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Assessing the Impact of Total Quality Management on Innovation in Palestinian Food Industries

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I

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This thesis was defended successfully on 27/11/2021 and approved by:

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Declaration

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

Student's Name: ..Rania..Omaw

Signature: ...Rania.....

Date: ....23/1/2022....

Dedication

To:

The soul of my mother

My father

My husband

My children

All loved ones who contribute to me in this achievement

Appreciation and love.

Acknowledgment

I would like to express my deepest gratitude to Allah for giving me the strength to accomplish this thesis.

The completion of this thesis could not have been possible without the supervision and expertise of my supervisor Dr. Yahya Saleh, who has been providing valuable guidance, advice and constructive comments and suggestions through all the stages of this thesis.

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Abstract

The globalization, changeable business environment, and increasing market competition entice the manufacturing sector to implement total quality management (TQM) to achieve the desired competitive advantage. On the other hand, the sustainable competitive advantage requires not only implementing TQM but also fostering innovation performance. Thus, organizations aim to attain high quality as well as high innovation capability at the same time. Many scholars have addressed the relationship between TQM and innovation; some scholars revealed a positive relationship, while others indicated a negative relationship. This study aims to reveal the impact of TQM practices, namely, customer focus, leadership, people involvement, process approach, systematic approach to management, continuous improvement, factual approach to decision making, and mutual beneficial suppliers' relations on innovation; specifically, product innovation, process innovation, organizational innovation, and marketing innovation in the Palestinian food industries. To this end, perceptions of top management on TQM and innovation were collected via an online questionnaire. The questionnaire was designed and distributed to a random sample of 75 registered food industries. Partial Least Square Structural Equation Modelling (PLS-SEM) was employed to analyse the collected data. The results revealed that TQM implementation in Palestinian food firms as a general has a strong positive relationship with innovation which confirms the previous arguments about the positive relationship between TQM and innovation. However, the individual principles of TQM differ in their impact on innovation types. More specifically, people involvement principle was found to have a positive impact on both process and organizational innovations; whereas process approach and systematic approach to management principles were found to positively impact organizational innovation. In addition, the mutual beneficial suppliers' relations principle was found to positively impact marketing innovation. On the other hand, none of the TQM principles was found to have any significant impact on product innovation. Also, the principles

of customer focus, leadership, continuous improvement and factual approach to decision making were found to have no impact on any type of innovation, thus, the managers of the Palestinian food firms have not to look at TQM as a means to improve quality only, but also as a means to encourage and reinforce the innovation via effectively deploying these practices to foster the innovation. Therefore, the study implies that the effective implementation of TQM is highly required to attain a significant innovation. Palestinian food firms are recommended to grant special attention to product innovation to introduce new products to meet the changeable needs of customers. More precisely, fostering product innovation not only requires implementing TQM but also allocating the resources, thereby, the top management should bear the responsibility of allocating resources for product innovation. Besides, Palestinian food firms are recommended to address the obstacles and the constraints that hinder utilizing TQM practices to reinforce the innovation.

Keywords: Total Quality Management, Product Innovation, Process Innovation, Organizational Innovation, Marketing Innovation, Food Industries.

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List of Abbreviations

TQM	Total Quality Management
GMP	Good Manufacturing Practice
HACCP	Hazard Analysis Critical Control Point
GDP	Gross Domestic Product
MAS	Palestine Economic Policy Research Institute
PSI	Palestine Standards Institution
ISO	International Organization for Standardization
WTO	World Trade Organization
PFIU	Palestinian Food Industries Union
PCBS	Palestinian Central Bureau of Statistics
PA	Palestinian Authority
MoNE	Ministry of National Economy
SMEs	Small and Medium Enterprises
R&D	Research and Development
CR	Composite Reliability
PLS-SEM	Partial Least Square-Structural Equation Modelling
VIF	Variance Inflation Factor
AVE	Average Variance Extracted

Chapter One

Introduction

1.1 Overview

This chapter manifests a background of the research in the first section, the following sections address the problem statement, aim and objectives, the significance of the research and the research questions and proposed hypotheses to be evinced. Thesis structure is presented in the last section.

1.2 Background

Over the last years, globalization and increasing market competition drastically changed the business environment. It is widely agreed that the organizations deploy total quality management (TQM) to increase the effectiveness, efficiency, and productivity leading to gain the desired competitive edge. More precisely, the manufacturers adopt TQM as a comprehensive strategy to achieve customer satisfaction as well as enhancing competitiveness in local and international markets, and increasing their export capacities (Deming, 1986).

However, the sustainable competitive advantage requires not only high quality but also fostering innovation performance (Mohnen and Kleinknecht, 2002).

In the same vein, Prajogo (2007) referred to quality as an order qualifier, while innovation is considered as an order winner. Hence, the organizations aim to attain high quality as well as high innovation capability at the same time.

Within the local Palestinian context, in the light of the changeable needs of consumers and the intensive competitiveness, the food manufacturers aim to achieve the highest standards of quality as well as human health and safety. More specifically, some of the food manufacturers in Palestine have acquired the Palestinian quality marks (PS), ISO (International Organization for Standardization) certificates in food safety, good manufacturing practices (GMP), and hazard

analysis critical control point (HACCP). However, TQM implementation is not large enough to attain the survival of the organizations and competitive advantage. Innovation brings the desired competitive edge as scholars pay significant attention to innovation (Dale, Bamford and van der Wiele, 2016).

As a result, food manufacturers implement TQM practices to create an environment to support innovative activities. More specifically, food firms could be innovative via introducing new products, establishing research and development (R&D) centers, developing new processes, adopting new technologies in the production and improving the distribution mechanisms for the products to be not limited within retailers or directly to consumers.

Several scholars have examined the relationship between TQM and innovation. Some argued that the TQM system could foster innovation. Others deduced that the TQM could impede innovation. However, the majority revealed a positive effect of TQM on innovation. Based on the conflicting arguments of the relationship between TQM and innovation, this research contributes to narrow the gap in the literature in regard to the food industries in Palestine. More importantly, the main aim of this study is to examine the relationship between TQM and innovation in the Palestinian food industries for developing a conceptual framework for the food manufacturers to have a sustainable innovation for meeting the changeable consumers' requirements and consequently, achieving the desired competitive edge in local and international markets.

1.3 The Research Problem

It was observed from the literature review, that the relationship between TQM and innovation is complex and unclear, some scholars argued that TQM system has a positive relationship with innovation. In contrast, other scholars deduced that TQM could hinder innovation. Based on the conflicting arguments of the relationship between TQM and innovation, it should be worthwhile to investigate the relationship between TQM and innovation in the Palestinian food industry. Moreover, the literature review reveals that the studies conducted in the food industry are few and

very limited within Palestinian food industry. In general, the food industry has a unique particularity due to the importance of the food products' quality that is directly related to human health and safety. Particularly, Palestinian food sector contributes to economic indicators like the gross domestic product (GDP), employment rates and foreign trade and exports. According to the Palestinian Central Bureau of Statistics (PCBS, 2017), food industries contribute approximately 4% to GDP. Specifically, food industries contribute approximately 22.2 % to the total manufacturing sector that contributes approximately 17.6% to GDP. In addition, this industry is the first among other industries in terms of workforce employment and utilization in its various subsectors. On the other hand, food industries are becoming more attractive for investors, as the percentage of household spending in Palestine is estimated at approximately 36% of all living expenses (PCBS, 2017), which emphasizes the significance of this dynamic sector and the necessity to have a sustainable competitive industry

It was noticed that during the period (2010-2017), there was a decline in the food industry's share in the local market despite the increase in the value of production, (MAS, 2019). This result is due to the unfair competition with Israeli and other foreign products that invade the local market and consequently challenging the Palestinian manufacturers to increase their competitiveness to gain a sustainable competitive advantage. On the other hand, the rapid changes in lifestyle patterns push Palestinian consumers to become more selective in their buying attitudes and change their emotional relationship with food products because of the availability of a greater variety of food products. Meanwhile, among Palestinian consumers, the perceived quality of Palestinian products is lagging the perceived quality of Israeli products.

Additional challenges confronting this industry are related to the internal production environment that also harms the competitiveness of the products– including limited innovative activities, low level of R&D, lack of competence and experience among workers to start innovation activities, the failure of many manufacturers to adopt effective quality control systems, high cost of raw materials,

high cost of transportation, delivery and storage. Additionally, the most prominent challenges facing the food industry are the lack of innovation activities in production and the dependence of the manufacturers on price competition rather than developing the existing products and introducing new products or evolve the traditional processes technologies to keep pace with technological developments, (MAS, 2019).

The aforementioned challenges drive the food manufacturers to utilize TQM in order to stimulate the manufacturers to create an environment that supports innovation in all their activities to attain sustainable competitiveness as well as increasing the market share in the local and global markets. As a key, implementing TQM principles in food industries is the cornerstone to develop this industry. On the other hand, the competitive advantage is not only to be quality- oriented but also to be innovative-oriented industries to create sustainable competitiveness. In this regard, food manufacturers could apply TQM practices to facilitate innovative activities.

1.4 Aim and Objectives of the Research

Many scholars examined the relationship between TQM and innovation. Based on the contradictory arguments of the relationship between TQM and innovation, the question raised on *"Does TQM implementation in Palestinian food industries contribute to fostering or hindering innovation?"* The main purpose of this study is to address this question by examining the relationship between TQM and innovation. To this end, this research investigated whether the innovation capability enables food manufacturers to build their competences and competitiveness with the assistance of TQM implementation. Certainly, examining the relationship between TQM and innovation is essential for providing a conceptual framework for the food industries to enhance their performance, achieve greater outcomes and gain the desired competitive advantage.

To reach this aim, the following research objectives have been developed:

1. Exploring to which extent the Palestinian food industries deploy TQM practices.

2. Exploring to which extent the Palestinian food industries implement different types of innovation
3. Examining the relationship between TQM implementation and innovation performance in the Palestinian food industries.
4. Identifying the most TQM practices that significantly contribute to innovation in the Palestinian food industries.
5. Developing a conceptual framework to explain the relationship between TQM and innovation in the Palestinian food industries.

1.5 The Significance of the Research

The significance of this research lies in securing the sustainable competitive advantage of food manufacturers via irrepressible embracing TQM principles in the system to create an environment for innovation. In general, Palestinian food firms encounter considerable challenges due to the unstable political and economic situation in Palestine, the dependency of the Palestinian economy on the economy of the Israeli occupation and the unfair competition between the local products and Israeli products. Thereby, increasing the competitive advantage in Palestinian food industries could be traced by innovation in the products, processes, marketing and organizations of Palestinian food industries.

In addition, food industries encounter changeable customer needs, changing the sources of the raw materials and the packaging of the products, contamination of products and limitation of the shelf life of food products which in turn push the food firms towards innovation, (Mambanda et al., 2017). However, the food industry in Palestine has high innovative potentials, and the innovative Palestinian industries are continuously improving their export, employment, and revenues On the other hand, the unstable political and economic situation in Palestine, the dependency of the Palestinian economy on the economy of the Israeli occupation and the unfair competition between the local products and Israeli products create an urgent need to increase the competitive advantage

of Palestinian food industries. Meanwhile, the changeable business environment and the buying attitudes of the Palestinian consumers resulting in increasing the demand for new products. Undoubtedly, access to new markets requires not only producing high-quality products but also launching new products to meet the changeable customer's needs as well as improving the production lines and production technologies.

In fact, the low level of R&D is considered a major problem that should be tackled in order to strengthen the industry's capability of innovation and formulate innovation policies to achieve the sustainability of a competitive economy. Additionally, the lack of cooperation between the industrial sector and the R&D institutions and higher education institutes hinders the Palestinian industrial manufacturers to be more innovative, (Khatib et al., 2013).

At the macro level, all these challenges in this industry force the manufacturers to increase their innovation capability. Consequently, launching new products and adopting new techniques in operation processes are highly recommended to meet the changeable consumers' needs.

At the micro-level, with regard to the internal operation environment, the traditional technologies in manufacturing and the minimum level of development R&D negatively affect the competitiveness and consequently the gains and profit, which poses an urgent need to utilize the implementation of TQM to promote innovation.

1.6 Research Questions.

This research aims at answering the following questions:

1. To which extent the Palestinian food industries deploy TQM practices?
2. To which extent the Palestinian food industries implement different types of innovation activities?
3. Does implementation of TQM in the Palestinian food industries contribute in fostering or hindering innovation?

4. What are the most TQM practices that affect the innovation performance in the Palestinian food industries?

5. What kind of a conceptual framework that could be developed to explain the relationship between TQM and innovation in the Palestinian food industries?

In this research, a set of hypotheses had been formulated, as shown in Chapter Two, to find the relationship between the dependent variables represented by four types of innovation; product innovation, process innovation, organizational innovation, and marketing innovation and the independent variables represented by the eight practices of TQM; customer focus, leadership, people involvement, process approach, systematic approach to management, continuous improvement, factual approach to decision making and mutual beneficial suppliers relations.

1.7 Thesis Structure

This research includes six chapters. Chapter One demonstrates the introduction of the research presenting a background of the research in the first section, the problem statement, the aim and objectives, the significance of the research and the proposed hypotheses to be evinced in the following sections. The last section in this chapter presents the thesis structure.

Chapter Two presents the literatures review for the previous related studies. The first section illustrates a theoretical background of TQM and innovation concepts and definitions. The following section addresses the relation between TQM and innovation. The proposed research hypotheses are presented in the last section.

Chapter three addresses the methodology of this thesis. The first section clarifies the research design, approaches of the research, illustrating the choices of qualitative, quantitative, or multiple methods, reaching to deduce the research strategies design. The following section addresses data collection techniques, sampling methods, and analyzing the data utilizing the partial least squares structural

equation modeling (PLS-SEM) to reveal a model that illustrates the relationships between the independent variables and dependent variables.

Chapter four presents the analysis of the collected data. The first section addresses the descriptive statistic's findings via analysis of demographic profile for the targeted firms' respondents and the demographic profile for the targeted firms, whereas, the following section displays the analysis of the collected data and testing the proposed hypotheses utilizing (PLS-SEM) to examine the effect of TQM on innovation in Palestinian food manufacturing firms.

Chapter Five manifests the interpretation of the findings in the first section including the assessment of TQM implementation in Palestinian food industries, assessment of innovation in Palestinian food industries and analysis of the results of testing the hypotheses as well as presenting the conceptual framework that illustrates the relationship between TQM and innovation. The following section addresses the theoretical implications of the research. Finally, the last section draws the limitations of the research and expectations of upcoming contributions in this field.

Lastly, Chapter Six draws the conclusions of the research findings, following a set of recommendations are submitted based on the discussed conclusions.

Chapter Two

Literature Review

2.1 Overview

This chapter manifests the previous related studies. The first section demonstrates a theoretical background including TQM and innovation concepts and definitions. The following section addresses the relation between TQM and innovation. The proposed formulated hypotheses are presented in the last section.

2.2 Total Quality Management (TQM)

2.2.1 TQM Definitions

Recently, managing quality has been evolved from simple inspection to quality control, quality assurance leading to total quality management (TQM). Four levels for quality management evolution are illustrated in Figure (2-1).

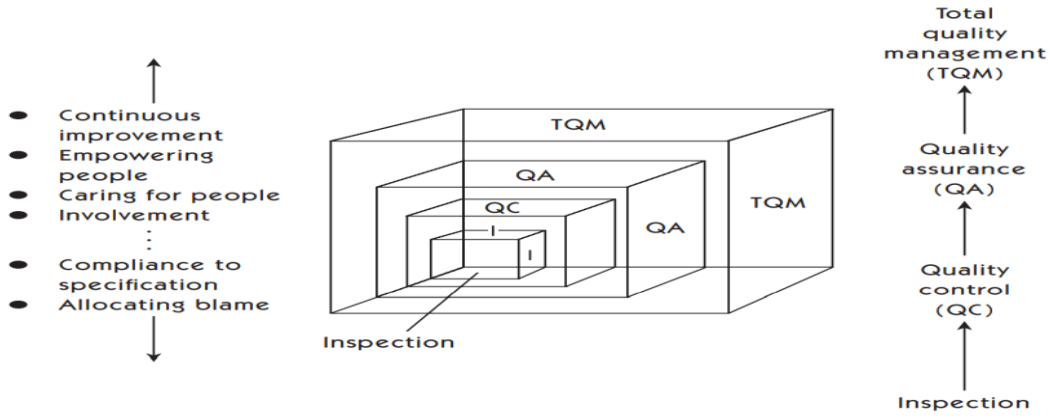

Figure (2-1): Evolutions of TQM (Dale, Bamford & van der Wiele, 2016).

The highest level (TQM) has been defined by ISO as: "TQM is a management approach for an organization, centered on quality, based on the participation of all its members and aiming at long-

term success through customer satisfaction, and benefits to all members of the organization and to society." Whereas, TQM is defined according to Jurow and Barnard (1993) as "a system of continuous improvement employing participative management and centered on the needs of customers."

Dale, Bamford and van der Wiele (2016) defined TQM as "both a philosophy and a set of guiding principles for managing an organization to the benefit of all stakeholders".

According to Panday (2014), TQM is composed of three paradigms:

Total: "Organization- wide" "Quality involves everyone and all activities in the company",

Quality: "With its usual definitions, with all its complexities" "Conformance to requirements (meeting customer requirements)."

Management: "The system of managing with steps like a plan, organize, control, lead, staff, etc." "A process for managing quality; it must be a continuous way of life; a philosophy of perpetual improvement in everything we do".

Oakland (2014) considered TQM as a comprehensive approach for improving competitiveness, effectiveness and flexibility through planning, organizing and understanding each activity, and involving each individual at each level. Moreover, it is useful and applicable in all types of organizations.

2.2.2 Total Quality Management (TQM) Principles

Ishikawa (1985) converged that TQM could be implemented by applying six principles, namely, the commitment of the management to implement TQM principles, customer focus, quality at all levels in the organization, continuous improvement, the mutual relations with suppliers and developing the performance measures for the operation processes.

Again, Panday (2014) stated that ISO 9000 implementation is a basis for TQM implementation, where, the main quality management principles are; customer focus, leadership, people involvement, process approach, a systems approach to management, continual improvement, factual approach to decision- making and mutually beneficial supplier relationship. Table (2-1) summarizes the definition of the TQM principles according to (ISO 9000:2000).

Table (2-1): Total Quality Management (TQM) Principles based on (ISO 9000:2000)

Customer focus	"Organizations depend on their customers and therefore should understand current and future customer needs, should meet customer requirements and strive to exceed customer expectations."
Leadership	"Leaders establish unity of purpose and direction of the organization. They should create and maintain the internal environment in which people can become fully involved in achieving organization objectives."
Involvement of people	"People at all levels are the essence of an organization and their full involvement enables their abilities to be used for the organization benefit."
Process approach	"The desired result is achieved more efficiently when activities and related resources are managed as a process."
System approach to management	"Identifying, understanding and managing interrelated processes as a system contributes to the organization effectiveness and efficiency in achieving its objectives."
Continual improvement	"Continual improvement of organization's overall performance should be a permanent objective of the organization."
Factual approach to decision- making	"Effective decisions are based on the analysis of data and information."

Mutually beneficial supplier relationships	"An organization and its suppliers are interdependent and a mutually beneficial relationship enhances the ability of both to create value."

As defined in (ISO 9000:2000), the following discussion elaborates more on these eight principles of TQM:

1.Customer Focus: It is the most important principle that refers to understanding the customer needs and gathering the customer requirements to produce the products that meet these requirements as well as measuring the customer satisfaction, which gets business benefits through increasing the market share and consequently increasing the revenues and the profits. In the same vein, Cai (2009) revealed that an organization emphasizes on customer orientation, which in turn gains customer satisfaction as well as high production performance leads to financial performance.

2. Leadership: The leaders in the organizations are responsible for establishing the vision for the organizations and sharing the vision with all the employees as well as allocating the resources to create better business environment. Effective and well-established TQM starts at top management commitment towards quality, clear strategies and vision, controlling the systems, processes, operation's costs, supplied materials and wastes, in addition to training, empowering and participation of all the employees as well as the focus on customers' needs and wants, (Oakland, 2011).

3.**People Involvement:** The recognition that the employees are empowering in the organizations at all levels ensuring the motivation and engaging the employees in the company as a whole as well as ongoing education and training of the employees to participate in the quality improvements.

4. Process Approach: Developing a set of processes for all the areas in the company that is oriented by teams, from marketing and sales, finance and human resources, and the production processes to

have the consistency of the quality and the effective use of the resources and avoid problem's occurrence via reducing the product variation.

5.Systematic Approach to Management: Developing a clear system for identifying, understanding and managing the processes, to eliminate the wastes and achieve efficiency.

6.Continual Improvement: Ongoing forward towards continuous improvement of the processes, resulting in the quality of products. Meanwhile, the commitment to improvement leads to achieving a successful organization and a competitive advantage.

7.Factual Approach to Decision Making: This principle refers to the rational analysis of reliable and accurate data as well as depending on the facts as a basis for the decision- making in the organizations.

8.Mutually Beneficial Supplier Relations: This principle is pointed to the relationship between the organization and the suppliers to boost the ability of both to create value, which achieves flexibility towards customer demands.

