dear Participant,

The researcher is carrying out a study titled "**The Impact of Total Quality Management on the Programs Quality in Palestinian Technical Colleges**" in partial fulfillment of the requirements of Master's degree in Quality Management from the Arab American University, Ramallah.

The researcher is interested in conducting interviews with experts working in the field of Technical and Vocational Education & Training in Palestine for an in-depth understanding of the practices of total quality management and its impact on the quality of accredited programs in Palestinian technical colleges.

Due to your extensive experience in this field, you can provide a more accurate picture in this regard, please kindly participate and answer the interview questions.

Thank you.

Researcher

Rabee` Abu-Shamleh

1. What are the key practices for managing the overall quality that are applied in the college in which you operate?

_____

2. According to the first question, according to your point of view, what are the most important TQM practices that have a clear and tangible impact?

_____

3. In your opinion, what are the advantages and added value resulting from the application of TQM practices in the Technical Colleges?

_____

4. In your opinion, what are the most important obstacles that limit the application of total quality management practices in Palestinian Technical Colleges?

_____

5. In your opinion, how can TQM practices affect the quality of accredited programs? Please clarify.

_____

6. Do you think that the application of total quality management practices will affect the quality of programs in Palestinian Technical Colleges? If the answer is yes, then how?

_____

7. Do you think that the correct application of TQM practices will affect the quality of the accredited programs in the college in terms of operator satisfaction? If the answer is yes, then how?

_____

8. Do you think that the total quality management methodology is the optimal and appropriate model for application in Palestinian Technical Colleges instead of applying any other quality system?

_____

Thank You

Appendix V: Interview Questions (Arabic)

الجامعة العربية الأمريكية
ARAB AMERICAN UNIVERSITY

أسئلة المقابلة

عزيزي المُشارك،

يجري الباحث دراسة بعنوان " **أثر إدارة الجودة الشاملة على جودة البرامج في الكليات التقنية الفلسطينية** " لإتمام رسالة التخرج لمتطلبات درجة الماجستير في إدارة الجودة من الجامعة العربية الأمريكية ، رام الله.

يهتم الباحث بإجراء مقابلات مع الخبراء ,العاملين في مجال التعليم المهني والتقني فلسطين لفهم متعمق لممارسات إدارة الجودة الشاملة وأثرها على جودة البرامج المعتمدة في الكليات التقنية الفلسطينية.

الباحث هو الشخص الوحيد الذي يمكنه الوصول إلى هذه المعلومات، علماً بأن الاجابات ستستخدم لغايات البحث العلمي فقط

نظرًا لخبرتكم الواسعة في هذا المجال بإمكان حضرتكم تقديم صورة اكثر دقة في هذا الصدد ، يرجى التكرم بالمشاركة والإجابة على أسئلة المقابلة.

شاكراً لكم مساعدتكم وجهدكم ووقتكم.

الباحث: ربيع ابو شملة

الجامعة العربية الأمريكية

<u>الجزء الأول:</u> معلومات عامة

اسم المُشارك **التوقيع**

1. العنوان:
2. المسمى الوظيفي:
3. سنوات الخبرة:
4. تاريخ المقابلة:

الجزء الثاني: ممارسات إدارة الجودة الشاملة وأثرها على جودة البرامج في الكليات التقنية الفلسطينية

1. ما هي الممارسات الرئيسية لإدارة الجودة الشاملة التي يتم تطبيقها في الكلية التي تعمل بها؟

_____

2. تبعا للسؤال الاول وفق وجهة نظرك، ما هي اهم ممارسات ادارة الجودة الشاملة التي لها تأثير واضح وملموس؟

_____

3. برأيك ، ما هي مزايا والقيمة المضافة الناتجة عن تطبيق ممارسات إدارة الجودة الشاملة في الكلية؟

_____

4. في رأيك ما هي أهم العقبات التي تحد من تطبيق ممارسات ادارة الجودة الشاملة في الكليات التقنية الفلسطينية بشكل عام؟

_____

5. في رأيك ، كيف يمكن أن تؤثر ممارسات إدارة الجودة الشاملة على جودة البرامج المعتمدة؟ يرجى التوضيح.