The industrial firms implement ISO standards mainly to improve the quality of products and operations to meet customers' needs. Martínez-Costa, Martínez-Lorente and Choi (2008) contend that the companies that implement ISO 9000 at a high level, show a high level of TQM implementation. Meanwhile, Han, Chen and Ebrahimpour (2007) affirmed that TQM and ISO 9001 have a significant and positive relationship. Furthermore, ISO 9001 is considered as the first step to implement TQM and a vital component of TQM.

Arumugam, Ooi and Fong (2008) alleged continual improvement and customer focus were the most prevailing and foremost TQM practices in quality performance in Malaysian ISO 9001:2000 certified firms.

2.2.3 Benefits of Total Quality Management (TQM)

Total Quality Management (TQM) implementation refers to improving productivity, profitability and customer satisfaction. The benefits of TQM include:

- **Fewer Product Defects**: Doing the right things right at the first time is the core goal of TQM, which means few defects in the products as well as reducing the external failure of the customer recall or warranty cost.
- **Lower Costs**: The few defects resulting in cost reduction of external failure of customer recall and customer support. Consequently, cost- saving leads to gaining high profitability.
- **Satisfied Customers**: High quality products that meet customers' need result in customer satisfaction. This means increasing the market share and high growth of revenues.
- **Well-Defined Cultural Values**: TQM mindset pervades the core values of quality management across all aspects of the companies.

However, Sharma and Kodali (2008) developed a model explaining TQM fundamentals that could guide any manufacturing company towards achieving manufacturing excellence, which is illustrated in Figure (2-2).

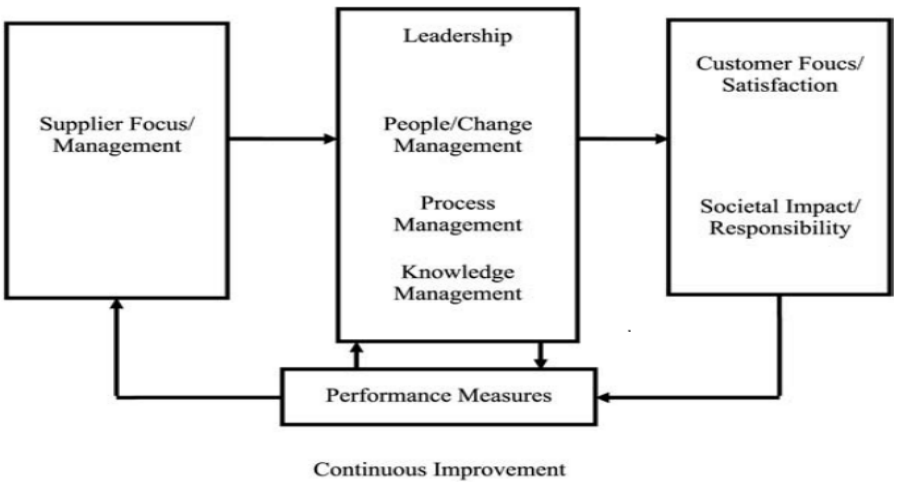

Figure (2-2): TQM Fundamentals for Manufacturing Excellence (Sharma and Kodali ,2008)

2.2.4 TQM Implementation in Food Industry

TQM implementation is highly required in the food industry. Food production without effective quality management system causing products failure that absolutely affect human health and safety leading to customer dissatisfaction. This will, in turn, increase the cost of the nonconformity, (van der Spiegel et al., 2005). Notwithstanding, Shameer and Sing, (2013) pointed many challenges facing food factories against deploying TQM; one of them is employees' resistance to change and frequent turnover of employees.

More insights on TQM implementation in the food industry, Psomas and Fotopoulos (2010) had conducted a study within Greek SMEs (Small and Medium Enterprises) food companies that were certified to ISO 9001:2000 and HACCP system certification. The results revealed that the adoption of top management for TQM practices as well as process and data quality management affect the company's quality improvement that considerably contributes to customer satisfaction. As a consequence, the quality improvement and customer satisfaction derived the market benefits.

Simultaneously, food industry aims to gain great outputs through applying TQM techniques and to control the quality of the products via purchasing the raw materials and parts from accredited suppliers who apply TQM practices to get a sustainable consumer concern and continuously improving the products to meet or exceed customer expectations.

Barendsz (1998) pointed that the food safety is a global concern due to the effect of the food products on human health as well as the effect on international trade. Moreover, TQM implementation in the agro-food industry requires an integrated system including all related parties in the agro-food chain to improve the quality of the products.

In the same belief, Alsaleh (2007) advocated that the effort of Saudi Arabia to join the World Trade Organization (WTO) required implementing TQM in Saudi food industry to enhance product quality as well as decrease product cost to be more competent in the international market.

2.2.5 TQM Implementation in Palestinian Industrial Context

Palestinian food industries seek to survive in the local market via effective operation processes, cost reduction and continuous improvement. Sayyad (2017) argued that, management commitment, employee involvement, training, education and rewards and recognition play a major role to enhance the performance in Palestinian manufacturing and service firms. However, a master thesis of Rabaya (2013) explored those Palestinian industries are interested in applying TQM practices at different levels. Continuous improvement represented the highest level, the second level was applying the statistical tools and customer's feedback to control the quality. Whereas, employees' involvement represented the lowest level of application. In that sense, employees' involvement is considered a key factor of TQM implementation.

SMEs in Palestine adopt and implement TQM practices in order to efficiently allocate resources and improve financial performance. It is worth noting that TQM has a positive and vital relationship with financial performance. Additionally, the financial performance has a positive and significant relationship with the competitive policies, which confirms the role of TQM in achieving the competitive advantage, (Herzallah, Gutiérrez-Gutiérrez and Munoz Rosas, 2014). In a similar vein, Baidoun (2004) referred to the critical quality factors (soft quality factors and hard quality factors) to be adopted in the Palestinian industrial context to implement TQM; top management commitment and involvement, customer-driven system and processes, employee commitment and involvement and continuous improvement culture. Figure (2-3) depicts TQM implementation framework to be adopted in Palestinian industry.

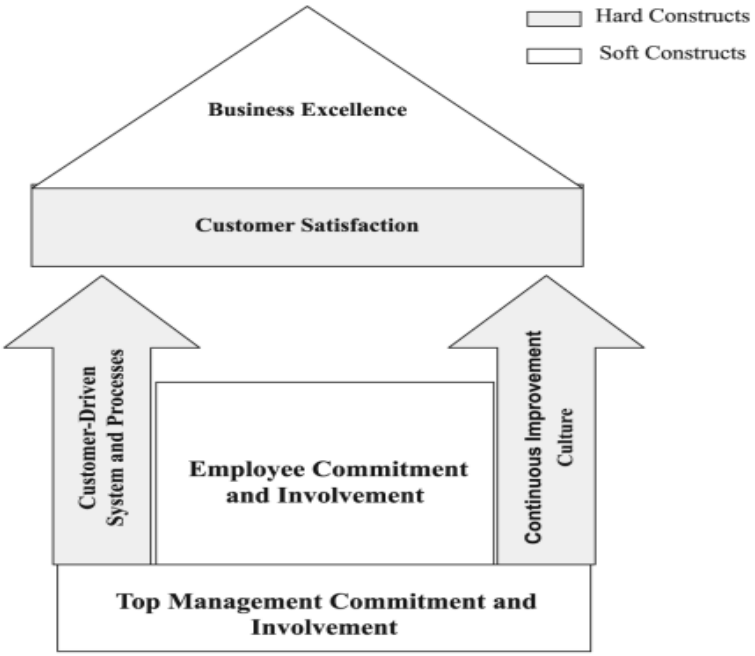

Figure (2-3): TQM Implementation Framework in Palestinian Industrial Context (Baidoun, 2004)

In the light of the aforementioned framework, Abu Tafish (2004) explored a large gap between the comparative criticality index for Sinikrot Company and the critical quality factors created by Baidoun, particularly, in quality factors that are critical to deploying TQM.

Recently, Hassan and Jaaron (2021) conducted the first study in Palestinian food industries to examine the effect of TQM practices on green manufacturing (GM) practices and their complementary effect on organizational performance in Palestine. This study reveals a significant positive correlation between TQM and organizational performance as well as a significant positive correlation between TQM and the implementation of GM practices.

2.3 Innovation

2.3.1 Innovation Definitions

Tidd et al. (2001, p.38) defined innovation as "a process of turning opportunity into new ideas and putting these into widely-used practice."

Rogers (1998) defined innovation as the application of new ideas to the products, processes, or any other aspect of a firm's activities. Whereas, Andersson, Lindgren and Henfridsson (2008) refer to innovation as new applications of knowledge, methods and technologies that leverage an organization's competitiveness.

Innovation is a very broad concept that has several classifications. Data (2005) refereed in Oslo Manual to the definition of innovation as; "An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations".

2.3.2 Types of Innovation

Based on the aforementioned definitions of innovation, innovation is classified into four types; product innovation, process innovation, organizational innovation and marketing innovation.

Likewise, Gunday et al. (2011) referred to the components of innovation; product innovation, process innovation, organizational innovation and marketing innovation that have a positive impact on the performance of the Turkish manufacturing firms.

On the other hand, Chesbrough (2003) pointed out two types of innovation; open innovation and closed innovation where open innovation is an innovation management model combining the internal as well as external knowledge and technology to develop innovation activities and sharing the knowledge to add value to the organization. While closed innovation holds that all knowledge for the innovation has produced internal the organization.

Additionally, Damanpour (1988) classified innovation as technological innovation and administrative innovation, where technological innovation is the adoption of new technologies that are integrated into products and processes development. Moreover, technological innovation enables the companies to achieve the desired competitive advantage and long-term success (Grover, Purvis and Segars, 2007). However, product innovation and process innovation are considered

technological innovation. While, administrative innovation refers to change the structure of the organization, processes and systems via introducing new ideas.

In parallel, Cerenkov, Judge and Wright (2005) referred to administrative (managerial) innovation as the adoption of new ideas to enhance the organizational processes, procedures, systems and routines of work.

Continuous or Incremental innovation is the most prevalent type of innovation in the companies. Incremental innovation enables the companies to improve the products or services a little bit better to sustain in the market. On the other hand, radical or breakthrough innovation leads to a significant improvement in products and services. However, a business model innovation is a third dimension beyond the incremental and radical, which innovate the structure of the business, look to the market to focus on the possibilities for changing to achieve the competitive advantage via focusing on the relationship between the company and the customers. Both Product innovation and process innovation could be radical or incremental, (Morris, 2013).

Accordingly, this study focuses on four main dimensions of innovation; product innovation, process innovation, organizational innovation and marketing innovation, as described in the following subsections.

2.3.2.1 Product Innovation

This type of innovation is about launching new products via breakthrough changes in the operation process. However, new products could be introduced when new markets are found, (Tarafdar and Gordon,2007). Likewise, to Oslo Manual, product innovation comprises prominent changes in the capabilities of products or services, involving new products as well as evolving the existing products and introducing new products to add value to the customers.

2.3.2.2 Process Innovation

This type of innovation includes adapting the existing processes, production lines as well as developing new technologies and processes. Meanwhile, process innovation leads to achieving the effectiveness and efficiencies of the production processes, (Tarafdar and Gordon,2007). Moreover, Data (2005) referred to Oslo Manual to process innovation as crucial changes in operation and delivery methods. The innovative activities include process innovation related to technological improvements such as new computing hardware or software or new machinery. However, Taddese and Osada (2010) indicate that process innovation in manufacturing companies in terms of 4Ms; method, machine, material and man, is significant due to its function as a source of the new market, achieving revenues and business profits leading to competitive advantage.

2.3.2.3 Organizational Innovation

Organizational innovation involves the changes in the relations between the people in the organization via changes in the organizational structure, job allocation, communication systems as well as reward systems (Slappendel, 1996). On the other side, organizational innovation includes deploying new changes in the organizational methods as well as changes in the workplace of the organization and the external relations of the organization, (Data, 2005)

2.3.2.4 Marketing Innovation

Marketing innovation refers to new marketing policies and methods, involving changes in the marketing mix; design of the product, packaging, placement, pricing method and new methods of promotion leading to develop new geographic areas, penetrate new segments (Slappendel, 1996). Marketing innovation plays a vital role in the success of organizations to achieve the competitive advantage, (Epetimehin ,2011).

In sum, Lundvall (1992, p. 8) affirmed that innovation is 'on-going processes of learning, searching and exploring, which results in new products, new techniques, new forms of organization and new markets. Figure (2-4) depicts the domains of innovation.

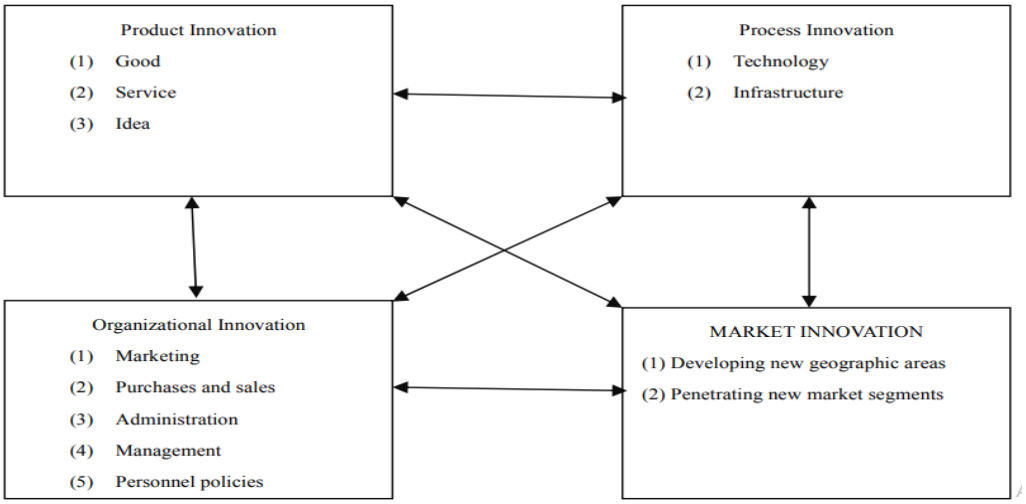

Figure (2-4): Domains of the Concept of Innovation (Lundvall, 1992)

2.3.3 Innovation in Food Industry

Innovation in the food industry combines social and cultural innovation with technological innovation including the entire food system, production, harvesting, primary and secondary processing, manufacturing and distribution, (Earle, 1997).

Avermaete et al. (2003) argued that the innovation in the food and beverage firms in two Belgian regions is considered important to launch new products, improve the processes, change the organizational system and alteration the marketing method. Moreover, all these innovation domains depend on the economic performance, the size of the organization and the organization's age.

Capitanio, Coppola, and Pascucci (2010) argued that Italian food firms are facing high competitiveness from other emerging countries and great products penetrating the local market as well as high production costs. Thereby, product innovation, process innovation and organizational innovation facilitating the reduction of production cost, better response to the changeable need of the consumers and changing the technological characteristics, such as quality, safety, ease of use,

and storability. Consequently, the organizations that innovate their activities are superior in profit and growth.

In the same vein, both innovation in packaging and technical innovation could boost the effort of food and beverage firms to introduce new brands, whereas process innovation could improve the quality of products and reduce the production costs, (Alfranca et al. 2002).

2.3. 4 Innovation in Palestinian Industrial Context

Innovation is representative of the company's performance when new products are introduced and new processes are created to make more efficient work. Innovation is highly pursued by many manufacturing companies to gain their competitive advantages. A master's thesis conducted by (Mustafa, 2005) to measure the competitiveness of the food industry sector in Palestine, recommended that producers could improve the competitiveness of food industries by focusing on; improving quality, reducing costs via adopting new technologies in the operations, developing research and development centers as well as conducting technical training for the workers and investing in promoting and advertising their products to attract consumers.

Khatib et al. (2013) conducted a study on two major industrial sectors in Palestine: the food and beverages sector and quarrying and stone fabrication. The results showed that the food and beverages sector has high innovative potentials. Meanwhile, innovative enterprises are continuously improving the export, employment, and revenues.

In contrast, as noted by Morrar (2017) using a sample of 350 industries in Palestine, revealed that during the period (2014-2016), the majority of industries did not introduce any innovative activities whether in products and processes, or organizational and marketing methods. Some factories attributed the lack of innovation to the lack of technological base and knowledge in Palestine, weakness of legal framework of property protection and innovation and the weak role of the government in supporting and encouraging innovation. Besides, the absence of cooperation between

the industrial sector and the universities contribute to a lack of innovation. On the other side, regarding the internal operation's environment, many factors contribute to weak innovation, some manufacturers referred to insufficient financial allocated resources and the high cost of launching new products and establishing R&D.

2.4 Food Industry in Palestine

The food industry sector is one of the most crucial manufacturing industries that contributes to numerous economic indicators in Palestine. More specifically, the Palestinian manufacturing industries contribute approximately 17.6 % to gross domestic product (GDP). Food industry is the oldest industry producing a wide variety of products contributing approximately 22.2 % to the manufacturing industry and approximately 4% to GDP, (PCBS, 2017). This indicates the substantial importance of the Palestinian food industry sector in its contribution to economic growth.

The quality of food products is a key issue since food products are directly related to human health and safety. Thus, considerable attention has been given by the Palestinian Authority (PA) to this industry to control the quality of food- diverse products. On the other hand, this sector is becoming more attractive for investors, as the percentage of household spending in Palestine is estimated at approximately 36% of all living expenses (PCBS, 2017) which emphasizes the significance of this sector in producing high- quality food products allow this sector to grow significantly in light of the growing demand and thus there is a high need for more competitive industry. According to the PFIU, the recent total investment in the food sector is estimated at approximately $580 million, (PFIU, 2018). Support food industry contributes to upgrading other sectors as the food industry mainly relies on the agricultural sector as well as other industrial sectors, as paper industries, plastic industries, chemical industries and metal industries.

By the end of the year 2017, the number of Palestinian food manufacturers that have registration from the Ministry of National Economy (MoNE) was 3038 in West Bank and Gaza. According to

PFIU, the majority of the food firms are small and medium family-owned businesses. Food firms employing nearly 17583 workers which represent 18.5 % of the total employment in the Palestinian manufacturing industry, (PCBS, 2017). Consequently, this industry is considered as the first rank among other industries in terms of workforce employment and utilization.

Over the last years, specifically during the period (2010-2017), it was noticed that the market share of the food industry has been declined, in spite of the increase in production. The reason for this decline could be attributed to the increased competition with the imported food products, especially, Israeli products and other regional sources (e.g., Turkey, Jordan, United Arab Emirates, Saudi Arabia, and Egypt). In addition to, increasing export-oriented production in some sub-industries, in particular, meat products. It is worth mentioning that the food industry is considered the second major exporter after the stone and marble industry sector.

One of the most pressing issues facing food industry is the unfair competition with Israeli products due to the smuggling of the food products that invade the local market and local products from Israeli settlements, regardless of their compliance with Palestinian technical regulations. This situation has negatively affected the competitiveness of Palestinian food products. Aside unfair competition environment, the food industry confronts many challenges; high cost of raw materials, high cost of exporting due to the barriers to entry into new markets and limited access to international markets. Moreover, the inability of the local market to absorb all local production, especially during the changeable financial and economic situation in Palestine. According to a study conducted by Palestinian Economic Policy Institute (MAS) in the year 2019, the food industry sector encounters many challenges related to the internal productive environment that negatively affect the competitiveness of this industry such as; limited R&D activities, ineffective implementation of a large number of food manufacturers for the quality control systems, and lack of professionalism, expertise and required technical skills.

2.5 The Relationship between TQM and Innovation

The knowledge of people and human resources management in industrial firms plays a crucial role in people's creativity, (Perdomo-Ortiz, Gonzalez-Benito and Galende ,2009). This belief supports the explaining of (Trott, 2008) for innovation management dilemma, where, the organizations focus one hand on the stability of organization to attain efficiency and on the other hand, focus on the flexible environment and ability of the organization to be creative. This innovation management dilemma had been explained and is depicted in Figure (2-5)

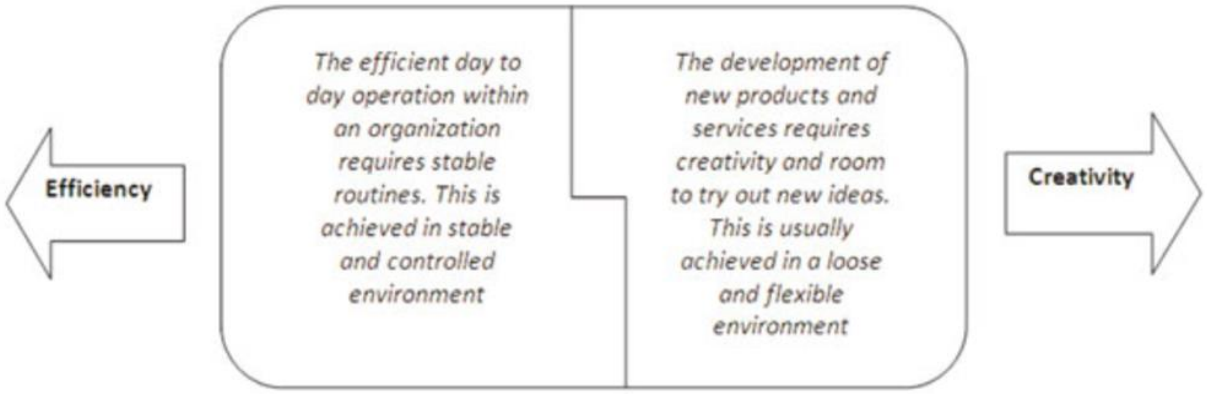

Figure (2-5): The innovation Management Dilemma (Trott, 2008)

However, to overcome this dilemma, Honarpour, Jusoh and Md Nor (2012) suggested that TQM implementation achieves efficiency via creating a stable and controlled environment and achieves creativity via creating a flexible environment to develop new products and services.

Several scholars examined the relationship between TQM and innovation, some scholars deduced a positive relationship between TQM and innovation, others argued that TQM could not directly affect innovation. On the other hand, some researchers asserted that TQM impedes innovation. The following sub-sections addresses arguments about the positive and negative relationship between TQM and innovation.

2.5.1 Positive Relationship between TQM and Innovation

Baldwin and Johnson (1996) contend that TQM implementation and the culture of the organization provide an excellent condition for innovation. Customer satisfaction leads the manufacturers to be more creative to meet customers' changeable needs, in addition to the role of leadership in encouraging and supporting innovation activities, in particular, research and development. Also, empowerment of employees makes them self-efficient and innovative as well as the role of continuous improvement in boosting the creative thinking. Likewise, Rodney and Brigitte, (1998) asserted that organizations which have a history of continuous improvement are more likely to go on and build a successful innovative culture.

Similarly, Hoang et al. (2006) substantiated that only three practices; leadership, people management and process and strategic management in open organizations are positively significant with innovation performance.

Santos-Vijande and Alvarez-Gonzalez (2007), Prajogo and Hong (2008), Martinez-Costa and Martinez-Lorente (2008) advocated that TQM system could reinforce innovation. They believe that the implementation of TQM principles positively affects innovation, and the organizations that implement TQM will be more successful in innovation activities.

Many other researchers asserted a positive significant effect of TQM on innovation. Table (2-2) illustrates summaries for these studies.

Table (2-2): Positive Relationship between TQM and Innovation

Author	Country	Sector	Summary
Satish and Srinivasan (2010)	India	manufacturing organizations.	Confirmed a positive correlation between TQM and innovation Performance in large and medium Indian manufacturing
Sadikoglu and Zehir (2010)	Turkey	different certified industries	In spite of the traditional view, that TQM plays vital role in an incremental innovation, continuous improvement and process management among TQM generate a breakthrough innovation, confirming the positive impact of TQM on firm performance, employees' performance and innovation performance
Kim, Kumar, and Kumar (2012)	Canada	ISO9001 certified manufacturing organizations and service companies	This study examined the relationship between quality management practices and five types of innovation; radical process innovation, incremental process innovation, radical product innovation, incremental product innovation and administrative innovation. The study revealed that process management has a positive relationship with all types of innovation. This result could be explained by the vital role of managing the processes to stand up to the routines and to support innovative activities.

Trivellas and Santouridis (2009)	Greece	manufacturing (SMEs)	TQM approach is very imperative to foster job satisfaction in order to facilitate the firm's innovativeness. The employees' job satisfaction could be a mediating effect on the relationship between TQM and innovation.
Pekovic and Galia (2009)	France	Manufacturing sector	in order to stimulate a significant innovation via TQM implementation, a very well-established quality management system is highly needed
Perdomo-Ortiz et al. (2006)	Spain	machinery and instruments for measurement	TQM can favor the innovation as well as both of TQM and innovation are compatible.

In sum, the previous contributions vouched that TQM practices lead organizations to foster innovation capability. Customer focus leads to meet the changeable customer's needs for new products. Likewise, continuous improvement is a vital practice that aids the organizations to make the changes and improvements in the processes as well as forcing the employees to be more creative to change the way of work that consequently leads to innovation. People management boosts sharing the knowledge and the creative ideas among employees. Moreover, the supplier relationship is crucial for developing the new products via complying the required raw materials with the specifications and adopting the new procedures that assist the firms to introduce new products.

2.5.2 Negative Relationship between TQM and Innovation

Some scholars pointed out that TQM could not reinforce innovation. On the other hand, others asserted that TQM could hinder innovation performance. Table (2-3) illustrates a summary of some of related studies.

Table (2-3): Negative Relationship between TQM and Innovation

Author	Country	Sector	Summary
Moreno, Gil-Marques and Valls-Pasola (2013)	Spain	Manufacturing firms facing increasing competition from Asian companies.	All of TQM practices have imperative and positive relationship with incremental innovation. While, none of them directly affects radical innovation,
Benner and Tushman (2002)	USA	photography industry and paint industry	The implementation of ISO 9001 resulting in incremental improvement but hindering the radical innovation.
Camisón and Puig-Denia (2016)	Spain	industrial companies	The level of quality management practices (QMP) implementation is not directly related to process innovation or generating the competitive edge.
Singh and Smith (2004)	Australia	Manufacturing organizations	The relationship between TQM and innovation is complex as well as there is no empirical evidence that TQM affects innovation
Atuahene-Gima (1996)	Australia	Manufacturing organizations and services firms	Customer satisfaction results in conformance of the products to the specifications/ customer's need rather than developing new products

Prajogo and Sohal (2001)	Australia	Manufacturing and nonmanufacturing companies	TQM principles could not foster innovation, as leadership could focus on core competences but hinder other competences or other strategic directions. Meanwhile, continuous improvement leads creating a stable system and controlled environment with reducing the ambiguity which means bad conditions for innovation's environment. Moreover, TQM focus on cost saving that limit the ability of the companies to bear a risk to allocate resources for developing new products
Cole and Matsumiya (2008)	Japan	Hi-tech sector	TQM deploy a quality culture that damage the potential of the organizations resulting in inhibiting innovation

In the aforementioned context, it was shown from the preceding studies that the impact of TQM on innovation is unclear due to the conflicting arguments. Some scholars pointed to a positive relationship; others proposed that TQM could not reinforce the innovation. On the other hand, some researchers asserted that TQM could hinder innovation performance.

2.5.3 The relationship between TQM and Innovation in Food Industry

Sotirelis and Grigoroudis (2020) reviewed the relationship between quality management and innovation, in agro-food companies; their study deduced a positive impact of quality on innovation. Both quality management and innovation have a positive impact on the performance. Nevertheless, internal and external factors might affect quality management –innovation links to get more access

to the local market and to enter new markets with focusing on customer- centric approach. Figure (2-6) clarifies the linkage between TQM and innovation in an agro-food industry

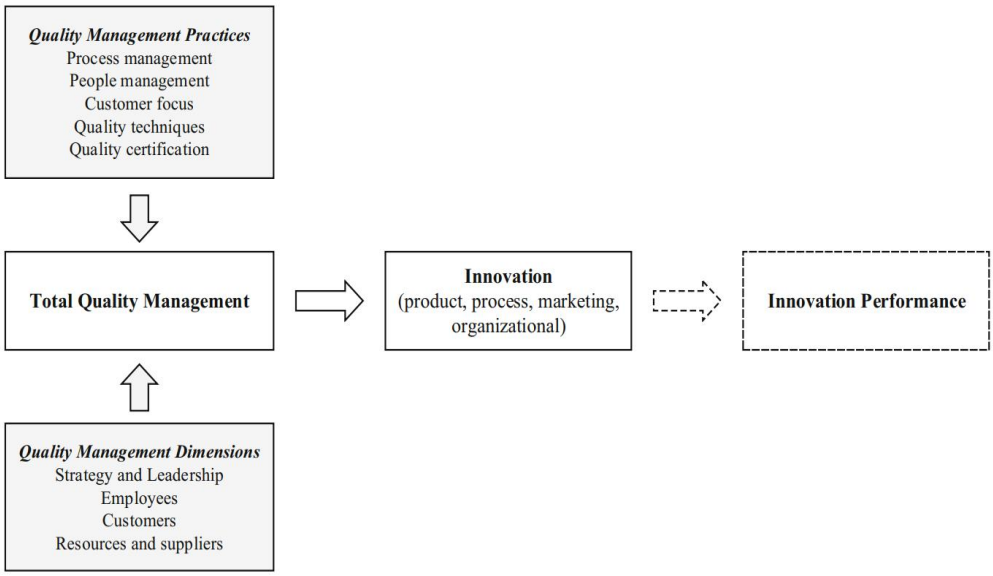

Figure (2-6): The linkage between TQM and Innovation in an Agro-Food Industry (Sotirelis and Grigoroudis, 2020)

Affum and Wang (2019) examined the relationship between TQM and the innovative capability of the foodservice industry in Ghana from three multi-dimensional views – government, industry and market. A comprehensive conceptual model (called Dynamic Quality Model) taking into account the changes in social, business, and political issues along the time was developed. Based on the changeable business environment, sustainable innovation is highly recommended for the food industry to achieve more social benefits for the consumers. The dynamic quality model and sustainable innovation model revealed a close link between quality and innovation. When the quality is embedded in the innovation, the food manufacturers attain sustainable innovation.

As previously mentioned, several scholars deduced a causal relationship between TQM and innovation. This causal relationship has also been supported by the view of (Maurer and Drescher ,1996) in the food firms, for the role of total quality management systems (TQMS) via adopting the series of ISO 9000 to 9004 in creating new ideas and new competitive policies.

Regardless of the type of industry, the majority of contributions explored a positive relationship between TQM practices and the innovation of the firms. On the other hand, numerous contextual factors (e.g. firm size, changeable business environment, firm culture and financial resources) might modify this relationship to a negative and weak relationship, (Raja and Wei, 2015).

Additionally, instability in market conditions negatively affect the relationship between TQM and innovation, (Santos-Vijande and Álvarez-González, 2007).

Generally, the literature on the relationship between TQM and innovation is not comprehensive as well as it lacks consensus about this relationship. There are two conflicting views of the relationships between TQM and innovation. Furthermore, many limitations have been observed in the previous contributions; the moderated factors that might influence TQM implementation, had not been investigated (e.g., firm size, firm age, the period of implementing TQM, acquiring the quality certificates and degree of competition). Furthermore, few studies have previously examined the effect of all TQM practices on innovation. In addition, many innovation dimensions are not fully considered in one research.

Thereby, this study would contribute to clarifying this relationship through a different approach to overcome these limitations.

Moreover, the literature review reveals that the studies conducted in the food industry are few and very limited within Palestinian food industry. Hence, this study aims to investigate the relationship between TQM and innovation to clarify which of the two conflicting arguments is explaining the relationship between TQM and innovation in Palestinian food industry.

2.6 Research Hypotheses

The main aim of this research is to empirically evaluate the impact of TQM. This section represents the conceptual framework and the proposed hypotheses. When examining the extant literature, researchers had investigated the effect of TQM on product innovation. More specifically, Pekovic

and Galia (2009) claimed that French ISO 9000 certified manufacturers with a high level of quality, achieve a high level of product innovation, in the same line, well-established quality management is highly needed to achieve high innovation performance. Meanwhile, Hoang and Laosirihongthong (2006) vouched that some TQM practices like leadership and people management, training and education, process and strategic management and open organization have a positive impact on the firm's level of newness in the Vietnamese industry. This relationship had been explained by the model shown in Figure (2-7).

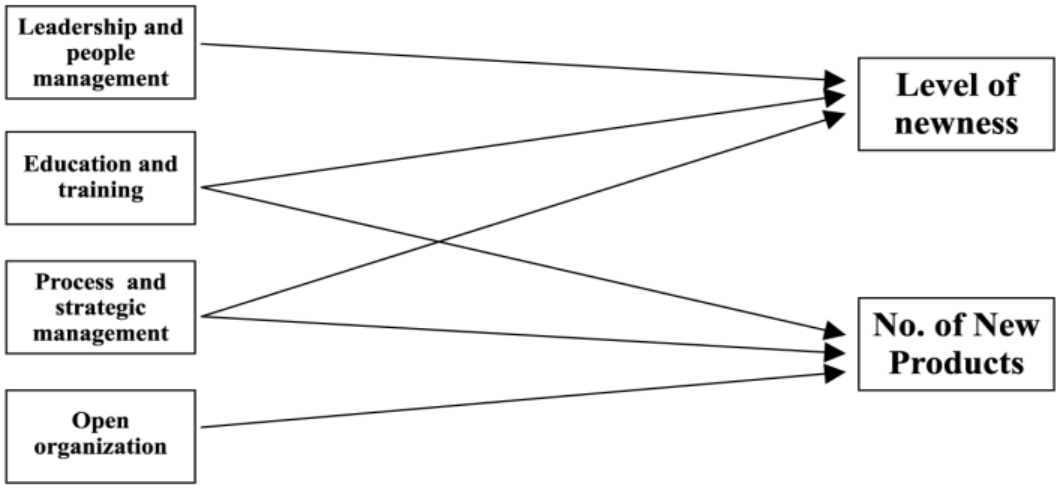

Figure (2-7): A Model of the Relationship between TQM and Innovation (Hoang and Laosirihongthong ,2006)

Also, Prajogo and Sohal, (2003) explored a causal relationship between quality performance and innovation performance including both manufacturing and non-manufacturing sectors, confirming that TQM is considered a key catalyst in both product quality and product development. Again, in another study by Prajogo and Sohal (2006) investigated the relationship between TQM and R&D management. The results revealed that R&D management is strongly related to innovation, where, TQM practices boosting the experts and specialists towards research and development, endorsing the share of knowledge and continuous improvement of processes, to find new markets and new customers. In addition to creating opportunities to implement quality management tools in their innovative activities. The adoption of quality management in innovative activities aids the

companies towards promoting themselves with respect to customer focus and minimizing the activities that do not create value for the customers as well as reducing time and costs in the development of new products, (Kim, Kumar, and Kumar,2012).

TQM instigates the organizations to achieve the maximum gains and the competitive advantage via products innovation. Lee et al. (2010) underlined that the senior managers of ISO 9001:2000-certified electrical and electronics (E&E) firms in Malaysia have perceived that customer focus, leadership, strategic planning, people management, process management and information and analysis are positively-correlated with product innovation. Moreover, information and analysis is the most prominent TQM practice that lead the organization to evolve their innovative activities for product innovation.

In the same context, Manders, de Vries and Blind, (2016) addressed the impact of TQM on radical and incremental product innovation; taking into consideration the factors that affect this relationship; motivation to implement ISO 9001, region, sector, size of the company and the version of the implemented standard. A framework had been developed to help the mangers to clear this relationship. Figure (2-8) illustrates the relationship between ISO 9001 and product innovation

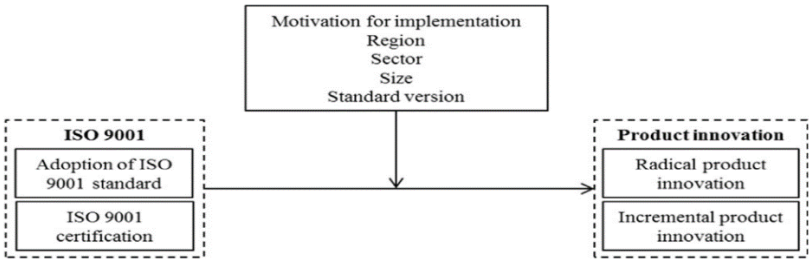

Figure: (2-8) The Relationship between ISO 9001 and Product Innovation (Manders, de Vries and Blind, 2016)

Accordingly, the following set of hypotheses are developed to investigate the impact of the eight TQM principles (in accordance with ISO setting) of product innovation in Palestinian food industry:

- H1a: Customer focus positively affects product innovation in the Palestinian food industry.
- H2a: Leadership positively affects product innovation in the Palestinian food industry.
- H3a: People involvement positively affects product innovation in the Palestinian food industry.
- H4a: Process approach positively affects product innovation in the Palestinian food industry.
- H5a: Systematic approach to management positively affects product innovation in the Palestinian food industry.
- H6a: Continuous improvement positively affects product innovation in the Palestinian food industry
- H7a: Factual approach to decision making positively affects product innovation in the Palestinian food industry.
- H8a: Mutual beneficial supplier relations positively affect product innovation in the Palestinian food industry.

Luning and Marcelis (2005) argued that the food quality management (managerial aspects and technological) contributes to create fertile environment for process innovation to change the traditional processes to new operation procedures.

On the other hand, Long et al. (2015) examined the relationship between TQM and innovation performance in the Malaysian manufacturing industry. The results of this study deduced that five TQM practices, namely, leadership, customer focus, process management, people management and strategic planning, have a positive impact on process innovation. Moreover, people management, process management, and customer focus are the most significant TQM practices that are positively associated with product innovation and process innovation. A conceptual framework had been developed to explain this relationship as shown in Figure (2-9).

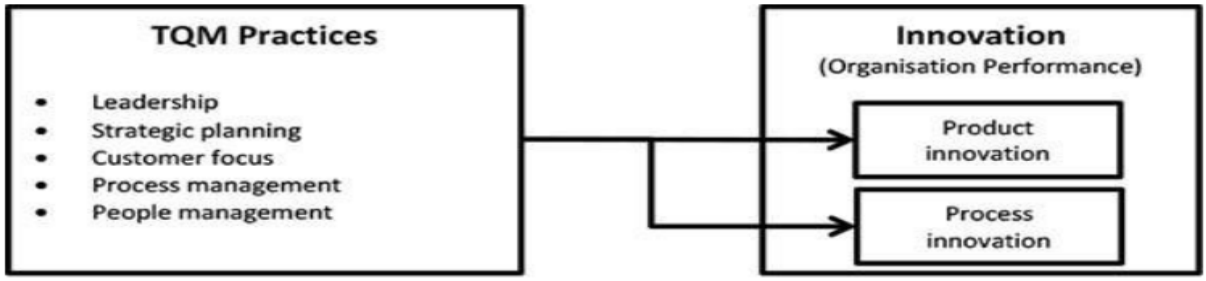

Figure (2-9): Conceptual Framework for TQM and Innovation. (Long et al. ,2015)

According to a study conducted by López-Mielgo, Montes-Peón and Vázquez-Ordás (2009), TQM implementation requires better conditions and allocated resources to positively contribute to innovation and standardizing the new process and new products. Zandhessami and Jalili (2013) investigated the effect of four dimensions of TQM; namely, customer focus, leadership, employee relations and continuous improvement on two dimensions of innovation; product innovation and process innovation. The results concluded that the leadership was the most significant with the innovation, in particular, the process innovation.

Consequently, the following set of hypotheses are developed to investigate the impact of the eight TQM principles (in accordance with ISO setting) on process innovation in Palestinian food industry:

- H1b: Customer focus positively affects process innovation in the Palestinian food industry
- H2b: Leadership positively affects process innovation in the Palestinian food industry.
- H3b: People involvement positively affects process innovation in the Palestinian food industry.
- H4b: Process approach positively affects process innovation in the Palestinian food industry.
- H5b: Systematic approach to management positively affects process innovation in the Palestinian food industry.
- H6b: Continuous improvement positively affects process innovation in the Palestinian food industry.

- H7b: Factual approach to decision making positively affects process innovation in the Palestinian food industry.
- H8b: Mutual beneficial supplier relations positively affect process innovation in the Palestinian food industry.

Abu-Salim, Sundarakani and Lasrado (2019) explored the relationship between TQM and organizational innovation in both manufacturing and service sectors in the United Arab Emirates (UAE). The findings revealed that continuous improvement (CI), information measurement (IM) and human resource management (HRM) were positively associated with organizational innovation. Meanwhile, Santos-Vijande and Álvarez-González (2007) advocated that TQM strongly and positively affects the firm's innovative culture and administrative innovation. TQM is a dominant basis to enable the organizations to develop radical innovation in the organizational processes (Collins and Hill, 1998).

Alongside, the following hypotheses are formulated to investigate the impact of the eight TQM principles (in accordance with ISO setting) on organizational innovation in Palestinian food industry:

- H1c: Customer focus positively affects organizational innovation in the Palestinian food industry
- H2c: Leadership positively affects organizational innovation in the Palestinian food industry.
- H3c: People involvement positively affects organizational innovation in the Palestinian food industry.
- H4c: Process approach positively affects organizational innovation in the Palestinian food industry.
- H5c: Systematic approach to management positively affects organizational innovation in the Palestinian food industry.

- H6c: Continuous improvement positively affects organizational innovation in the Palestinian food industry.
- H7c: Factual approach to decision making positively affects organizational innovation in the Palestinian food industry.
- H8c: Mutual beneficial supplier relations positively affect organizational innovation in the Palestinian food industry.

Yusr, Othman and Mokhtar (2012) confirmed that TQM practices are positively associated with the marketing capabilities of the organizations leading to superior innovation performance. Meanwhile, Sotirelis and Grigoroudis, (2020) advocated that implementing TQM practices in agro-food companies has a positive significant effect on marketing innovation. On the other hand, Demirbag et al., (2006) asserted that the marketing innovation has a positive significant impact on the performance of the organizations through TQM as mediator factor.

Correspondingly, the following hypotheses are formulated to investigate the impact of the eight TQM principles (in accordance with ISO setting) on marketing innovation in Palestinian food industry:

- H1d: Customer focus positively affects the marketing innovation in the Palestinian food industry
- H2d: Leadership positively affects the marketing innovation in the Palestinian food industry.
- H3d: People involvement positively affects the marketing innovation in the Palestinian food industry.
- H4d: Process approach positively affects the marketing innovation in the Palestinian food industry.
- H5d: Systematic approach to management positively affects the marketing innovation in the Palestinian food industry.