6. هل تعتقد أن التطبيق الصحيح لممارسات إدارة الجودة الشاملة سيؤثر على جودة البرامج في الكليات التقنية الفلسطينية في الكلية؟ إذا كانت الإجابة نعم، فكيف؟

_____

_____

7. هل تعتقد أن التطبيق الصحيح لممارسات إدارة الجودة الشاملة سيؤثر على جودة البرامج المعتمدة في الكلية من حيث رضا المشغلين؟ إذا كانت الإجابة نعم ، فكيف؟

_____

_____

8. هل تعتقد أن منهجية ادارة الجودة الشاملة هي النموذج الأمثل والمناسب لتطبيقه في الكليات التقنية عوضاً عن تطبيق اي نظام جودة آخر؟

_____

_____

شكرا جزيلاً

Appendix VI: Questionnaire (English)

الجامعة العربية الأمريكية
ARAB AMERICAN UNIVERSITY

QUESTIONNAIRE

Dear Participant,

The researcher is carrying out a study titled "**The Impact of Total Quality Management on the Programs Quality in Palestinian Technical Colleges**" in partial fulfillment of the requirements of Master's degree in Quality Management from the Arab American University, Ramallah.

The attached questionnaire aims to collect the primary data about Total Quality Management practices at Palestinian Technical Colleges. The importance of the data provided in achieving the study objectives, please answer the questions accurately, as it does not take more than 10 minutes, the data will be used for scientific research purposes only.

Thank you.

Researcher

Rabee` Abu-Shamleh

Section One: Respondents' Characteristics

Please choose the appropriate response:

1. Gender:

1. Male
2. Female

2. Age:

1. 20-34
2. 34–44
3. Over 44.

3. Work Field:

1. Academic
2. Administrative

4. Education Degree:

1. University Degree (Diploma or BA)
2. Postgraduate (Master or PhD)

5. Number of years working in the College (years of experience):

1. Less than 5 years
2. (5–15) years
3. More than 15 years

6. Classification of the college in reference of AQAC.

1. University College (Diploma & BA)
2. Intermediate College (Diploma)

7. Student`s Number.

1. Less than 300 student
2. (300-1000) student
3. More than 1000 student

8. Number of discipline:

1. (3-5) discipline
2. (6-10) discipline
3. More than 10 discipline

9. College location

1. West Bank
2. Gaza Strip

10. Classification of the college in reference to Establishment:

1. Governmental
2. Public
3. Private

Section Two: TQM Practices

Please indicate the level of agreement with each of the following statements on the extent of implementation of TQM practices:

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Dimension 1: Beneficiary satisfaction					
1. Students' needs are met.					
2. Extracurricular activities are carried out to strengthen the relationship between students and the staff faculty.					
3. The top management is keen on solving problems that face faculty members.					
4. The top management is keen to follow up the complaints of students and employees.					
5. Students are advised according to their interest.					
Dimension 2: Continuous Improvement					

1. The top management is working fundraising for development and improvement.					
2. The top management is keen to develop human resources.					
3. Feedback contributes to improving the output					
4. The monitoring and evaluation processes are carried out regularly					
5. Employees are take part in scientific conferences and workshop, and have scholarships.					
Dimension 3: Governance, Leadership, Strategic Planning					
1. The college regulations and instructions are updated regularly.					
2. Actual application of laws and regulations complies with approved regulations.					
3. The college's top management shows interest in achieving the goals of the National Strategy for TVET.					
4. The employees take part in preparing the college's strategic plan					
5. Top management shows a strong commitment to the executive action plans related to the strategic plan.					
Dimension 4: Educational Infrastructure					
1. Classrooms, laboratories, workshops and technical equipment are provided in proportion to the offered majors.					
2. Technology & communication tools are provided according to the disciplines offered.					
3. Green energy sources are provided in the college.					
4. Health facilities are provided with high quality specifications that fit to students and employees.					
5. Facilities for students and workers with special needs are provided.					
Dimension 5: Process Management					
1. Follow up the chain of operations and daily work in the college.					
2. All departments of the college cooperate and integrate in implementing the various plans and operations.					
3. Time and cost factors are taken into consideration in planning.					
4. The top management and employees make great effort to prevent errors.					
5. Scientific statistical methodologies and tools are used in data analysis.					
Dimension 6: Employees Satisfaction					
1. The college staff shows compliance with the laws and					

regulations.					
2. The college employees carry out the functional tasks assigned to them.					
3. The promotions and incentives are satisfactory to the employees.					
4. College staff shows entrepreneurial spirit.					
5. College employees show loyalty to the college.					