- H6d: Continuous improvement positively affects the marketing innovation in the Palestinian food industry.
- H7d: Factual approach to decision making positively affects the marketing innovation in the Palestinian food industry.
- H8d: Mutual beneficial supplier relations positively affect the marketing innovation in the Palestinian food industry.

Collectively, Figure (2-10) depicts the proposed conceptual framework in this study. More specifically, the model includes the aforementioned formulated hypotheses.

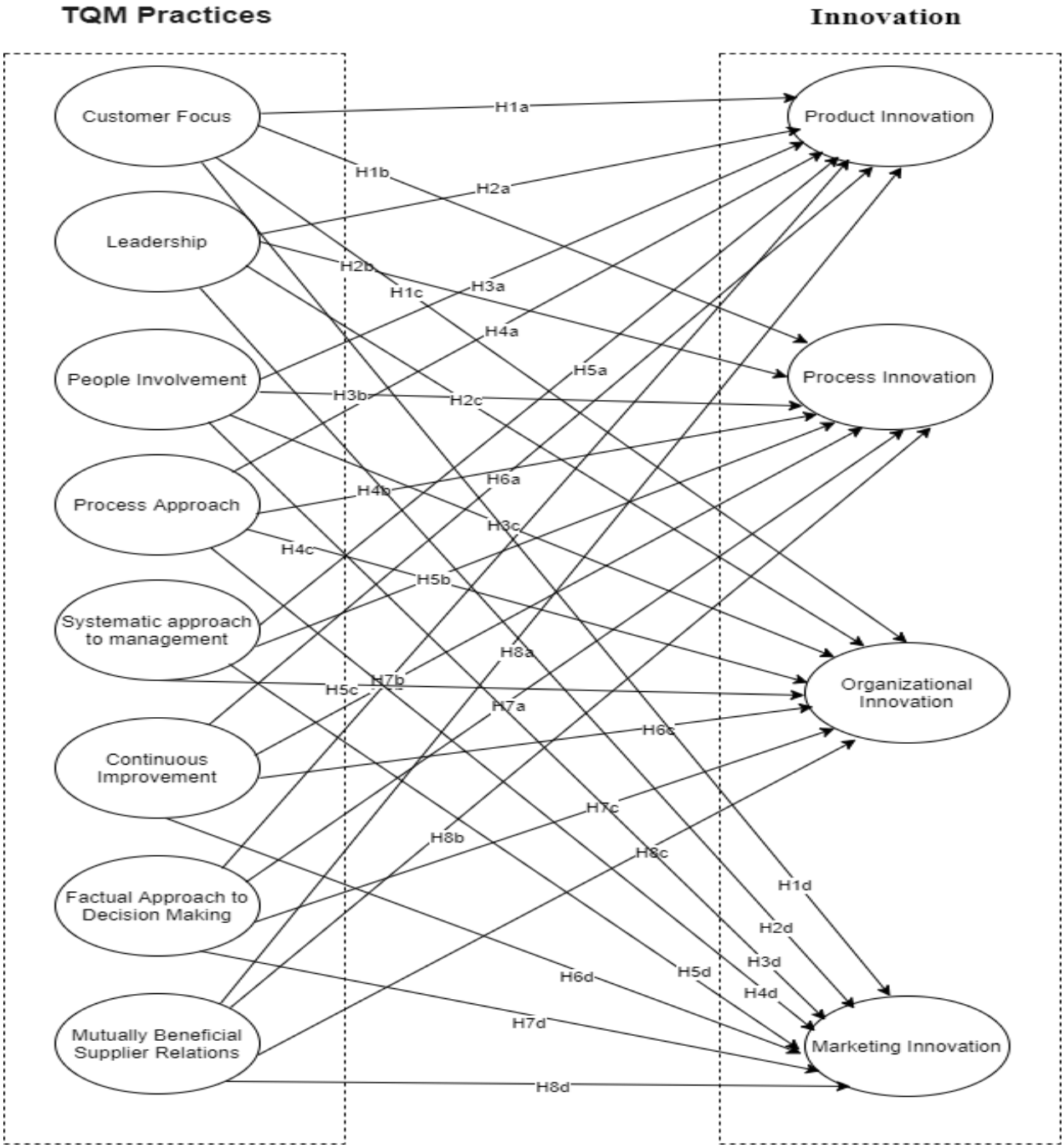

Figure (2-10): Proposed Conceptual Framework

Chapter Three

Methodology

3.1 Overview

This chapter addresses the methodology of this thesis. The first section clarifies the research design, approaches of the research, illustrating the choices of qualitative, quantitative, or the multiple methods, reaching to deducing the research strategies design. The following sections address data collection techniques, sampling methods and analyzing the data to reveal a model that illustrates the relationships between the independent variables and dependent variables in this study.

3.2 Approach of Research Design

Kothari (2004) defined research as an academic systematic and objective activity to search for knowledge for forming the solution of problems or generalization for theoretical formulation through defining the problem, formulating hypotheses, collecting and analyzing the facts and data reaching the conclusions.

Goddard and Melville (2004) classify the types of research as followings:

1. The experimental research: this research is a concern with cause and effect through revealing the effect of the changes in the independent variables (causes) on the changes in dependent variables (effects). Two groups are formulated, the experimental group and the control group.

2. Creative research: this research introduces new theory, new invention and new procedures, involving both theoretical researches concerning creating new theories as

well as new models and practical research concerning the design and physical issues mainly through trial and error.

3. Descriptive research: this research (case-study) addresses a certain situation to explore if a general theory is emerged.

4. Ex Post Facto Research: this research is looking backward at the effects to explore the causes. In other words, it is (from after the fact), which is in contrast to the experimental research.

5. Action Research: this research is participatory and emancipatory identifying a specific problem, gathering comprehensive data about the situation as well as involving the stockholders to take the recommendations to make the change. Moreover, the researcher would monitor the effectiveness of the implemented changes.

6. Historical research: this research addresses the previous related studies to examine a current situation deducing cause - effect relationships to predict the situation in the future.

7. Expository research: this research includes introducing new insight about a particular subject as a result of reviewing existing information, comparing contradictory arguments from previous studies.

Regarding the research objectives, Kothari, (2017), points out that three broad catagories are found for the researches; the first one, is explanatory research that addresses the causal relations variables (cause and effect) by data collection, statistical testing and analyzing the data to explain the effect of the independent variables on the dependent variables. The second one, is exploratory research that aims to go insight a certain topic or a problem via formulating hypotheses rather than testing them. In contrast to the exploratory, a third alternative is the

descriptive research that addresses a certain situation to explore if a general theory is emerged via the structuralized process for testing the hypotheses.

Based on the aforementioned types of researches, the explanatory research approach is used in this study. As the aim of this study is to explore the effect of TQM on innovation within the Palestinian food firms, where the relationship between the independent variables (TQM practices) and the dependent variables (innovation) is never examined before within Palestinian context.

3.3 Research Approach

Research approaches are the procedures and plans for formulating the assumptions, collecting, analysing and interpretation of the required data, (Vanderstoep and Johnson, 2008).

3.3.1 Main Research Approaches

Silverman (2013) elucidated the first approach; deductive approach is formulated through developing the hypotheses based on pre-existing theory. However, this approach is considered suited to the positivist approach leading to have an acceptable probability level (Snieder & Larner, 2009). The second approach is the inductive approach that is commonly applied in qualitative research. It is used in absence of theories; thus, the starting point is the observation and new theory is generated, (Bryman & Bell, 2011).

The third alternative is the abductive approach, which focuses on explanations of the facts that could not be clarified within the existing theories, (Vanderstoep and Johnson, 2008).

There are three basic approaches for the research, qualitative research approach, quantitative approach, or mixed methods. The selection of the proper research approach is based on the purpose of the research as well as the problem to be solved.

The Qualitative Approach: qualitative research commences with an inductive approach to investigate the phenomenon. The researchers in the qualitative approach collect data as observations, interviews and focus group to study deeply the situation in detail to understand all the categories, Durrheim (2006). Specifically, non-standardized techniques for data collection is used such as interviews and focus group interviews, afterward the collected data is analyzed using procedure (such as categorizing data) that generate or uses non-numerical data, (Creswell, 2003).

The Quantitative Approach: this approach is generally associated with a deductive approach. Creswell (2003) noted that quantitative research is the process of collecting, analyzing and interpreting the data leading to the research objectives via implementing the strategies of experiments, surveys, and collecting data methods. Durrheim (2006) differentiates quantitative and qualitative approaches, where, the researchers in quantitative approach collect data as numbers and employ the statistical methods to analyze the data, begins with predetermined categories to use the data through standardized measures.

Mixed Research Design: This approach is the integration of both quantitative and qualitative research design to understand the research problem and to answer the research questions, (Creswell, 2003).

As explained above, in this research, a deductive quantitative approach is applied.

3.4 Research Strategy

The research strategy is the plan of the researcher to achieve the research objective. The previous experience of the researcher affects the selections of the strategy, as the common research strategies are the experiment, case studies, survey research, observation, grounded theory, action research and mixed methods, (Vanderstoep and Johnson, 2008). More specifically, the research design strategies that are followed in quantitative researches are

experimental strategy, case study strategy, correlational design strategy or survey research design strategy as discussed below:

- Experimental research strategy: refers to much control on the environment of the research commonly used in physics, biology, chemistry, and medicine as well as investigating the effect of some of the variables on others, (Vanderstoep and Johnson, 2008).
- Case study strategy: refers to a specific contemporary phenomenon based on multiple sources of data, (Vanderstoep and Johnson, 2008).
- Correlational design strategy: a process identifying the relationships between the dependent variables and independent variables. The correlation has both direction and magnitude, regarding the direction, correlation can be positive or negative, (Vanderstoep and Johnson, 2008).
- Survey strategy: a procedure particularly applied in the quantitative approach to collect a sample representing a population with standardized methods to describe the characteristics, attitudes, opinions and trends of all the population, thus reaching to generalization of the sample to the population. The questionnaires and structured interview techniques are used for data collection in this strategy,(Creswell 2003).

As this research is considered quantitative research, a survey research strategy is used via employing the questionnaire technique for data collection

3.5 Research Methodology

To achieve the objectives of this research, a deductive quantitative methodology has been applied as Figure (3-1) demonstrates.

- **Phase 1**: At this phase, the scope of the research was identified as well as the problem to be solved, the significance and justifications to conduct the research were illustrated. An intensive literature review was conducted to reveal the effect of TQM on innovation, identifying and narrowing the gap to contribute to this topic. Consequently, the research questions were developed as well as the hypotheses were proposed to be tested. At the end, the research strategy was structured to achieve the research objectives.

- **Phase 2**: Data collection through identifying the population of the research and determining the number of a representative sample as well as selecting the technique to collect the required data through choosing survey strategy as a questionnaire was designed and distributed online to the selected sample.

- **Phase 3**: The data was analyzed and interpreted utilizing a statistical program using PLS-SEM to explore the relationships between the variables and to test the proposed hypotheses. Finally, the results and recommendations were explained

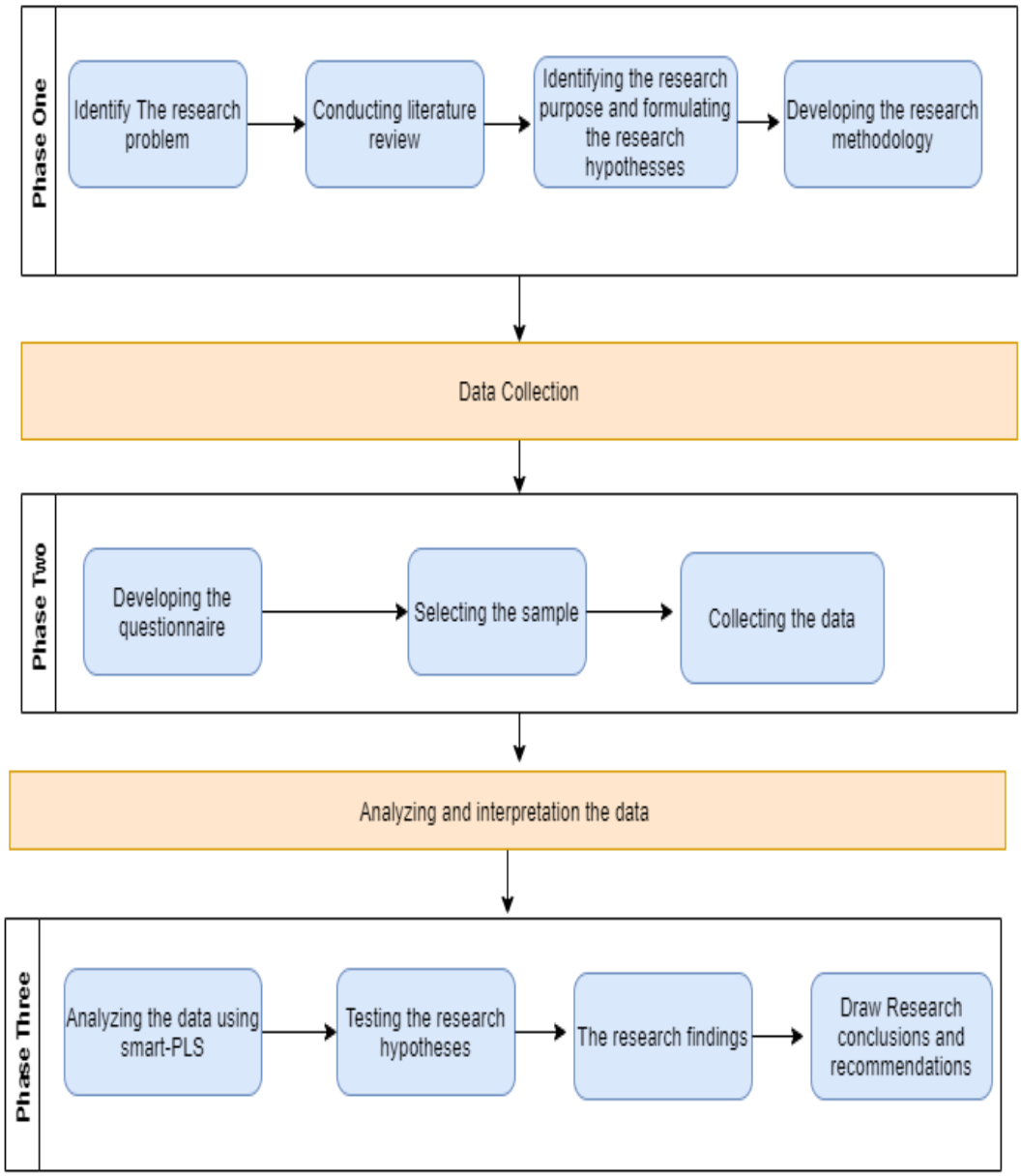

Figure (3-1): Research Diagram Flow Chart

3.6 Data Collection- Questionnaire Design

Indeed, the questionnaire is the main research method, considered as a tool to survey the population. The purpose of the survey is to represent a particular population where each respondent has an equal chance to be selected, (Gillham, 2008).

In this study, closed questions were predetermined for the respondents. The adopted scale was the Five-point Likert scale, which is "a psychometric scale that has multiple categories from which respondents choose to indicate their opinions, attitudes, or feelings about a particular issue", (Nemoto and Beglar, 2014).

The research questionnaire was developed based on an intensive literature review. The questionnaire has been judged by four local experts to evaluate the wording, clarity, redundancy, the ability of the items to be representative for each designated construct. A finalized English and Arabic questionnaire are available in Appendix A and Appendix B, respectively.

The questionnaire comprises four main sections. The cover letter presents the title of the research, the aim of the research, the time consumed to fill the questionnaire, an appreciation for the responses cooperation and finally the researcher's full contact details for any inquiries. The first section deals with the facts about the demographic profile of the respondents; gender, age, qualification, position and years of experience. Firms profile; the geographical location, number of employees, working years in the Palestinian market and finally the food subsectors are also included in this section.

The second section consists of eight subsections to measure the implementation of TQM practices (in accordance with ISO setting) in Palestinian food firms; customer focus, leadership, people involvement, process approach, systematic approach to management, continuous

improvement, factual approach to decision making and finally the mutual beneficial supplier's relations.

To determine the degree of approval or objection to a formula or phrase. A five-point Likert scale is used in this study, anchored by "1: strongly disagree" to "5: strongly agree". The third section compromises four subsections to assess the innovation performance in Palestinian food firms; product innovation, process innovation, organizational innovation and finally the marketing innovation. Again, a five Likert scale anchored by "1: strongly disagree" and "5: strongly agree" is used to ask respondents to score to which extend their firms are innovative.

The last section embraces an open-ended question to allow the respondents to express their opinions or any comments about something not covered in the questionnaire.

In this research, an Arabic electronic (online) questionnaire was utilized using Microsoft forms, sent by email to 75 targeted firms, as well as the respondents are contacted by telephone to clarify any ambiguity in the questionnaire items.

The starting data collection phase was in March 2021 and ending was at the beginning of June 2021. The data elicited by the items was stored anonymously on the Microsoft forms database to be analyzed.

3.7 Sampling Techniques

According to Durrheim (2006) sampling is the "selection of research participants from an entire population, and involves decisions about which people, setting, events, behavior, and/or social processes to observe".

Furthermore, the main objective is to select a representative sample that represents all the population. The sample types are;

Purposive Sampling: used in the qualitative approach, select the samples based on theoretical reasons.

Convenience Sampling: selecting the participants who are available whereas not representative of the population. Hence, it could not be generalized.

Random Sampling: an equal chance to select each case in the population, Thereby, it is a representative sample commonly used in surveys.

This research aims to explore the impact of TQM on innovation in the Palestinian food industry. Hence, the firms from the Palestinian food sector that implement a quality management system are the targeted population in this study.

According to the Ministry of National Economy (MoNE), 598 working firms in the food industry are registered in West Bank including the baking sector. The subsectors of food industry are; milk & dairy product, processing meat products, vegetable oils and fats, processing, and canning fruits and vegetables, wheat flour & cereal products feed industry, soft drinks and non-carbonated, pasta and noodles, sugars and sweets and bread and bakery products.

Excluding bakeries, packaging of the food products and slaughterhouses, the working firms are 300 firms. Thus, all of the 300 firms were investigated by contacting the MoNE and PFIU and Palestine Standards Institution (PSI) and the private certification bodies in Palestine.

As a result, 90 firms are legally registered and licensed to work in Palestine and applied a quality management system. A total of 75 food firms in all food subsectors were randomly sampled from a population. Steven Thompson formula, (Thompson, 1987) is used to calculate the sample size:

$$n = \frac{N \times p(1-p)}{\left[\left[N-1 \times \left(d^2 \div z^2\right)\right] + p(1-p)\right]}$$

Were,

n= the sample size

N=population size

P=proportion of property offers and neutral

d=error margin

z= is the upper α/2 of the normal distribution (for 95% confidence level 1.96)

The following parameters were used N= 90, P= 0.5, d= 0.05 and z=1.96 for 95% confidence level 95%. Applying the aforementioned equation, sample size is approximately n= 73

An electronic questionnaire was distributed to 75 Palestinian food firms in West Bank, a total of 75 was submitted with valid responses, as online questionnaires cannot be submitted unless all questions are answered.

3.8 Data Analysis Techniques

The collected data from the submitted questionnaires were raw, processing is needed to turn the data into useful information. In this study, the gathered data were statistically analyzed. The frequency test in SPSS statistical program was used to identify the demographic profiles for the targeted firms' respondents and the demographic profile for the targeted Firms.

PLS-SEM (Partial least squares structural equation modeling) as well as SEM -PLS Path model was used to assess the relationship between the variables.

PLS-SEM is a prominent software used in this study to validate the proposed model, PLS is powerful in tackling several types of research problems. More specifically, it can be ideal where the sample size is small as well as the data distribution is skewed, (Wong, 2013).

SEM -PLS Path model is a diagram that visually connects the variables, two types of theories are needed to develop the path model: measurement theory and structural theory. Measurement theory specifies the relationship between the construct and its indicators (measurement model) to assess the validity and reliability of the measures. Composite reliability is measured to assess the internal consistency reliability. In addition to estimating convergent validity and discriminant validity. Later to asserting valid and reliable measures, the relationship between variables is examined as well as the model's ability to predict is evaluated (structural model). Thus, coefficients of determination (R^2 values), the level and significance of the path coefficients, the predictive relevance (Q^2) and the effect sizes (f^2) are estimated, (Hair *et al.*, 2016).

Chapter Four

Data Analysis and Results

4.1 Overview

This chapter presents the analysis of the collected data. The first section addresses the descriptive statistic's findings via analysis of the demographic profiles for the targeted firms' respondents and the demographic profiles for the targeted firms. After that, the analysis of the collected data and testing the proposed hypotheses utilizing the PLS_SEM are displayed to examine the effect of TQM on innovation in the Palestinian food industry.

4.2 Demographic Profiles Analysis

Frequency test in SPSS is used to identify the demographic profile for the targeted firms' respondents as well as the demographic profile for the targeted firms. The findings and the interpretation of the results are demonstrated in the following subsections.

4.2.1 Demographic Profile for the Targeted Firms' Respondents

4.2.1.1 Gender and Age: The analysis shows that 91% of the respondents from the targeted food firms were male, whilst 9% of the respondents were female as illustrated in Figure (4-1).

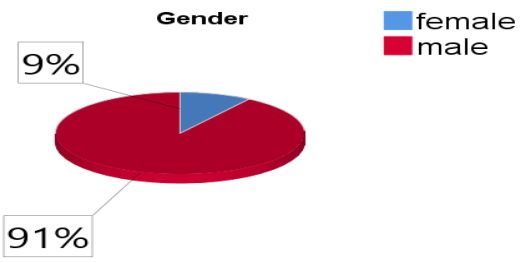

Figure (4-1): Respondents' Gender

Meanwhile, 59% of the respondents' ages were ranging from 21 and 40, and 41% of their ages were 41 years and above. A summary of the respondents' ages frequency percentage is depicted in Figure (4-2).

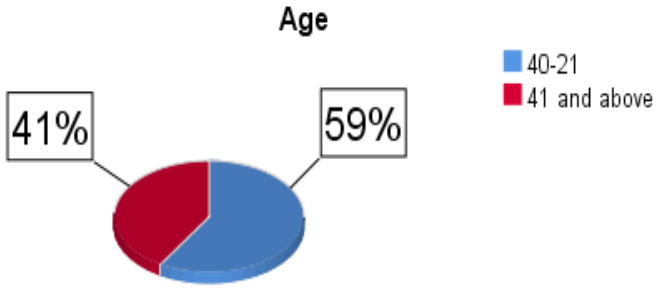

Figure (4-2): Respondents Age

4.2.1.2 Educational Level

About 85% of the respondents have a bachelor's degree,11% of them have a master's degree, 1% of them have PhD degree,1% of them have diploma degree and 1% of them were other degree. The educational level of the respondents is shown in Figure (4-3).

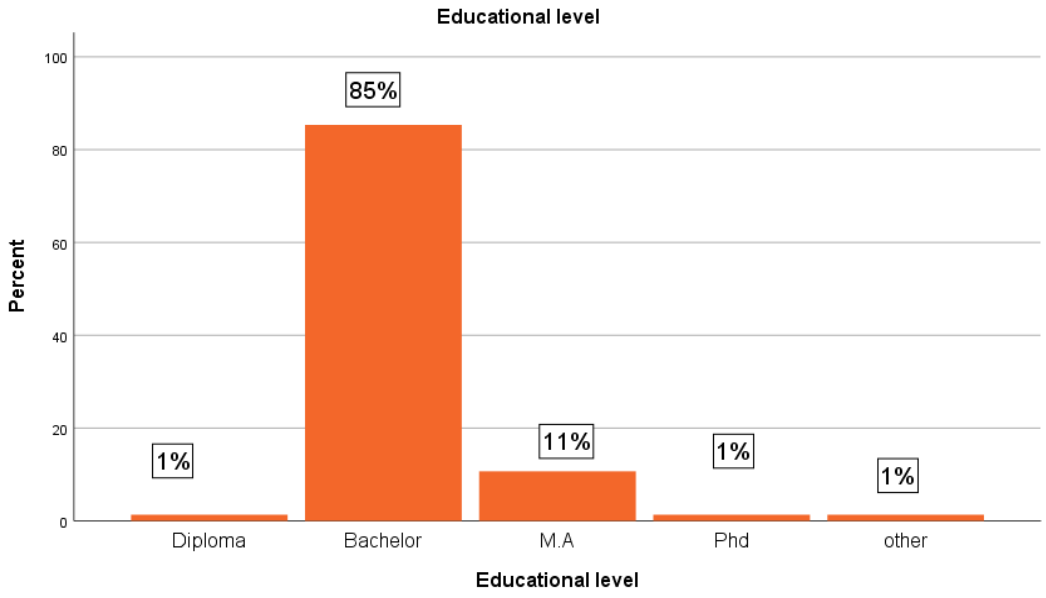

Figure (4-3): Respondents Educational Level

4.2.1.3 Positions in the Targeted Firms

Figure (4-4) displays that 29% of the respondents were quality managers, 27% of the respondents were administrative employees, 23% of them were head of departments, whereas 11% of the respondents were general directors, meanwhile 11% of them are technical managers.

Figure (4-4): Respondents Positions in the Targeted Firms

4.2.1.4 Years of Experience

Figure (4-5) shows that 44% of the respondents have (11-20) years of experience, and 25% of them ranging from (5-10) years of experience, meanwhile 25% of their experience was 21 years and above while 5% of the respondents were less than 5 years of experience.

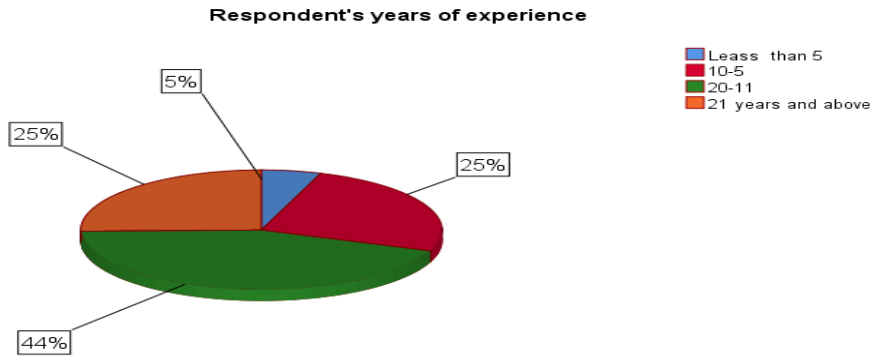

Figure (4-5): Respondents Years of Experience

4.2.2 Demographic Profile for the Targeted Firms

4.2.2.1 Firms' Locations

As illustrated in Figure (4-6), most of the surveyed firms are located in Ramallah with frequency percent 28%, meanwhile, 16% of them are located in each of Nablus and Tukaram. The figure also shows that 13% of them are located in Hebron. Also, 9%,7%, 4%,3%, 3% and 1% of the firms are located in Jericho, Jerusalem, Jenin, Qalqilya, Tubas and Bethlehem, respectively.

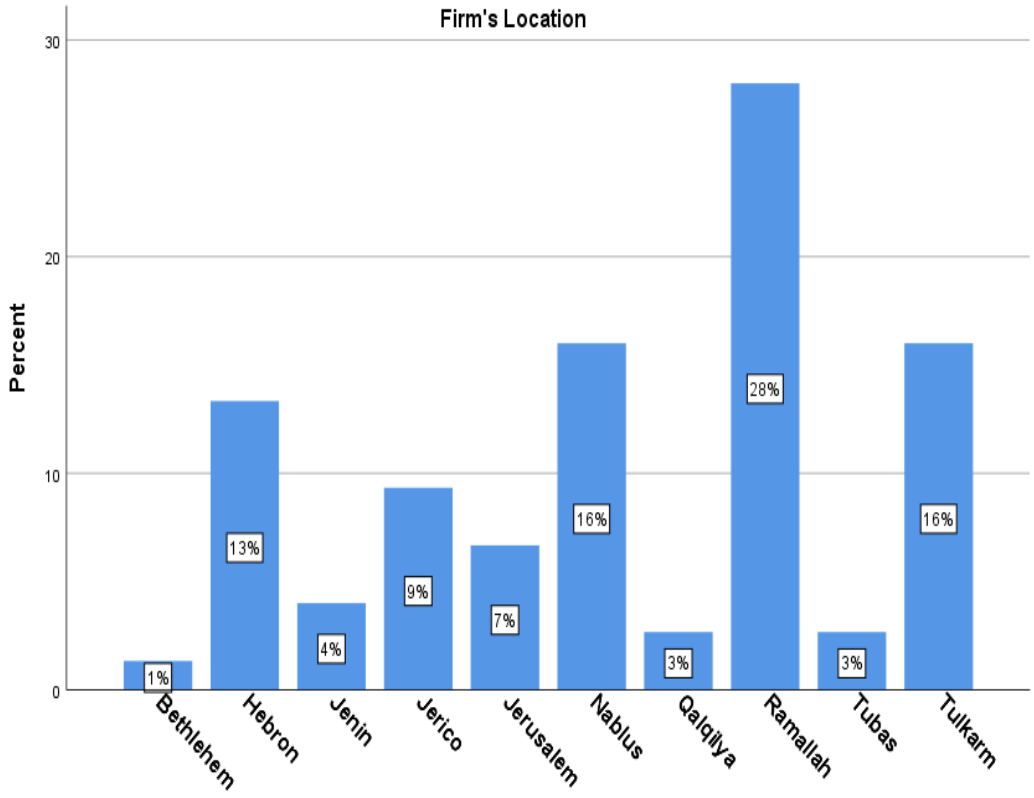

Figure (4-6): Firms' Locations

4.2.2.2 Number of Employees

The analysis found that 8% of the surveyed firms have more than 250 employees, 37% of them have from (50 to 249) employees,55% of the firms have from (6 to 49) employees, as shown in Figure (4-7). According to European Union (EU) and the Organization for Economic Co-

operation and Development (EU/OECD) classification of the firm's size, the firms with (1-49) employees are classified as small, the firms with (50 to 249) employees are classified as a medium, and firms with more than 250 employees are considered as large. Consequently, most of the representative firms (55%) are classified as small-sized and (37%) of the targeted firms are medium-sized, meanwhile, only 8% of the targeted firms are classified as large firms.

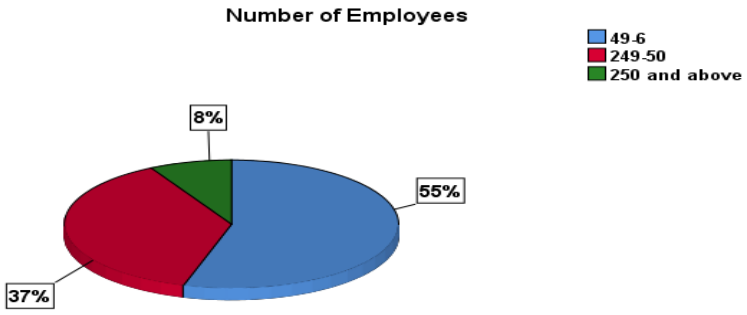

Figure (4-7): Number of Employees in the Firms

4.2.2.3 Firms' Working Years in the Palestinian Market

Figure (4-8) shows that 60% of the targeted firms have been working in the Palestinian market from 11to 30 years, while 23% of them have been working in the Palestinian market for 31 years and above, 11% of the firms have experience in the food industry from 6 to 10 years and 7% of them have less than 5 working years.

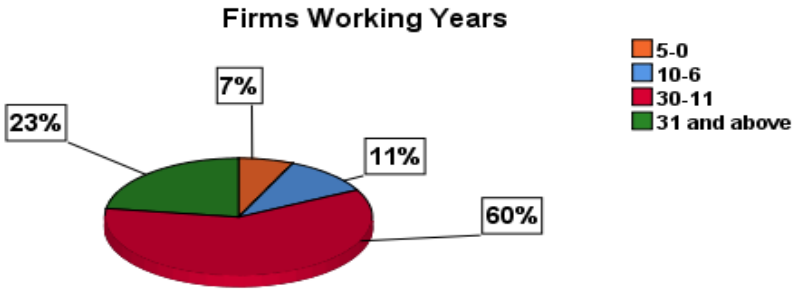

Figure (4-8): Firms Working Years in the Palestinian Market

4.2.2.4 Firms Food Subsectors

Each of milk and dairy products and processed meat subsectors was 9% of the sample firms,7% of surveyed firms were manufacturing wheat flour, grain and feed products, each of sugar and sweets products, and vegetable oil and fats products sectors represented 5% of the sample, meanwhile, 12% firms were working in the soft drinks and non-carbonated sector,19% of them were processing and cannoning fruits and vegetables and only 1% of them were manufacturing pasta and noodles, whereas the most food subsectors(32%) were classified as other food products as shown in Figure (4-9).

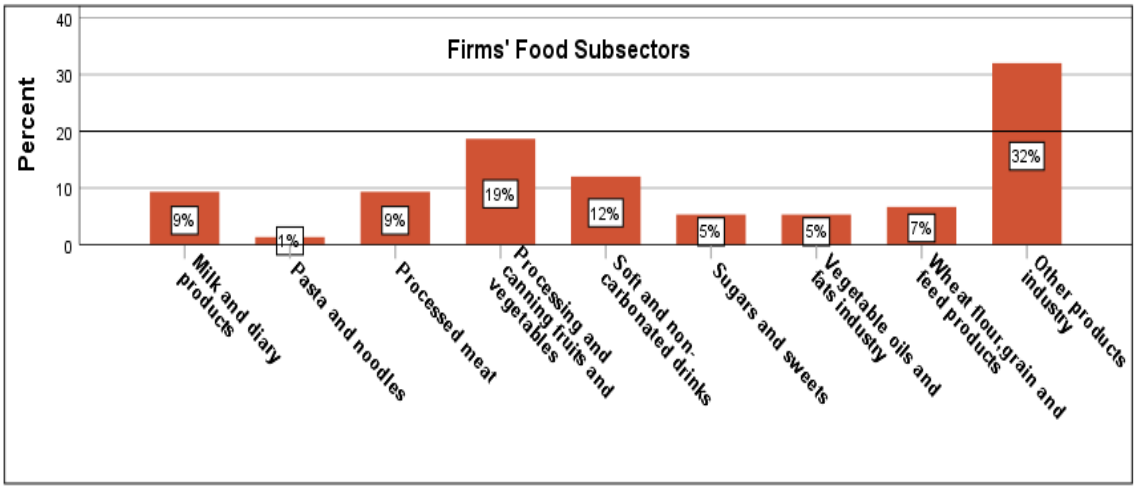

Figure (4-9): Firms Food Subsectors

4.3 SEM-Partial Least Squares (PLS) Analysis

4.3.1 Measurement Development

Based on the literature reviews, 46 items were generated to measure TQM practices (specifically, customer focus: 6 items, leadership: 6 items, people involvement: 6 items, process approach: 6 items, systematic approach to management: 6 items, continuous improvement: 5 items, factual approach to decision making: 6 items, and mutual beneficial suppliers' relations: 5 items). On the other hand, 25 items were to measure the innovation types (product innovation:

6 items, process innovation: 6 items, organizational innovation: 7 items, marketing innovation: 6 items). Table (4-1) illustrates the generated items. The generated items were reviewed and assessed by four judges with regards to accuracy of items, redundancy, wording clarity and the ability of the items to describe the constructs. Accordingly, the generated items were modified and improved.

A five-point Likert-type scale is used to measure the previous items, the scale ranged from 1: strongly disagree to 5: strongly agree and each respondent from the food firms was asked to express to which extent his/her firm implements each TQM practice. The results indicates that the degree of approval of the respondents toward customer focus practice in the food firms achieves approximately the score (4.28), leadership practice achieves approximately the score (4.25), people involvement practice achieves approximately the score (4.15), process approach practice achieves approximately the score (4.19), systematic approach to management achieves approximately the score (4.32), continuous improvement practice achieves approximately the score (4.37), factual approach to decision making achieves approximately the score (4.08) and mutual beneficial suppliers relations practice achieves approximately the score (4.34).

Likewise, 25 items were generated to assess four types of innovation; product innovation, process innovation, organizational innovation and marketing innovation, using the same five-point Likert-type scale. The results indicate that the degree of approval of the respondents toward product innovation in the food firms achieves approximately the score (4.12), process innovation achieves approximately the score (4.24), organizational innovation achieves approximately the score (3.72) and marketing innovation achieves approximately the score (4.1).

Partial least squares structural equation modeling (PLS-SEM) is a prominent approach used in this study to validate the proposed model. PLS is powerful in tackling several types of research

problems. More specifically, it can be ideal where the sample size is small as well as the data distribution is skewed, (Wong, 2013). Smart PLS package was used for the analysis.

SEM-PLS specifies the relationship between the construct and its indicators (outer model) to assess the validity and the reliability of the measure. According to asserting valid and reliable measures, the relationship between the independent variables and dependent variables is examined (inner model), hence, the ability of the model to predict will be estimated.

Table (4-1): Variable Measurements

Construct	Construct Items		References
Customer Focus			**Saleh et al. (2018)**
***5-point Likert scale**			
	TQM- CF1	Your organization depends on customers to identify their wants and needs.	
	TQM- CF2	Your organization follows up the customer complaints according to an approved procedure in this regard.	
	TQM- CF3	Your organization takes the customer suggestions into consideration when introducing new products.	
	TQM- CF4	Your organization measures the customer satisfaction according to an approved procedure.	
	TQM- CF5	There are clear baselines for relations with the customer.	
	TQM- CF6	The loyalty of the customers belongs to your organization and its products.	
Leadership			**Hung et al. (2011)**
	TQM- LEAD1	There is a clear plan for the top management to implement total quality management.	
	TQM- LEAD2	Top management participates with all employees in the organization's vision and future goals.	
	TQM- LEAD3	Top management is committed to providing the necessary infrastructure for the implementation of total quality management.	

	TQM- LEAD4	Top management provides the necessary financial support for the training programs of employees.
	TQM- LEAD5	Top management is concerned with removing the obstacles that facing the implementation of TQM.
	TQM- LEAD6	Top management promotes a culture of innovation and creativity in the organization.
People involvement		**عادل عيد & عياد (2017)**
	TQM-PEOP1	Employees are involved in making the decisions.
	TQM-PEOP2	Employees are trained and their capabilities are upgraded.
	TQM-PEOP3	Employees are rewarded for their achievements.
	TQM-PEOP4	Employees are appreciated by their managers when they achieve a high level of performance.
	TQM-PEOP5	Your organization is motivating the employees morally.
	TQM-PEOP6	Your organization measures the employee's satisfaction on an ongoing basis.
Process approach		**Saleh et al. (2018)**
	TQM- PA1	The processes are designed to ensure the quality at all stages.
	TQM- PA2	Your organization seeks to simplify the operating procedures.
	TQM- PA3	Your organization documents all operations in a clear and understandable manner for all employees.
	TQM- PA4	Your organization applies the statistical methods to adjust operations according to the required specifications.
	TQM- PA5	There are standards operation procedures that clarify the responsibilities and authorities of the employees.
	TQM- PA6	Your organization has a monitoring and control system for operations processes.
Systematic Approach to Management		**عادل عيد & عياد (2017)**
	TQM -SAM1	Working policies are clear and known by all employees.

	TQM - SAM 2	Quality is assured at all levels of the organization.
	TQM - SAM 3	The working system is characterized as participative, cooperative and integrative
	TQM - SAM 4	There is an effective communication channels between the general directorate, department managers and employees.
	TQM - SAM 5	The workers are trained to work with the updated processes.
	TQM -SAM6	The system is constantly reviewed and updated.
Continuous Improvement		**Saleh et al. (2018)**
	TQM -CI1	You are always thinking about how to do your better.
	TQM –CI2	Your organization grants the flexibility to the employees to introduce new ideas for continuous improvement.
	TQM –CI3	There is a clear policy regarding improvement of products, processes and systems.
	TQM –CI4	Your organization seeks to reduce the time required to produce the product.
	TQM –CI5	Your organization seeks to reduce the production costs.
Factual Approach to Decision Making		**عادل عيد & عياد (2017)**
	TQM-FAD1	The decisions are made based on available data and statistics.
	TQM-FAD2	The decisions are made to be applicable.
	TQM-FAD3	Data is checked for accuracy before relying on it to make the decisions.
	TQM-FAD4	There are approved methods for data collection and analysis.
	TQM-FAD5	Your organization provides appropriate conditions for the exchange of information.
	TQM-FAD6	Your organization renews the sources of information.
Mutual Beneficial Suppliers Relations		**Silva et al. (2014)**
	TQM-MBSR1	The suppliers provide the organization with information about the raw materials.

	TQM-MBSR2	The suppliers provide the organization with information about the components of raw materials for generating new products
	TQM-MBSR3	The information is exchanged with the suppliers about manufacturing processes.
	TQM-MBSR4	Your organization seeks to establish long-term relationships with the suppliers.
	TQM-MBSR5	The suppliers are evaluated according to approved criteria.
Product Innovation		**Silva et al. 2014)**
***5-point Likert scale**		
	PI1	Your organization has a special department for research and development of new products.
	PI2	Your organization dedicates the resources to introduce new products.
	PI3	The new products are distinguished by innovative and competitive taste, design and packaging.
	PI4	Your organization obtains the new ideas from the customers to improve the products.
	PI5	The quantity of the new products is introduced to the market.
	PI6	The launching of new products creates the desired competitive advantage
Process Innovation		**Taddese and Osada (2010)**
	PRI1	The traditional operation systems are updated to provide everything that is new and expected.
	PRI2	Your organization provides the financial resources to improve the performance of production processes.
	PRI3	Processes of production are re-designed according to the customer needs.
	PRI4	Manufacturing processes are gradually being automated.
	PRI5	The equipment used in the manufacturing process has already been updated.
	PRI6	New technologies contribute to increase sales compared to the traditional technologies.