Section Three: Part One (Quality System)

Please indicate the level of agreement with each of the following statements:

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.The college has quality standards such as ISO 9001.					
2.Quality assurance procedures are applied according to announced standards.					
3.College employees are trained to be familiar with quality practices.					
4.The College's quality practices implementation manual is used.					

Section Three: Part two (Quality of Programs)

Please indicate the level of agreement with each of the following statements:

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Academic study plans are reviewed and updated periodically.					

2.	The majors & programs are offered in the college to meet labor market needs.					
3.	The offered programs and majors encourage creativity, innovation and leadership.					
4.	The expected learning outcomes are published.					
5.	The quality assurance of the proposed programs is ensured through specific policies and procedures.					

Thank You

Appendix VII: Questionnaire (Arabic)

الجامعة العربية الأمريكية
ARAB AMERICAN UNIVERSITY

الجامعة العربية الامريكية

كلية الدراسات العليا

برنامج: ادارة الجودة

عزيزي المستجيب،،،

يجري الباحث دراسة بعنوان " **أثر إدارة الجودة الشاملة على جودة البرامج في الكليات التقنية الفلسطينية**" وذلك لإتمام رسالة التخرج لمتطلبات درجة الماجستير.

يهدف استخدام هذه الأداة إلى جمع بيانات حول ممارسات إدارة الجودة الشاملة في الكليات التقنية الفلسطينية وأثرها على جودة البرامج والتخصصات، ونظراً لأهمية البيانات التي تقدم من قبلكم في تحقيق أهداف الدراسة، يرجى من حضرتكم الإجابة على الأسئلة بدقة، حيث أنه لا تستغرق الإجابة أكثر من 10 دقائق، وسوف تستخدم البيانات لأغراض البحث العلمي فقط.

مع فائق الاحترام والتقدير،،،

الباحث: ربيع ابو شملة

بريد إلكتروني: rabee_abushamleh@yahoo.com

القسم الأول: الخصائص الديموغرافية

الرجاء اختيار الإجابة المناسبة:

1. الجنس:

- ذكر
- انثى

2. العمر:

- 20–34 عام
- اكبر من 44 عام
- 34–44 عام

3. المسمى الوظيفي:

- أكاديمي
- إداري

4. الدرجة العلمية:

- درجة جامعية (دبلوم او بكالوريوس)
- دراسات عليا ماجستير فاعلى.

5. عدد سنوات العمل في الكلية (سنوات الخبرة):

- اقل من 5 سنوات
- أكثر من 15 سنة
- 5–15 سنة

6. تصنيف الكلية بناء على تبعيتها وتأسيسها:

- حكومية
- أهلية
- خاصة

7. عدد التخصصات المعتمدة في الكلية:

- 3–5
- أكثر من 10

- 10-6

8. تقع الكلية في:

- المحافظات الشمالية (الضفة الغربية)
- المحافظات الجنوبية (قطاع غزة)

9. عدد طلبة الكلية الذين هم على مقاعد الدراسة حالياً:

- أقل من 300
- 300- 1000
- أكثر من 1000

10. يتم تصنيف الكلية حسب الهيئة الوطنية للاعتماد والجودة في مؤسسات التعليم العالي الفلسطينية:

- كلية جامعية (دبلوم وبكالوريوس)
- كلية متوسطة (دبلوم متوسط فقط)

القسم الثاني: ممارسات ادارة الجودة الشاملة (ممارسات ادارة الجودة الشاملة)

يرجى وضع علامة (X) عند المستوى الذي تراه مناسب مع كل من العبارات التالية حول مدى تنفيذ ممارسات إدارة الجودة الشاملة :