Organizational innovation		**عادل عيد & عياد (2017)**
	OI1	The organizational structure has high degree of flexibility.
	OI2	Your organization has made a major organizational change that has not been done before.
	OI3	The workplace has been rearranged.
	OI4	There are complex formal procedures within the organizational structure that limit innovation.
	OI5	Employees have the ability to offer new solutions to problems they encounter at work.
	OI6	New operation procedures are created to meet the changeable needs of the customers.
	OI7	There is a flexibility for creating new ideas at all administrative levels.
Marketing innovation		**Yusr et al. (2012)**
	MI1	Your organization creates an unconventional marketing method in placement of the new products.
	MI2	Your organization creates innovative pricing marketing method.
	MI3	Your organization conducts the market survey in innovative methods.
	MI4	Your organization allocates the financial resources for the marketing activities.
	MI5	Your organization conducts innovative marketing campaigns.
	MI6	Your organization seeks to find new market segment.

4.3.2 Assessment of the Measurement Model

Evaluation both validity and reliability of the measures is conducted to assess the reflective measurement model. Messick (1989, p.13) states that validity is “an integrated evaluative judgment of the degree to which empirical evidence and theoretical rationales support the

adequacy and appropriateness of inferences and actions based on test scores and other modes of assessment". Thereby, average variance extracted (AVE) is tested to evaluate the convergent validity and the discriminant validity is evaluated by Fornell- Larcker criterion and cross-loadings. In addition, the reliability is examined to evaluate the internal consistency via testing the composite reliability (CR) and individual indicator reliability. According to (Hair, Ringle and Sarstedt, 2011), the outer loading of the indicators should be more than 0.70, to consider acceptable, while the indicators with the outer loading between 0.40 and 0.70 should be eliminated if deleting them enhances the composite reliability (CR) and average variance extracted (AVE). On the other hand, the indicators with outer loading below 0.40 should be removed from the scale, (Hair Jr et al., 2016).

In general, items with loadings less than 0.4 or 0.5 should be dropped, (Hulland, 1999). Consequently, this threshold is employed in this study to assess the individual indicator reliability. Based on the criteria mentioned above, 11 items out of 71 were removed due to the low outer loading or to enhance the composite reliability (CR) and average variance extracted (AVE). The deleted items are (PA1, SAM1, SAM2, CI1, CI5, FAD2, PRI1, OI2, OI3, OI4, MI6). A final set of 60 items was retained for the next step of the analysis process.

After testing the individual indicator reliability, the composite reliability is estimated to evaluate the internal consistency. Composite reliability is accepted when it is more than 0.70 (Hair, Ringle and Sarstedt, 2011). Each construct in this study has CR values higher than 0.70, hence confirming the reliability of the constructs. Convergent validity is evaluated by testing the AVE. The AVE should be more than 0.50 to indicate an adequate validity of the construct (Fornell and Larcker, 1981). The results indicate that AVE values are ranging from 0.507 to 0.638, thus the constructs validity is confirmed. The individual items loading, CR and AVE are reported in the Table (4-2) and are illustrated in Figure (4-12).

Table (4-2): Reflective Constructs Measurement Properties

Reflective Variable	Construct Items	Item Loading	Composite Reliability (CR)	Average Variance Extracted (AVE)
Customer Focus	CF1	0.810	**0.876**	**0.547**
	CF2	0.731		
	CF3	0.806		
	CF4	0.686		
	CF5	0.829		
	CF6	0.531		
Leadership	LEAD1	0.588	**0.876**	**0.543**
	LEAD2	0.747		
	LEAD3	0.796		
	LEAD4	0.825		
	LEAD5	0.670		
	LEAD6	0.767		
People Involvement	PEOPI1	0.764	**0.878**	**0.547**
	PEOPI2	0.667		
	PEOPI3	0.803		
	PEOPI4	0.690		
	PEOPI5	0.799		
	PEOPI6	0.704		
Process Approach	PA1	0.807	**0.843**	**0.522**
	PA3	0.774		
	PA4	0.576		
	PA5	0.659		
	PA6	0.771		
Systematic Approach to Management	SAM2	0.660	**0.839**	**0.568**
	SAM3	0.750		
	SAM4	0.858		
	SAM5	0.736		
	C12	0.778	**0.752**	**0.507**

Continuous Improvement	CI3	0.767		
	CI4	0.572		
Factual Approach to Decision Making	FAD1	0.811	**0.880**	**0.596**
	FAD3	0.788		
	FAD4	0.783		
	FAD5	0.798		
	FAD6	0.672		
Mutual Beneficial Supplier Relations	MBSR1	0.812	**0.852**	**0.541**
	MBSR2	0.830		
	MBSR3	0.738		
	MBSR4	0.535		
	MBSR5	0.724		
Product Innovation	PI1	0.682	**0.868**	**0.527**
	PI2	0.777		
	PI3	0.778		
	PI4	0.780		
	PI5	0.739		
	PI6	0.573		
Process Innovation	PRI2	0.824	**0.824**	**0.542**
	PRI3	0.804		
	PRI5	0.672		
	PRI6	0.625		
Organizational Innovation	OI1	0.751	**0.836**	**0.561**
	OI5	0.821		
	OI6	0.728		
	OI7	0.689		
Marketing Innovation	MI1	0.746	**0.898**	**0.638**
	MI2	0.801		
	MI3	0.858		
	MI4	0.689		
	MI5	0.885		

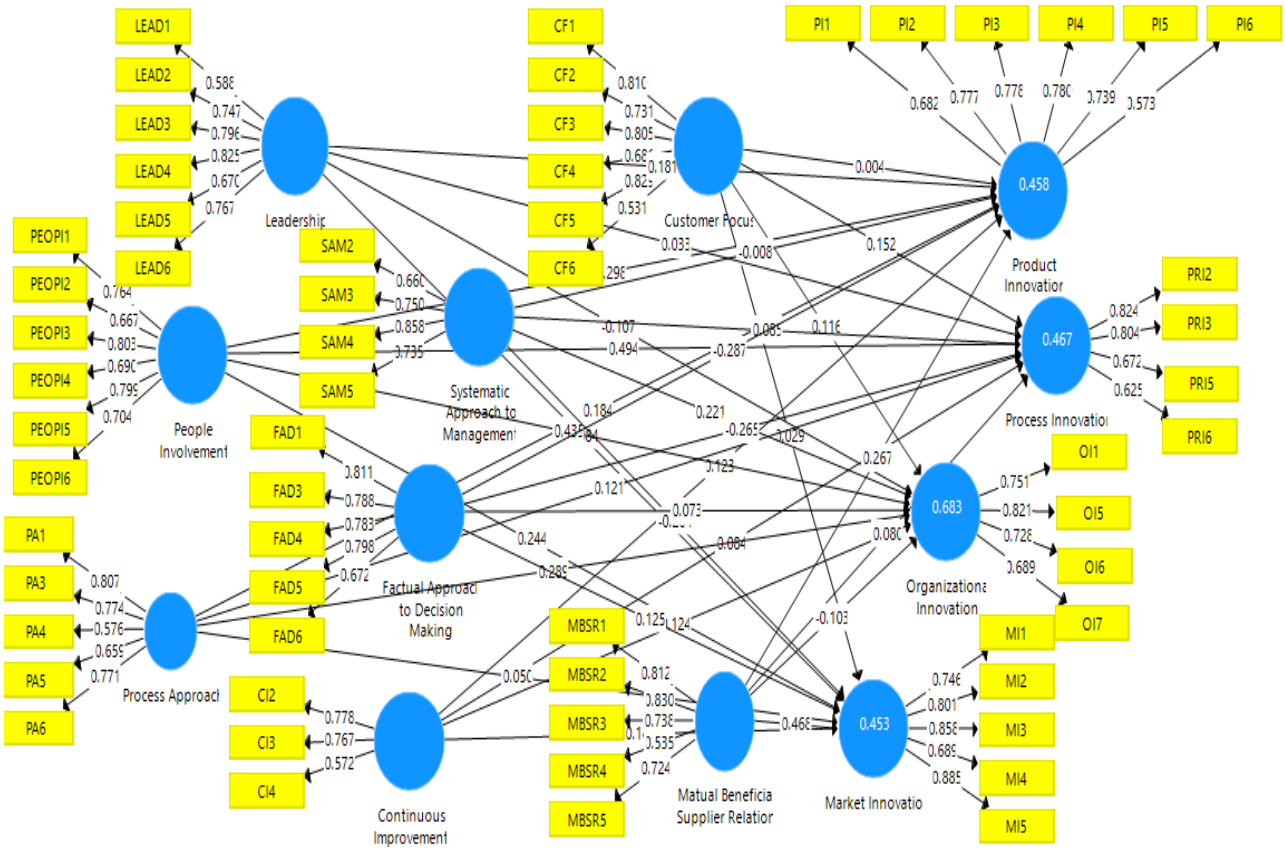

Figure (4-10): Research Model PLS Path Modeling Estimation

Three approaches are applied to evaluate the discriminant validity; the first one is the cross-loadings test to verify that each of the indicator's outer loading on the construct should be greater than all of its loadings on other constructs. The second one is Fornell-Larcker, it calculates the square root of the AVE values of each construct and compares it with the latent variable correlations. A third approach called the Heterotrait-Monotrait ratio of correlations (HTMT) is proposed to assess discriminant validity, (Henseler, Ringle and Sarstedt, 2015). Based on this reference, Table (4-3) summarizes the cross - loading of each indicator's outer loading, with the other constructs in the horizontal line, while Table (4-4) represents the Fornell-Larcker criterion, where AVE of each construct is higher than the construct's highest squared correlation with any other construct. Finally, the Table (4-5) displays the (HTMT criteria, where HTMT's values in this study are less than 1, (Henseler, Ringle and Sarstedt, 2015). Accordingly, the discriminant validity of the research model is established.

Table (4-3): Discriminant Validity- Cross Loading

Item	CF	LEAD	PEOPI	PA	SAM	CI	FAD	MBSR	PI	PRI	OI	MI
CF1	0.810*	0.453	0.346	0.380	0.294	0.294	0.265	0.397	0.288	0.440	0.434	0.310
CF2	0.731*	0.442	0.278	0.583	0.239	0.330	0.372	0.453	0.183	0.305	0.389	0.302
CF3	0.805*	0.366	0.318	0.350	0.312	0.283	0.282	0.326	0.302	0.210	0.333	0.107
CF4	0.686*	0.413	0.290	0.462	0.339	0.404	0.555	0.384	0.254	0.170	0.375	0.415
CF5	0.829*	0.429	0.294	0.393	0.334	0.341	0.444	0.380	0.285	0.417	0.400	0314
CF6	0.531*	0.222	0.234	-0.021	0.070	0.264	0.043	0.163	0.305	0.209	0.229	0.203
LEAD1	0.432	0.588*	0.372	0.468	0.293	0.317	0.388	0.532	0.353	0.237	0.365	0.327
LEAD2	0.437	0.747*	0.577	0.433	0.534	0.509	0.581	0.530	0.508	0.364	0.498	0.460
LEAD3	0.543	0.796*	0.483	0.507	0.456	0.364	0.508	0.472	0.342	0.440	0.430	0.219
LEAD4	0.403	0.825*	0.538	0.431	0.523	0.471	0.630	0.456	0.333	0.371	0.504	0.340
LEAD5	0.225	0.670*	0.448	0.353	0.457	0.265	0.463	0.241	0.181	0.226	0.340	0.238
LEAD6	0.314	0.767*	0.651	0.294	0.483	0.555	0.530	0.450	0.491	0.479	0.554	0.440
PEOPI1	0.257	0.534	0.764*	0.180	0.512	0.466	0.397	0.356	0.541	0.386	0.575	0.503
PEOPI2	0.391	0.563	0.667*	0.422	0.394	0.292	0.500	0.462	0.362	0.518	0.463	0.359
PEOPI3	0.192	0.623	0.803*	0.290	0.629	0.508	0.542	0.344	0.391	0.400	0.556	0.239
PEOPI4	0.313	0.495	0.690*	0.341	0.420	0.495	0.286	0.366	0.370	0.498	0.513	0.313
PEOPI5	0.314	0.453	0.799*	0.235	0.437	0.418	0.388	0.367	0.384	0.546	0.609	0.365
PEOPI6	0.305	0.502	0.704*	0.160	0.470	0.467	0.410	0.482	0.339	0.394	0.426	0.406
PA1	0.364	0.560	0.368	0.807*	0.398	0.272	0.504	0.548	0.417	0.364	0.472	0.322
PA3	0.413	0.352	0.320	0.774*	0.370	0.286	0.294	0.412	0.382	0.388	0.567	0.296
PA4	0.312	0.333	0.123	0.576*	0.340	0.246	0.446	0.317	0.219	0.135	0.347	0.252
PA5	0.351	0.326	0.169	0.659*	0.290	0.267	0.411	0.339	0.182	0.174	0.236	0.293
PA6	0.379	0.396	0.253	0.771*	0.354	0.226	0.444	0.425	0.249	0.135	0.374	0.308
SAM2	0.354	0.452	0.384	0.561	0.660*	0.344	0.433	0.489	0.303	0.372	0.435	0.276
SAM3	0.166	0.411	0.464	0.238	0.750*	0.458	0.364	0.355	0.290	0.442	0.480	0.294
SAM4	0.211	0.599	0.659	0.386	0.858*	0.569	0.502	0.521	0.409	0.393	0.581	0.335
SAM5	0.409	0.417	0.402	0.302	0.735*	0.425	0.476	0.444	0.361	0.237	0.529	0.250
CI2	0.315	0.643	0.591	0.217	0.524	0.788*	0.476	0.452	0.415	0.444	0.455	0.352
CI3	0.307	0.288	0.392	0.411	0.413	0.767*	0.382	0.444	0.294	0.350	0.462	0.462
CI4	0.329	0.280	0.226	0.090	0.330	0.572*	0.144	0.254	0.305	0.152	0.322	0.181
FAD1	0.331	0.569	0.425	0.462	0.533	0.454	0.811*	0.290	0.250	0.263	0.529	0.362
FAD3	0.338	0.489	0.338	0.485	0.398	0.332	0.788*	0.253	0.199	0.157	0.431	0.315
FAD4	0.434	0.501	0.336	0.616	0.407	0.363	0.783*	0.311	0.184	0.153	0.468	0.251
FAD5	0.333	0.663	0.608	0.426	0.561	0.393	0.798*	0.483	0.279	0.307	0.533	0.346
FAD6	0.350	0.487	0.431	0.202	0.329	0.379	0.672*	0.496	0.232	0.273	0.341	0.369
MBSR1	0.283	0.510	0.527	0.403	0.545	0.485	0.394	0.812*	0.450	0.431	0.396	0.520
MBSR2	0.502	0.452	0.423	0.486	0.475	0.561	0.373	0.830*	0.484	0.502	0.414	0.503
MBSR3	0.366	0.415	0.385	0.397	0.443	0.360	0.354	0.738*	0.466	0.256	0.432	0.484
MBSR4	0.110	0.343	0.244	0.200	0.243	0.192	0.194	0.535*	0.324	0.170	0.172	0.276
MBSR5	0.443	0.552	0.334	0.582	0.442	0.389	0.407	0.724*	0.362	0.324	0.452	0.430
PI1	0.204	0.386	0.401	0.303	0.392	0.423	0.381	0.433	0.682*	0.259	0.452	0.391
PI2	0.255	0.405	0.428	0.270	0.288	0.373	0.162	0.417	0.777*	0.414	0.362	0.432

PI3	0.262	0.467	0.350	0.468	0.326	0.304	0.173	0.532	0.778*	0.480	0.326	0.433
PI4	0.358	0.428	0.450	0.301	0.342	0.404	0.218	0.372	0.780*	0.432	0.451	0.444
PI5	0.271	0.375	0.458	0.234	0.426	0.383	0.261	0.451	0.739*	0.420	0.460	0.355
PI6	0.217	0.127	0.262	0.259	0.172	0.114	0.120	0.207	0.573*	0.228	0.256	0.302
PRI2	0.395	0.564	0.549	0.362	0.418	0.476	0.275	0.373	0.485	0.824*	0.409	0.354
PRI3	0.314	0.370	0.627	0.189	0.403	0.414	0.329	0.341	0.440	0.804*	0.473	0.424
PRI5	0.241	0.203	0.286	0.285	0343	0.252	0.122	0.352	0.264	0.672*	0.439	0.232
PRI6	0.230	0.226	0.239	0.246	0.208	0.136	0.099	0.380	0.319	0.625*	0.220	0.302
OI1	0.319	0.494	0.598	0.420	0.609	0.494	0.498	0.456	0.320	0.458	0.751*	0.392
OI5	0.397	0.479	0.539	0.568	0.592	0.377	0.415	0.420	0.454	0.335	0.821*	0.359
OI6	0.444	0.450	0.407	0.420	0.355	0.466	0.441	0.356	0.356	0.371	0.728*	0.336
OI7	0.344	0.448	0.577	0319	0.427	0.433	0.455	0.320	0.462	0.439	0.689*	0.449
MI1	0.388	0.308	0.437	0.232	0.189	0.294	0.357	0.371	0.403	0.324	0.417	0.746*
MI2	0.398	0.388	0.494	0.339	0.388	0.353	0.407	0.442	0.476	0.440	0.586	0.801*
MI3	0.278	0.301	0.300	0.301	0.206	0.381	0.237	0.483	0.416	0.315	0.367	0.858*
MI4	0.204	0.513	0.446	0.327	0.480	0.446	0.367	0.575	0.418	0.359	0.359	0.689*
MI5	0.283	0.375	0.315	0.400	0.260	0.447	0.339	0.556	0.458	0.367	0.327	0.885*

Table (4-4): Discriminant Validity (Using Fornell-Larcker criterion)

	CF	**LEAD**	**PEOPI**	**PA**	**SAM**	**CI**	**FAD**	**MBSR**	**PI**	**PRI**	**OI**	**MI**
CF	**0.739**											
LEAD	0.536	**0.737**										
PEOPI	0.399	0.712	**0.740**									
PA	0.503	0.553	0.365	**0.722**								
SAM	0.368	0.628	0.644	0.488	**0.754**							
CI	0.434	0.587	0.595	0.358	0.603	**0.712**						
FAD	0.458	0.710	0.565	0.565	0.589	0.502	**0.722**					
MBSR	0.486	0.619	0.532	0.577	0.600	0.555	0.478	**0.735**				
PI	0.363	0.526	0.544	0.427	0.454	0.474	0.301	0.572	**0.726**			
PRI	0.413	0.497	0.620	0.364	0.481	0.470	0.306	0.577	0.529	**0.736**		
OI	0.498	0.626	0.714	0.582	0.674	0.588	0.604	0.523	0.531	0.534	**0.749**	
MI	0.385	0.477	0.498	0.405	0.386	0.487	0.429	0.615	0.546	0.454	0.513	**0.799**

Table (4-5) Discriminant Validity- Heterotrait-Monotrait Ratio (HTMT)

	CF	LEAD	PEOPI	PA	SAM	CI	FAD	MBSR	PI	PRI	OI	MI
CF												
LEAD	0.632											
PEOPI	0.482	+0.840										
PA	0.642	0.693	0.431									
SAM	0.488	0.789	0.811	0.650								
CI	0.680	0.820	0.860	0.539	0.942							
FAD	0.554	0.837	0.671	0.731	0.739	0.706						
MBSR	0.570	0.755	0.651	0.710	0.771	0.812	0.580					
PI	0.444	0.579	0.648	0.510	0.579	0.705	0.363	0.688				
PRI	0.496	0.578	0.739	0.466	0.633	0.667	0.358	0.710	0.644			
OI	0.633	0.777	0.898	0.726	0.894	0.941	0.765	0.665	0.684	0.716		
MI	0.450	0.540	0.587	0.497	0.479	0.690	0.505	0.732	0.647	0.562	0.651	

4.3.3 Assessment of the Structural Model

After establishing the validity and reliability, assessment of the structural model for the first order model (Model1) is conducted to examine the ability of the model to predict as well as to explore the relationships between the constructs. Four criteria are used to assess the structural model; the coefficient of determination (R^2 Value), the significance of the path coefficients, the effect size (f^2) and the predictive relevance (Q^2).

Firstly, based on the classification that Hair Jr et al., (2016) proposed for evaluating (R^2), the coefficient of determination (R^2) values for product innovation, process innovation, organizational innovation and marketing innovation were estimated as displayed in Table (4-6). Where, R^2 values for the dependent variables below 0.25 are considered weak, R^2 values from 0.25 to 0.5 are considered moderate and the R^2 values from 0.50 to 0.75 are considered substantial. In this study, the R^2 values were (0.458, 0.467,0.683 and 0.453).

Table (4-6): Coefficient of Determination R^2(Model-1)

Construct	R Square	R Square Adjusted	Result
Product Innovation	0.458	0.392	Moderate
Process Innovation	0.467	0.402	Moderate
Organizational Innovation	0.683	0.644	High
Marketing Innovation	0.453	0.387	Moderate

Secondly, based on Cohen, (2013) for effect size classification where the f^2 values above 0.35 are considered large effect size; f^2 values ranging from 0.15 to 0.35 are medium effect size, f^2 values between 0.02 to 0.15 are small effect size, and f^2 values less than 0.02 are considered to have no effect size. The effect size f^2 are estimated and illustrated in Table (4-7).

Table (4-7): Effect size f^2 (Model- 1)

	f^2							
Construct	**Customer focus**	**Leader -ship**	**People involve ment**	**Process approac h**	**Systematic approach to management**	**Continuous improvement**	**Factual approach to decision making**	**Mutual beneficial supplier relations**
Product Innovation	**0.000**	**0.018**	0.066	0.031	**0.000**	**0.014**	0.064	**0.059**
Process Innovation	0.027	**0.001**	0.183	**0.014**	**0.006**	**0.007**	0.055	**0.005**
Organizati onal Innovation	0.026	**0.011**	0.239	0.133	0.065	0.025	**0.007**	**0.015**
Marketing Innovation	0.001	0.004	0.044	0.002	0.032	0.024	0.012	**0.181**

Accordingly, there is no effect from customer focus on product innovation and marketing innovation, whereas the effects of customer focus on the process innovation and organizational innovation are relatively small. Leadership has no effect on any of the four innovation dimensions. On the other hand, people involvement has medium effect size on both process innovation and organizational innovation, while people involvement has small effect on both

product innovation and marketing innovation. Process innovation is not affected by process approach, while the process approach has small effect on product innovation, organizational innovation and marketing innovation. Systematic approach to management has no effect on both product innovation and process innovation while it has small effect on both organizational innovation and marketing innovation. Likewise, continuous improvement has no effect on both product innovation and process innovation while it has small effect on both organizational innovation and marketing innovation. Organizational innovation and marketing innovation are not affected by factual approach to decision making, while, this approach has small effect on product innovation and process innovation. Lastly, mutual beneficial supplier relation has medium effect on the marketing innovation and small effect on product innovation and no effect on both process innovation and organizational innovation.

Blindfolding procedure is followed to estimate the Stone-Geisser's Q^2 value. According to Hair, Ringle and Sarstedt, (2011), Q^2 values of the constructs that are more than zero confirm the model's predictive relevance for these construct. Table (4-8) demonstrate the Q^2 value.

Following to estimation of R^2, f^2 and Q^2 values, the goodness of fit (GoF) of the model is calculated by the geometric mean of both AVE and the average of R^2 of the dependent variables, and comparing to the baseline values for GoF (Wetzels et al.,2009). There is no fit when GoF value is less than 0.1, whereas, there is a small fit when GoF is between 0.1 and 0.25, while when GoF values are between 0.25 and 0.36 the fit is medium. Large fit is achieved when GoF value is higher than 0.36. The calculated GoF for this model is 0.53 which is considered a sufficient global PLS model validity.

Table (4-8): Construct Cross-Validated Redundancy (Model-1)

Construct	SSO	SSE	Q^2 (=1-SSE/SSO)
Product Innovation	450.000	363.666	0.192
Process Innovation	300.000	244.236	0.186
Organizational Innovation	300.000	207.119	0.310
Marketing Innovation	375.000	283.551	0.244

The proposed hypotheses are tested to identify the statistical significance of the path coefficient via PLS bootstrapping where the critical t-value for a two-tailed test is 1.96 (significance level = 5 percent). PLS bootstrapping is running for re-sampling of 5000 (Hair Jr et al., 2016). The results from running bootstrapping are given in Figure (4-11).

The analysis shows that 5 out of 32 proposed hypotheses were supported. More specifically, the results revealed that people involvement (PI) has a strongly positive significant effect on process innovation (PR), hence, H3b is supported where (β=0.494, T-Value=3.362 and P-value=0.001). Likewise, people involvement (PI) has a strongly significant and positive effect on organizational innovation. Thus, H3c is supported with bootstrapping values of (β=0.435, T-Value=3.931and P-value=0.000). On the other hand, process approach captures positive significant effect on organizational innovation, so H4c is supported where (β=0.289, T-Value=2.206 and P-value=0.028). Systematic approach to management has positive significant effect on organizational innovation. Therefore, H5c is supported, where (β=0.221, T-Value=2.006 and P-value=0.045). Mutual beneficial supplier relations manifested a positive significant relationship with marketing innovation, hence H8d is supported where the estimated bath coefficient values are β = 0.468, T-Value=2.826, and P-value= 0.005.

Customer focus does not affect any type of innovation, as (H1a, H1b, H1c, H1d) are not supported, likewise, leadership does not affect any type of innovation as (H2a, H2b, H2c, H2d) are not supported, whereas the people involvement affects only on process and organizational

innovation but does not affect product and marketing innovation. Thus, both of H3a and H3d are not supported. Organizational innovation is the only type of innovation that process approach affects as (H4a, H4b, H4d) are not supported. In similar, organizational innovation is the only type that systematic approach to management affects as (H5a, H5b, H5d) are not supported. On the other hand, both continuous improvement and factual approach to decision making do not affect any type of innovation as (H6a, H6b, H6c, H6d, H7a, H7b, H7c, H7d) are not supported. Mutual beneficial supplier relation affects the marketing innovation whereas it does not affect the other types of innovation, as (H8a, H8b, H8c) are not supported. Table (4-9) demonstrates the model-1 fit results.

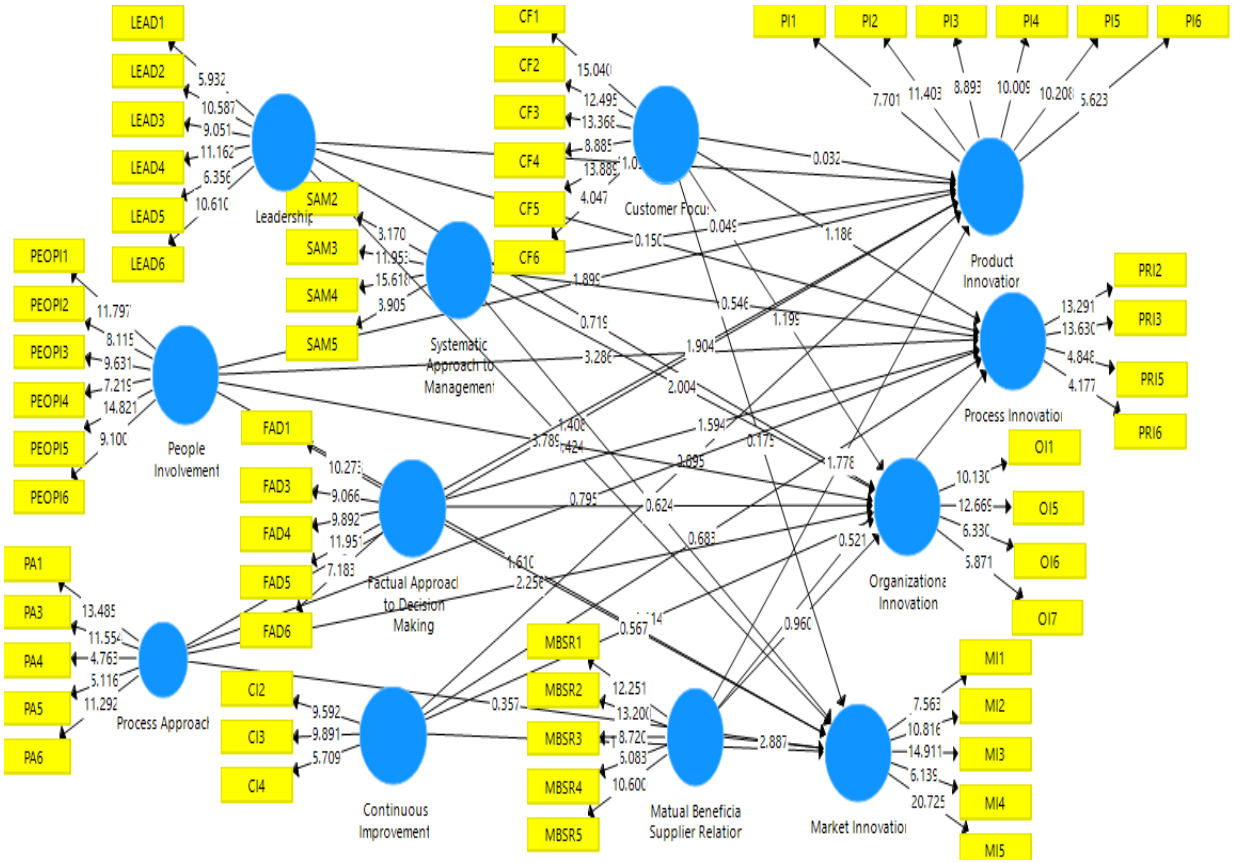

Figure (4-11): Model Fit Employing PLS-Bootstrapping Procedure (Model-1)

Table (4-9): Model Fit Results (Model-1)

Path	HYP.	(β)	Standard Deviation (STDEV)	T-value	P Values	Result
Customer focus -> Product innovation	H1a	0.004	0.110	0.033	0.974	Not supported
Customer focus -> Process innovation	H1b	0.152	0.120	1.271	0.204	Not supported
Customer focus -> Organizational innovation	H1c	0.116	0.097	1.195	0.233	Not supported
Customer focus -> Marketing innovation	H1d	0.029	0.165	0.173	0.863	Not supported
Leadership -> Product innovation	H2a	0.181	0.168	1.078	0.282	Not supported
Leadership -> Process innovation	H2b	0.033	0.220	0.152	0.879	Not supported
Leadership -> Organizational innovation	H2c	-0.107	0.145	0.736	0.462	Not supported
Leadership -> Marketing innovation	H2d	-0.084	0.198	0.427	0.669	Not supported
People involvement -> Product innovation	H3a	0.298	0.158	1.887	0.060	Not supported
People involvement -> Process innovation	**H3b**	**0.494**	**0.147**	**3.362**	**0.001**	**Supported**
People involvement -> Organizational innovation	**H3c**	**0.435**	**0.111**	**3.931**	**0.000**	**Supported**
People involvement -> Marketing innovation	H3d	0.244	0.148	1.651	0.099	Not supported
Process approach-> Product innovation	H4a	0.184	0.135	1.358	0.175	Not supported
Process approach-> Process innovation	H4b	0.121	0.161	0.750	0.453	Not supported
Process approach-> Organizational innovation	**H4c**	**0.289**	**0.131**	**2.206**	**0.028**	**Supported**
Process approach-> Marketing innovation	H4d	0.050	0.143	0.348	0.728	Not supported
Systematic approach to management-> Product innovation	H5a	-0.008	0.165	0.049	0.961	Not supported
Systematic approach to management-> Process innovation	H5b	0.085	0.162	0.524	0.601	Not supported
Systematic approach to management-> Organizational innovation	**H5c**	**0.221**	**0.110**	**2.006**	**0.045**	**Supported**
Systematic approach to management-> Marketing innovation	H5d	-0.204	0.146	1.401	0.162	Not supported
Continuous improvement-> Product innovation	H6a	0.123	0.136	0.900	0.368	Not supported
Continuous improvement-> Process innovation	H6b	0.084	0.116	0.728	0.467	Not supported
Continuous improvement-> Organizational innovation	H6c	0.124	0.110	1.129	0.259	Not supported
Continuous improvement-> Marketing innovation	H6d	0.161	0.137	1.180	0.239	Not supported

Factual approach to decision making-> Product innovation	H7a	-0.287	0.150	1.907	0.057	Not supported
Factual approach to decision making-> Process innovation	H7b	-0.265	0.167	1.591	0.112	Not supported
Factual approach to decision making-> Organizational innovation	H7c	0.073	0.115	0.636	0.525	Not supported
Factual approach to decision making-> Marketing innovation	H7d	0.125	0.226	0.552	0.581	Not supported
Mutual beneficial supplier relations-> Product innovation	H8a	0.267	0.147	1.812	0.071	Not supported
Mutual beneficial supplier relations-> Process innovation	H8b	0.080	0.152	0.523	0.601	Not supported
Mutual beneficial supplier relations-> Organizational innovation	H8c	-0.103	0.106	0.978	0.329	Not supported
Mutual beneficial supplier relations-> Marketing innovation	**H8d**	**0.468**	**0.166**	**2.826**	**0.005**	**Supported**

Consequently, the conceptual framework based on the supported hypotheses in (Model-1) is illustrated in Figure (4-12).

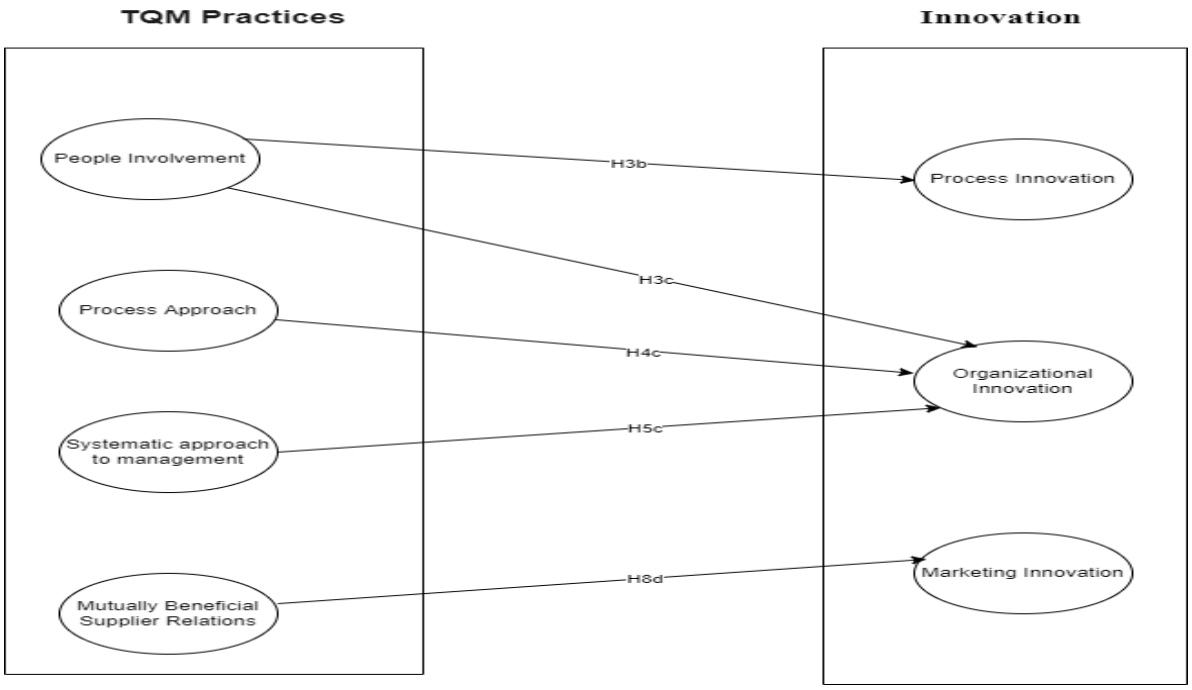

Figure (4-12): The Conceptual Framework

In order to explore the effect of TQM on the innovation in Palestinian food firms, a second-order model was constructed using repeated indicators approach. The measurement and the structural model were validated and tested using Smart PLS 3.3.2 package. Figure (4-13)

illustrates the research model PLS path modeling estimation (Model-2). The internal consistency of the reflective measurement model was evaluated using individual indicator reliability and composite reliability, as well as AVE was employed to evaluate the convergent validity. Moreover, the discriminate validity was evaluated using the Fornell-Larcker criterion and the HTMT ratio of correlations. The calculated results confirmed the model constructs reliability and validity as tabulated in Tables (4-10, 11, 12) below.

Table (4-10) Reflective Constructs Measurement Properties (Model-2)

Reflective Variable	Construct Items	Item Loading	Composite Reliability (CR)	Average Variance Extracted (AVE)
Customer Focus	CF1	0.793	**0.875**	**0.546**
	CF2	0.751		
	CF3	0.817		
	CF4	0.708		
	CF5	0.825		
	CF6	0.482		
Leadership	LEAD1	0.592	**0.877**	**0.547**
	LEAD2	0.732		
	LEAD3	0.821		
	LEAD4	0.836		
	LEAD5	0.698		
	LEAD6	0.731		
People Involvement	PEOPI1	0.747	**0.878**	**0.547**
	PEOPI2	0.679		
	PEOPI3	0.816		
	PEOPI4	0.688		
	PEOPI5	0.784		
	PEOPI6	0.714		
Process Approach	PA1	0.807	**0.845**	**0.526**
	PA3	0.724		
	PA4	0.588		
	PA5	0.687		
	PA6	0.797		

Systematic Approach to Management	SAM2	0.679	**0.839**	**0.567**
	SAM3	0.720		
	SAM4	0.859		
	SAM5	0.743		
Continuous Improvement	C12	0.809	**0.750**	**0.505**
	CI3	0.738		
	CI4	0.562		
Factual Approach to Decision Making	FAD1	0.802	**0.881**	**0.597**
	FAD3	0.794		
	FAD4	0.796		
	FAD5	0.797		
	FAD6	0.666		
Mutual Beneficial Supplier Relations	MBSR1	0.810	**0.852**	**0.541**
	MBSR2	0.825		
	MBSR3	0.724		
	MBSR4	0.538		
	MBSR5	0.744		
Product Innovation	PI1	0.706	**0.869**	**0.526**
	PI2	0.770		
	PI3	0.760		
	PI4	0.778		
	PI5	0.748		
	PI6	0.570		
Process Innovation	PRI2	0.830	**0.824**	**0.542**
	PRI3	0.797		
	PRI5	0.670		
	PRI6	0.628		
Organizational Innovation	OI1	0.750	**0.836**	**0.561**
	OI5	0.815		
	OI6	0.739		
	OI7	0.686		
Marketing Innovation	MI1	0.741	**0.897**	**0.636**
	MI2	0.813		
	MI3	0.845		
	MI4	0.703		
	MI5	0.874		

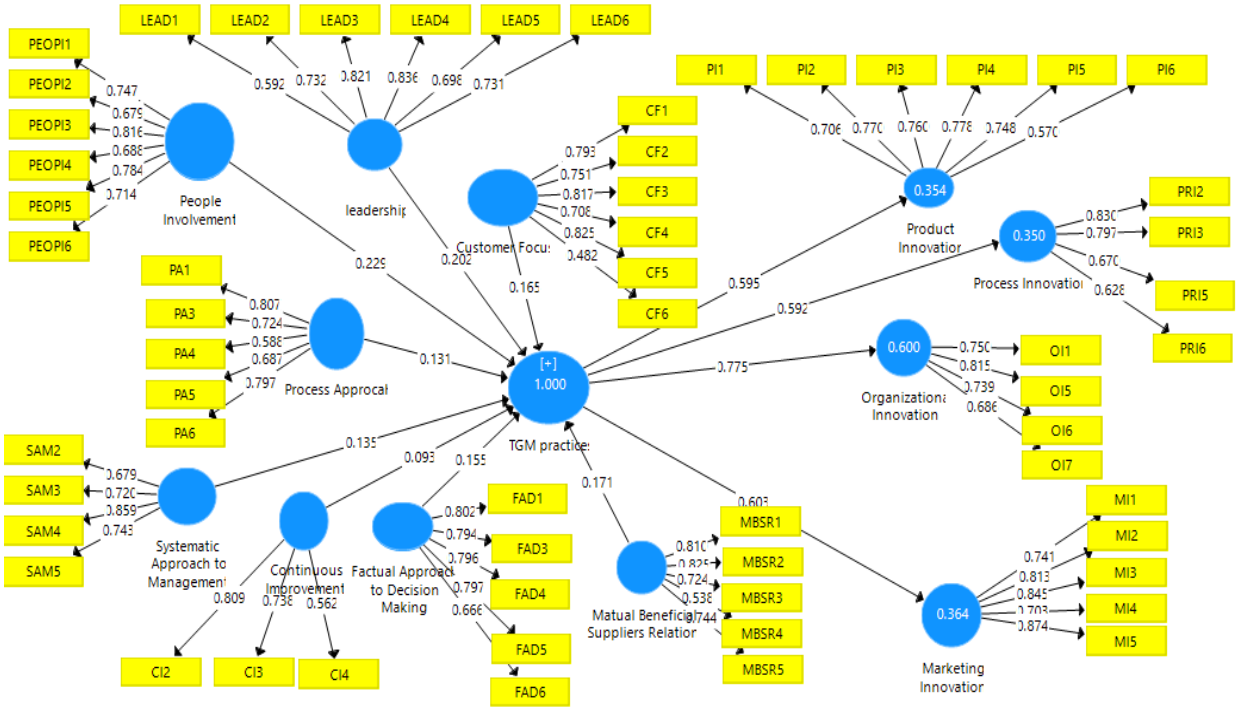

Figure (4-13): Research Model PLS Path Modeling Estimation (Model-2)

Table (4-11): Discriminant Validity (Using Fornell-Larcker criterion) (Model-2)

	CF	LEAD	PEOPI	PA	SAM	CI	FAD	MBSR	PI	PRI	OI	MI
CF	**0.739**											
LEAD	0.541	**0.739**										
PEOPI	0.396	0.705	**0.740**									
PA	0.526	0.562	0.360	**0.725**								
SAM	0.387	0.629	0.648	0.496	**0.753**							
CI	0.431	0.585	0.605	0.348	0.604	**0.711**						
FAD	0.480	0.705	0.572	0.584	0.591	0.504	**0.773**					
MBSR	0.494	0.615	0.535	0.580	0.607	0.554	0.480	**0.735**				
PI	0.351	0.505	0.541	0.408	0.463	0.484	0.309	0.568	**0.726**			
PRI	0.400	0.490	0.616	0.344	0.476	0.474	0.302	0.478	0.523	**0.736**		
OI	0.497	0.614	0.706	0.558	0.672	0.588	0.603	0.524	0.538	0.532	**0.749**	
MI	0.384	0.472	0.502	0.409	0.401	0.485	0.434	0.617	0.549	0.460	0.523	**0.798**

Table (4-12): Discriminant Validity- Heterotrait-Monotrait Ratio (HTMT) (Model-2)

	CF	LEAD	PEOPI	PA	SAM	CI	FAD	MBSR	PI	PRI	OI	MI
CF												
LEAD	0.632											
PEOPI	0.482	0.840										
PA	0.642	0.693	0.431									
SAM	0.488	0.789	0.811	0.650								
CI	0.680	0.820	0.860	0.539	0.942							
FAD	0.554	0.837	0.671	0.731	0.739	0.706						
MBSR	0.570	0.755	0.651	0.710	0.771	0.812	0.580					
PI	0.444	0.579	0.648	0.510	0.579	0.705	0.363	0.688				
PRI	0.496	0.578	0.739	0.466	0.633	0.667	0.358	0.621	0.644			
OI	0.633	0.777	0.898	0.726	0.894	0.941	0.765	0.665	0.684	0.716		
MI	0.450	0.540	0.587	0.497	0.479	0.690	0.505	0.732	0.647	0.562	0.651	

Variance Inflation Factor (VIF) was estimated to examine the collinearity among constructs in the formative measurement model based on threshold that (Hair Jr et al., 2016) referred, the VIF values should be below 5. All the estimated VIF values that are tabulated in Table (4-13) are accepted. Consequently, there was no critical levels of collinearity.