#	العبارة	غير موافق بشدة (1)	غير موافق (2)	محايد (3)	موافق (4)	موافق بشدة (5)
	المجال الأول: رضا المستفيد (المستفيدون الطلبة والعاملون)					
1	يتم تلبية احتياجات الطلبة بمجملها					
2	يتم تنفيذ أنشطة لامنهجية لتوطيد العلاقة بين الطلبة والهيئة التدريسية					
3	تحرص ادارة الكلية على حل المشكلات المهنية التي تواجه أعضاء هيئة التدريس					
4	تحرص ادارة الكلية على متابعة شكاوي الطلبة والعاملين					
5	يتم ارشاد وتوجيه الطلبة لما فيه مصلحتهم					
	المجال الثاني: التحسين المستمر					
1	تعمل الجهات ذات الاختصاص في الكلية على تجنيد الأموال للتحسين والتطوير					
2	تعمل ادارة الكلية على تطوير قدرات الكوادر البشرية					
3	تساهم التغذية الراجعة في تحسين المخرجات					
4	يتم تنفيذ عمليات المتابعة والتقييم بانتظام					
5	تحرص الكلية على ابتعاث الموظفين واشراكهم في المؤتمرات العلمية					
	المجال الثالث: الحوكمة والقيادة والتخطيط					
1	يتم تحديث اللوائح التنظيمية والتعليمات الناظمة في الكلية بانتظام					
2	يتوافق التطبيق الفعلي للأنظمة والقوانين مع اللوائح التنظيمية					

	المقرة					
3	تظهر الادارة العليا للكلية اهتماما في تحقيق أهداف الاستراتيجة الوطنية للتعليم والتدريب المهني والتقني					
4	تشرك الادارة العليا الموظفين في اعداد الخطة الاستراتيجية للكلية					
5	تظهر الادارة العليا للكلية التزاماً قوياً بالخطط التنفيذية المنبثقة عن الخطة الاستراتيجية					
	المجال الرابع: البنية التحتية التعليمية					
1	تعمل ادارة الكلية على توفير القاعات الدراسية والمختبرات والورش والمعدات الفنية بما يتناسب مع التخصصات المطروحة					
2	تعمل ادارة الكلية على توفير أدوات الاتصال التكنولوجي بما يتناسب مع التخصصات المطروحة					
3	تبدي ادارة الكلية اهتماما بتوفير مصادر الطاقة النظيفة					
4	يراعى في تصميم مباني الكلية توفير المرافق الصحية بمواصفات مقبولة لدى الطلبة والعاملين					
5	يتم العمل على توفير المرافق الخاصة بالطلبة والعاملين من ذوي فئة الاحتياجات الخاصة					
	المجال الخامس: ادارة العمليات					
1	يتم متابعة سلسلة العمليات والأعمال اليومية في الكلية					
2	تبدي ادارة الكلية اهتماماً لتعاون جميع أقسام الكلية في تنفيذ الخطط والعمليات المختلفة					
3	تراعي ادارة الكلية في عملية التخطيط عاملي الوقت والتكلفة					
4	تبذل ادارة الكلية أقصى جهد ممكن لتفادي حدوث الأخطاء					
5	يتم استخدام المنهجيات الإحصائية العلمية في تحليل البيانات					
	البعد السادس: رضا العاملين في الكلية					
1	يبدي موظفي الكلية التزاما بالأنظمة والقوانين					
2	يقوم موظفو الكلية بالمهام الوظيفية الموكلة إليهم					
3	الترقيات والحوافز مرضية للعاملين					

4	يظهر موظفو الكلية روح المبادرة في عملهم					
5	يبدي موظفو الكلية انتماءاً لمؤسستهم					

القسم الثالث (الجزء الاول):

#	العبارة	غير موافق بشدة (1)	غير موافق (2)	محايد (3)	موافق (4)	موافق بشدة (5)
	نظام الجودة					
1	يتم تطبيق معايير شهادات الجودة في الكلية مثل ISO 9001					
2	يتم تطبيق إجراءات ضمان الجودة وفق أسس واضحة ومعلنة في الكلية					
3	يتم تدريب العاملين في الكلية على ممارسات الجودة					
4	يتم استخدام دليل تطبيق ممارسات الجودة في الكلية					

القسم الثالث (الجزء الثاني):

#	العبارة	غير موافق بشدة (1)	غير موافق (2)	محايد (3)	موافق (4)	موافق بشدة (5)
	جودة البرامج والتخصصات					
1	يتم مراجعة وتحديث الخطط الدراسية بشكل دوري					
2	يتم طرح التخصصات في الكلية وفقاً لدراسات علمية لاحتياجات سوق العمل					
3	البرامج والتخصصات المطروحة تشجع على الابداع والابتكار					

	والريادة					
4	يتم نشر مخرجات التعلم المتوقعة للبرامج والتخصصات المطروحة					
5	يتم متابعة ضمان جودة مخرجات البرامج المطروحة من خلال سياسات واجراءات واضحة ومعلنة					

شكرا جزيلا،،،

Appendix VIII: Respondent`s Characteristics Profile

Characteristic		Frequency	Percent	Valid Percent	Cumulative Percent
Gender	Male	206	60.4	60.4	60.4
	Female	135	39.6	39.6	100.0
Age	20-34 years old	70	20.5	20.5	20.5
	34-44 years old	124	36.4	36.4	56.9
	More than 44 years old	147	43.1	43.1	100.0
Work Classification	Academic	253	74.2	74.2	74.2
	Administrative	88	25.8	25.8	100.0
Academic Qualification	Academic Degree (Diploma or Bachelor)	121	35.5	35.5	35.5
	Postgraduate (Master or PhD)	220	64.5	64.5	100.0
Years of Experience	Up to 5 years	87	25.5	25.5	25.5
	5-15 years	142	41.6	41.6	67.2
	More than 15 years	112	32.8	32.8	100.0
College classification/ Establishment	Governmental	90	26.4	26.4	26.4
	Private	91	26.7	26.7	53.1
	Public	160	46.9	46.9	100.0
College Classification/ AQAC	University College	188	55.1	55.1	55.1
	Intermediate College	153	44.9	44.9	100.0
Programs #.	3-5 Programs	34	10	10	10
	6-10 Programs	95	27.9	27.9	37.8
	More than 10 Programs	212	62.1	62.2	100.0
College Location	West Bank	277	81.2	81.2	81.2
	Gaza Strip	64	18.8	18.8	100.0
Students #	Less than 300 student	31	9.1	9.1	9.1
	300-1000 Student	161	47.2	47.2	56.3
	More than 1000 Student	149	43.7	43.7	100.0

Appendix IX: Convergent Validity Model

#	Construct	Item	Loading	AVE	CR
1	Beneficiary Satisfaction	BS1	0.802	0.665	0.908
		BS2	0.773		
		BS3	0.844		
		BS4	0.867		
		BS5	0.788		
		BS1	0.802		
2	Continuous Improvement	CI1	0.722	0.641	0.899
		CI2	0.824		
		CI3	0.852		
		CI4	0.860		
		CI5	0.734		
3	Employees Satisfaction	ES1	0.787	0.587	0.875
		ES2	0.745		
		ES3	**0.582**		
		ES4	0.858		
		ES5	0.830		
4	Governance, Leadership, S.Planning	GLS1	0.873	0.761	0.941
		GLS2	0.866		
		GLS3	0.859		
		GLS4	0.864		
		GLS5	0.900		
5	Infra-Structure	IS1	0.797	0.651	0.903
		IS2	0.807		
		IS3	0.820		
		IS4	0.808		
		IS5	0.801		
6	Process Management	PM1	0.841	0.707	0.923
		PM2	0.874		
		PM3	0.819		
		PM4	0.883		
		PM5	0.784		
7	Programs Quality	PQ1	0.783	0.910	0.669
		PQ2	0.796		
		PQ3	0.798		
		PQ4	0.852		
		PQ5	0.857		
8	Quality System	QS1	0.803	0.763	0.928

		QS2	0.888		
		QS3	0.899		
		QS4	0.901		

Appendix X: Cross Loadings of the Measurement Model Indicators

	BS	CI	ES	GLS	IS	PM	PQ	QS
BS1	**0.802**	0.584	0.438	0.56	0.551	0.6	0.628	0.501
BS2	**0.773**	0.621	0.433	0.593	0.544	0.567	0.596	0.492
BS3	**0.844**	0.686	0.467	0.644	0.546	0.672	0.55	0.517
BS4	**0.867**	0.666	0.541	0.663	0.618	0.695	0.563	0.526
BS5	**0.788**	0.542	0.407	0.576	0.525	0.587	0.589	0.488
CI1	0.547	**0.722**	0.409	0.623	0.552	0.621	0.522	0.52
CI2	0.608	**0.824**	0.454	0.624	0.523	0.595	0.56	0.532
CI3	0.701	**0.852**	0.428	0.751	0.624	0.689	0.643	0.628
CI4	0.712	**0.86**	0.513	0.756	0.604	0.741	0.643	0.606
CI5	0.447	**0.734**	0.422	0.614	0.494	0.548	0.424	0.455
ES1	0.418	0.372	**0.787**	0.406	0.355	0.491	0.453	0.306
ES2	0.339	0.286	**0.745**	0.289	0.245	0.412	0.377	0.237
ES3	0.388	0.457	**0.582**	0.457	0.422	0.435	0.359	0.417
ES4	0.507	0.499	**0.858**	0.479	0.432	0.565	0.484	0.505
ES5	0.468	0.475	**0.83**	0.453	0.395	0.527	0.465	0.427
GLS1	0.672	0.751	0.501	**0.873**	0.641	0.738	0.667	0.64
GLS2	0.689	0.722	0.485	**0.866**	0.61	0.721	0.63	0.597
GLS3	0.645	0.752	0.476	**0.859**	0.574	0.708	0.671	0.607
GLS4	0.597	0.708	0.463	**0.864**	0.61	0.699	0.581	0.589
GLS5	0.651	0.755	0.491	**0.900**	0.607	0.71	0.624	0.634
IS1	0.568	0.561	0.35	0.56	**0.797**	0.571	0.483	0.422

IS2	0.55	0.577	0.399	0.553	**0.807**	0.594	0.496	0.414
IS3	0.569	0.58	0.418	0.568	**0.820**	0.583	0.536	0.496
IS4	0.555	0.537	0.421	0.571	**0.808**	0.609	0.468	0.486
IS5	0.516	0.574	0.396	0.561	**0.801**	0.592	0.474	0.464
PM1	0.624	0.69	0.526	0.713	0.589	**0.841**	0.602	0.522
PM2	0.707	0.67	0.581	0.692	0.622	**0.874**	0.606	0.633
PM3	0.645	0.669	0.515	0.688	0.639	**0.819**	0.602	0.505
PM4	0.698	0.701	0.563	0.707	0.656	**0.883**	0.608	0.578
PM5	0.547	0.646	0.518	0.646	0.566	**0.784**	0.545	0.551
PQ1	0.576	0.527	0.396	0.569	0.444	0.54	**0.783**	0.566
PQ2	0.519	0.546	0.386	0.537	0.477	0.494	**0.796**	0.569
PQ3	0.558	0.542	0.465	0.548	0.481	0.539	**0.798**	0.561
PQ4	0.566	0.59	0.518	0.59	0.507	0.616	**0.852**	0.577
PQ5	0.689	0.661	0.528	0.71	0.571	0.675	**0.857**	0.659
QS1	0.432	0.497	0.403	0.498	0.443	0.481	0.535	**0.803**
QS2	0.566	0.586	0.452	0.606	0.508	0.609	0.624	**0.888**
QS3	0.603	0.677	0.455	0.662	0.517	0.599	0.663	**0.899**
QS4	0.549	0.632	0.463	0.673	0.505	0.618	0.678	**0.901**

Appendix XI: List of Questionnaire Arbitrators

#	Arbitrator Name	Background	Title
1	Dr. Ziad Jweilis	Regional TVET expert	CEO of the Palestinian TVET National Committee
2	Dr. Ahmad Othamn	TVET & Statistical Expert	DG of Development & Scientific Research-MoHE
3	Dr. Muhib Abu-Loha	Dean of TG for 7 years	Secretary of the Higher Education Council-MoHE
4	Eng. Abed Alfttah Albatran	Local TVET expert	TVET projects Coordinator-GIZ

الملخص

الهدف الرئيس للدراسة هو فحص ودراسة تأثير ممارسات إدارة الجودة الشاملة على جودة البرامج في الكليات التقنية الفلسطينية ، وذلك باستخدام منهجية البحث الكمي لاختبار الفرضيات. تم جمع البيانات الأولية من خلال عينة تتكون من 341 موظفًا في الكليات التقنية الفلسطينية في الضفة الغربية وقطاع غزة، وذلك من خلال استبانة إلكترونية.

تعتمد الاستبانة المصممة على منهجية إدارة الجودة الشاملة وتتكون من أربعة أجزاء. يتعلق الجزء الأول بخصائص العاملين، والجزء الثاني يتعلق بأبعاد إدارة الجودة الشاملة وهي (رضا المستفيد، التحسين المستمر، رضا العاملين، البنية التحتية، وإدارة العمليات). والجزء الثالث مرتبط بنظام الجودة في الكليات التقنية، والجزء الأخير مرتبط بجودة البرامج في الكليات التقنية. تم استخدام مقياس ليكرت المتدرج والمكون من خمس نقاط للرد على أسئلة الاستبانة.

تم استخدام الاحصاءات الوصفية، والإحصاءات الاستدلالية في العملية التحليلية، وكذلك نمذجة المعادلات الهيكلية في تحليل البيانات وذلك من خلال تطبيقي (SPSS) و (Smart–PLS)

تظهر النتائج بشكل واضح أن هناك علاقة إيجابية بين إدارة الجودة الشاملة وجودة البرامج في الكليات التقنية الفلسطينية، وتكشف الدراسة بأن الحوكمة والقيادة والتخطيط الإستراتيجي وإدارة العمليات ورضا المستفيدين والتحسين المستمر لها الأثر الأقوى في إدارة الجودة الشاملة. في نفس الوقت، فإن المتغيرين الأخيرين (رضا الموظفين والبنية التحتية) مهمان أيضًا ولكن أقل من المتغيرات المذكورة أعلاه.

وتساهم الدراسة في مساعدة متخذي القرار في وزارة التعليم العالي والبحث العلمي والكليات التقنية، باستكشاف أبعاد إدارة الجودة الشاملة والتي لها أعلى تأثير على جودة البرامج.

علاوة على ذلك، تساهم الدراسة في نظرية إدارة الجودة الشاملة من خلال إثراء النقاش حول كيفية قياس جودة البرنامج في الكليات التقنية الفلسطينية من خلال مفهوم شامل يدمج جميع المتغيرات الضرورية لإدارة الجودة الشاملة.

تقدم الدراسة بعض التوصيات الرئيسية، مثل تعزيز ثقافة إدارة الجودة الشاملة بين العاملين في الكليات التقنية الفلسطينية بشكل خاص ومؤسسات التعليم العالي بشكل عام. ويجب أن تحظى متغيرات التحسين والتطوير المستمر، ورضا العاملين والبنية التحتية باهتمام أكبر لتحسين ممارسات إدارة الجودة الشاملة.

من أهم المحددات الرئيسية التي واجهت هذه الدراسة هو البعد الجغرافي بين الضفة الغربية وقطاع غزة، وجائحة فيروس كورونا المستجد (كوفيد-19) وحالة الطوارئ المعلنة في الأراضي الفلسطينية.

وينصح بإجراء ابحاث مستقبلية لتقييم جودة البرامج في الكليات التقنية الفلسطينية من منظور أصحاب المصلحة الآخرين، مثل الطلاب وأولياء الأمور والخبراء. وكذلك فإن الباحثون مدعوون لدراسة المزيد من المتغيرات التي تؤثر على إدارة الجودة الشاملة وجودة البرنامج.