Table (4-13): Formative Construct Assessment (Model-2)

Second-order construct	First-order constructs	VIF
TQM practices	Customer focus	1.659
	Leadership	3.254
	People involvement	2.522
	Process approach	2.100
	Systematic approach to management	2.405
	Continuous improvement	2.008
	Factual approach to decision making	2.417
	Mutual beneficial suppliers' relations	2.235

The same criteria used in the first model was applied to assess the structural model. Table (4-14) shows the accepted R^2 Values.

Table (4-14): Coefficient of Determination R^2 (Model-2)

Construct	R Square	R Square Adjusted	Result
Product Innovation	0.354	0.345	Moderate
Process Innovation	0.350	0.341	Moderate
Organizational Innovation	0.600	0.595	High
Marketing Innovation	0.364	0.355	Moderate

Meanwhile, all f^2 values were above 0.35, which means that TQM has a large effect on all innovation types. Table (4-15) displays the f^2 values.

Table (4-15): Effect Size f^2 (Model-2)

f^2				
Construct	**Product innovation**	**Process innovation**	**Organizational innovation**	**Marketing innovation**
TQM	0.548	0.539	1.502	0.573

Likewise, the Q^2 values are all above the accepted threshold, so they are more than zero asserting the model's predictive relevance for these constructs. Table (4-16) demonstrates the Q^2 value.

Table (4-16): Construct Cross-Validated Redundancy (Model-2)

Construct	SSO	SSE	Q^2 (=1-SSE/SSO)
TQM practices	3000.000	2088.919	0.304
Product Innovation	450.000	376.249	0.164
Process Innovation	300.000	252.867	0.157
Organizational Innovation	300.000	206.782	0.311
Marketing Innovation	375.000	297.221	0.207

Based on the same criteria that (Wetzels et al.,2009) confirmed for GoF of the model. The calculated GoF for this model is 0.48 which is large enough to be considered a sufficient global PLS model validity.

Four hypotheses are formulated in model-2, to investigate the impact of TQM (in accordance with ISO setting) on innovation in Palestinian food industry, as following:

- H9a: TQM positively affects product innovation in the Palestinian food industry.
- H9b: TQM positively affects process innovation in the Palestinian food industry.
- H9c: TQM positively affects organizational innovation in the Palestinian food industry.
- H9d: TQM positively affects marketing innovation in the Palestinian food industry.

The results of t-values from bootstrapping are shown in Figure (4-14). A strongly positive significant effect of TQM practices on all types of innovation is established as the P-values for all paths are approximately equal to zero resulting in supporting (H9a, H9b, H9c and H9d) hypotheses. The model fit results (Model-2) are illustrated in Table (4-17).

Table (4-17): Model Fit Results (Model-2)

Path	HYP.	(β)	Standard Deviation (STDEV)	T-value	P Values	Result
TQM -> Product innovation	H9a	0.595	0.103	5.770	0.00	Supported
TQM -> Process innovation	H9b	0.592	0.098	6.055	0.00	Supported
TQM -> Organizational innovation	H9c	0.775	0.062	12.574	0.00	Supported
TQM -> Marketing innovation	H9d	0.603	0.071	8.483	0.00	Supported

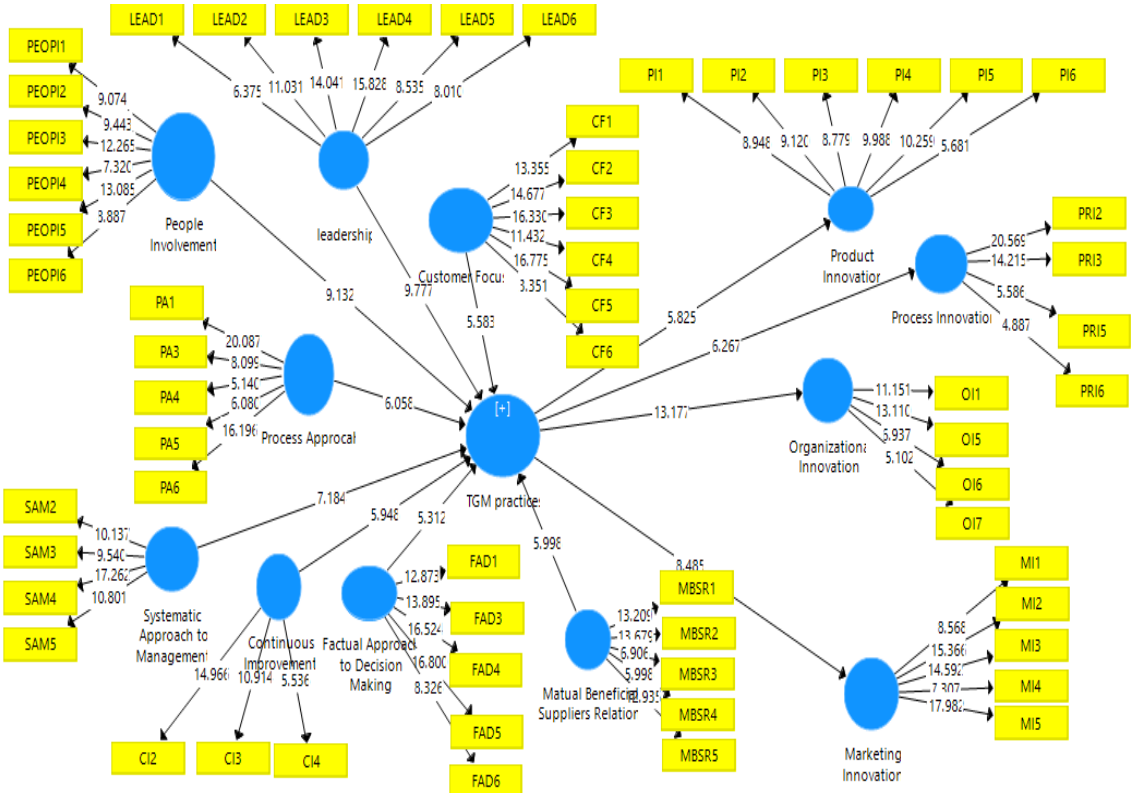

Figure (4-14): Model Fit Employing PLS-Bootstrapping Procedure (Model-2)

Chapter Five

Discussion

5.1 Overview

This chapter explicates interpretation of the analysed results in the first section including the assessment of TQM implementation in Palestine, assessment of innovation performance in Palestine as well as discussing the conceptual framework and the results of testing the hypotheses. The following section addresses the theoretical implications of the research. Finally, the last section draws the limitations of the research and the expectation of upcoming contributions in this field.

5.2 Discussion of Results

In the light of the significance of fostering innovation capabilities via TQM implementation in the manufacturing industry, particularly in the food industry, this study reveals not only the effect of TQM on innovation in Palestinian food firms but also highlighting which TQM principles affect the innovation to help the managers of the organizations to achieve the competitive edge among the national and international market. Meanwhile, this study contributes to solving the contradictory argument about the relationship between TQM and innovation to confirm a strongly positive relationship between TQM and innovation within Palestinian food firms. The analysis of the results draws a number of theoretical implications which are highlighted in the below sections.

5.2.1 Assessment of TQM in Palestinian Food Firms

Based on contacting the MoNE, PSI and private certification bodies in Palestine, the target firms implement the TQM practices. More specifically, 60% of the target firms are certified for the Palestinian standards (PS Marks), ISO standards, HAACP and GMP. The others implement quality control in the operation processes. On the other side, it is ostensible from the analysis of the results that the target firms that implement TQM are SMEs, which means that the size of the enterprises does not hinder the Palestinian food industry to deploy TQM practices. Meanwhile, it is worth noting that according to MoNE, SMEs enterprises consist the majority of the Palestinian economy which in turn absorb a large number of the workforce.

The degree of approval of the respondents toward TQM implementations in the food firms achieve the score (4) on average for all the TQM practices which means that the Palestinian food firms deploy TQM practices; customer focus principle which formulates the core of TQM, through conducting continuous surveys to identify the needs and desires of customers, following up the customer complaints and measuring the customer satisfaction as well as the loyalty of the customers belongs to the firm and its products. Furthermore, they indicate a clear baseline for relations with the customer. On the other hand, the customer suggestions are taken into consideration when introducing new products.

Leadership is the second principle that the firms implement, focusing on the role of the senior manager to draw the plan for deploying TQM principles, involving all the employees in the organization’s vision and goals as well as the commitment to provide the necessary infrastructure for the implementation of TQM. Furthermore, commitment to providing the necessary financial support for training programs to develop the knowledge and skills of employees is essential. Emphasizing the role of the leadership is represented in removing

obstacles to the application of the principles of total quality and promoting a culture of innovation and creativity.

The answers of the respondents about implementing people involvement principle asserted that employees are trained and their capabilities upgraded and involved in making decisions, besides, rewarding and motivating the employees morally. Moreover, conducting measuring employee satisfaction on an ongoing basis is essential.

The process approach is applied in Palestinian food firms to ensure quality at all stages of production. Accordingly, the organizations seek to simplify operating procedures as well as documenting all operations in a clear and understandable manner for all employees. On the other hand, statistical methods are applied to adjust operations according to the required specifications.

Palestinian food firms confirm applying a systematic approach to management, where the system is characterized by participation, cooperation and integration as well as the need to be constantly reviewed and updated. Meanwhile, the workers are trained in the updated processes. Moreover, it is essential to assure the quality at all levels of the organization and build effective communication channels between the general directorate, department managers and employees.

Continuous improvement and introducing new ideas for improvements of products, processes and systems are conducted to reduce the time required to produce the product and reduce the production costs.

The firms apply the factual approach to decision- making based on available data and statistics. Data is checked and analyzed for accuracy before relying on it, as well as applying approved methods for data collection and analysis. Meanwhile, appropriate conditions are created for the exchange of information and renewing the sources of information.

TQM concentrates on the relations with suppliers to assure the quality of the raw materials. This relationship is mutual beneficial as the suppliers provide information on the raw materials that supply to the enterprise and information about the components of raw materials for the products to be regenerated. Also, the information is exchanged with the supplier about manufacturing processes. The firms seek to establish long-term relationships with suppliers and evaluate the suppliers according to approved criteria.

5.2.2 Assessment of the Innovation in the Palestinian Food Industry

The degree of approval of the respondents toward innovation performance in the food firms obtained the score (4) on average for all types of innovation which means, that the Palestinian food firms take initiatives in promoting innovation.

The targeted firms aim to achieve the desired competitive advantage through enhancing innovation performance. Particularly, product innovation, where the firms focus on developing a special department for R&D of products. Moreover, the resources are dedicated to introducing new products. On the other hand, the firms obtain new ideas and suggestions from customers in order to improve products.

Process innovation is embraced in the targeted firms, where the traditional systems of the operations are deviated, in order to improve the performance of production processes and meeting the customer needs. Particularly, manufacturing processes are gradually being automated and the equipment used in the manufacturing process have already been updated. Consequently, introducing new technologies contribute to increasing sales revenues compared to traditional technologies.

The organizational structure of the organization has a high degree of flexibility and the employees having the ability to offer new solutions to problems they encounter at work as well

as rearranging the workplace for organizational innovation at all administrative levels which results in meeting the needs of the customer.

The targeted firms adopt new methods in presenting the new products in an unconventional marketing manner as well as the pricing of the products in an innovative marketing manner. On the other hand, new methods are created to survey the needs of the Palestinian market and introduce new marketing campaigns to target new markets. In consequence, marketing innovation is deployed.

5.2.3 Assessment of the Impact of TQM on Innovation in Palestinian Food Firms

The main objective of this study is to explore the effect of TQM on innovation in the Palestinian food industry. Based on supporting the hypotheses that tested in model-2 (H9a, H9b, H9c, H9d), it was found empirical evidence that TQM has a strongly positive significant effect on four dimensions of innovation. More precisely, some TQM practices are significant with certain types of innovation. According to testing the proposed hypotheses in model-1, people involvement principle is strongly significant with both process innovation and organizational innovation through supporting (H3b, H3c). This result confirms the effect of people involvement in sharing the knowledge and the creative ideas among employees in all levels of the organization. This result adheres with the previous studies that pointed out the effect of people involvement on process innovation, namely, Long et al. (2015) argued that process management and people management are the main TQM practices that affect process innovation. In addition, Luning and Marcelis (2005) pointed out the contribution of food quality management (technological and managerial aspects) to provide an excellent condition for process innovation to change the traditional processes into new processes and procedures. On the other side, Shipton et al. (2005) revealed that the supportive learning climate and

involving the employees in training and sharing the knowledge enhanced the organizational innovation.

The findings indicate that the deploying process approach and systematic approach to management seem to be positively associated with organizational innovation, through supporting (H4c, H5c) in model-1. This result could explain the crucial role of the process approach and systematic approach to management to support innovative activities in the organization at all levels, where identifying the inputs and outputs and ordering the work activities, are key to take innovation initiatives. This result is in line with the belief of Taddese and Osada, (2010), that the reason for the success of TQM as the influential management tool is the potential of TQM to create culture change in the organizations through applying the process approach and systematic approach to management to synergize change and innovation. The results also demonstrate a significant positive effect of the mutual beneficial supplier relations on marketing innovation, through supporting (H8d) in model-1. This result could be explained by the important role of the suppliers in promoting the innovation, to clarify the market's conditions to the manufacturers resulting in the innovation in the marketing mix to penetrate new markets. As Mueller, Culbertson and Peckham, (1982) explored that the suppliers of the packaging and equipment in food processing enterprises play a vital role in creating much innovation as well as increasing the productivity in food firms.

Additionally, Rosell and Lakemond (2012) asserted that the suppliers positively contribute to innovation. This contribution is related to the suppliers' knowledge in the process knowledge and the technical knowledge to achieve the integration between the external and internal knowledge.

Surprisingly, none of TQM practices contributes to foster product innovation. This result is consistent with the belief of (Rama, 2008), that product innovation in the food industry is

incremental rather than radical. This belief is explained by the conservative behavior of the consumers which is called consumer inertia that aversion to the new products. On the other side, the product innovation requires allocating resources to introduce new designs and new technologies rather than implementing quality management principles. Thereby, the Palestinian food firms could bear a risk to allocate resources for developing new products.

It is noteworthy that customer focus, leadership, continuous improvement and factual approach to decision making do not contribute to foster innovation in the Palestinian food firms. This result could be explained by the effect of these practices to make incremental innovation rather than radical innovation; customer focus practice mainly boosts the conformance of the products to the standards and improving the quality. The leadership focus on promoting the quality culture and core competences towards the effectiveness, productivity, efficiency and cost saving that hinder the innovation. On the other hand, the continuous improvement contributes to create a stable environment and controlled system that might hinders the innovation. In addition, factual approach to decision making mainly focus on making effective decisions based on analysis of data regardless to be innovative and making the changes. Some of previous arguments confirmed this result, namely, Prajogo and Sohal, (2001) advocated that customer satisfaction is achieved by conformance of the products to the specifications/ customer's need rather than developing new products, new processes, new changes at the organizational level and new marketing methods, meanwhile the leadership could focus on core competences but hinder other competences or other strategic directions. In the same line, continuous improvement leads to creating a stable system and controlled environment with reducing ambiguity which means bad conditions for innovation's environment.

5.3 Theoretical Implications

This study presents four main contributions. Firstly, the relationship between TQM and innovation is not clear in the previous related studies, some researchers asserted a positive relationship, others confirm that TQM could not directly affect innovation, while others deduced a negative relationship. Consequently, this study contributed to reducing this gap and clarifying this previous disputed.

Secondly, all the previous empirical studies examined the direct relationship between TQM and innovation, focusing on some of TQM practices but few address the effect of all eight TQM practices in one study. This study addressed the effect of the eight principles related to TQM on innovation. In addition, the researchers in the previous studies considered few dimensions of innovation, (e.g., product innovation, or process innovation), whereas, this study investigates the effect of TQM on four types of innovation.

Thirdly, this study develops an empirically tested model to measure the impact of TQM on innovation in the food industry in developing countries, which facilitates further research in this field.

Fourthly, this study provides evidence that TQM implementation in the food industry in Palestine strongly positively affects innovation and sheds light on certain practices that are not significant for more investigation from the managers of the food firms in Palestine.

Chapter Six

Conclusions and Recommendations

6.1 Overview

The first section in this chapter draws the conclusions of the research findings, following a set of recommendations which are developed based on the discussed conclusions.

6.2 Conclusions

This study introduces TQM as a platform for innovation in the Palestinian food industry.

There was no consensus on the relationship between TQM and innovation in the previous studies due to the conflicting arguments about this relation. Moreover, investigating the effect of each principle of TQM on innovation in one study is not possible. Thus, this research adds to the body of the literature to examine the impact of TQM on innovation in the Palestinian food industry in a different approach.

Based on conducting intensive literature reviews, a set of relevant hypotheses were formulated and a new model was developed to examine the impact of TQM on innovation.

According to analyzing the collected data from a sample of Palestinian food firms, this study presents four fundamental disclosures, firstly, the Palestinian food SMEs implement the TQM principles as well as promoting product innovation, process innovation, organizational innovation and marketing innovation.

Secondly, the results also demonstrated that TQM in Palestinian food firms has a strongly positive significant impact on innovation which confirms the previous arguments about the positive relationship between TQM and innovation.

Thirdly, each principle of TQM has a dissimilar effect on innovation. Specifically, people involvement principle is positive strongly significant with both process innovation and organizational innovation. Whereas, deploying the process approach and implementing a systematic approach to management are fostering organizational innovation. Additionally, this study explored a significant positive effect of the mutual beneficial supplier relations on marketing innovation. However, the results imply that none of TQM practices contributes to foster product innovation. This result is explained by the crucial need to allocate the resources to develop R&D to introduce new designs and new technologies rather than implementing quality management principles. Thereby, the Palestinian food firms could bear a risk to allocate resources for developing new products.

Fourthly, this study identifies the TQM principles that could not affect any type of innovation. More precisely, customer focus, leadership, continuous improvement and factual approach to decision making are not significant with any type of innovation. This result could be explained by the role of these practices to make incremental innovation rather than radical innovation; customer focus mainly to improve the quality and conformance of the products to the standards. Moreover, the focus of the leadership on the quality culture and core competences rather than other competences to make the change as well the focus of the leadership on efficiency and cost saving that hinder the innovation. On the other hand, the continuous improvement contributes to create a stable environment that hinders the innovation. In addition, factual approach to decision making mainly focus on making effective decisions based on analysis of data regardless to make the changes. Indeed, the firms should effectively deploy these practices to foster innovation.

6.2 Recommendations

In the light of the gained results, several recommendations are presented to the Palestinian food firms. Utilizing the TQM to foster innovation by implementing well-established and effective quality management systems. Specifically, people involvement is strongly significant with the process and organizational innovation which assert the significance of involving and empowerment of all the employees to achieve employees' satisfaction leading to upgrading the organization. Moreover, the process approach and systematic approach to management are positively significant with process and organizational innovation, which emphasize the importance of the processes and the systems to facilitate the innovation. On the other hand, this study sheds the light on the contribution of mutual beneficial relations with suppliers on marketing innovation, which means to give high attention to the suppliers as they provide the manufactories with information about the market.

Consequently, the managers of the food firms have not to look at TQM as a means to improve quality only, but also as a means to encourage and reinforce innovation.

Meanwhile, Palestinian food firms are recommended to address the obstacles and the constraints that encounter utilizing TQM practices that do not affect the innovation, mainly, customer focus, leadership, continuous improvement and factual approach to decision making to serve innovation activities.

Palestinian food firms are recommended to draw special attention to product innovation to introduce new product to meet the changeable needs of customers, where fostering product innovation not only requires implementing TQM but also allocating the resources, thereby, the top management should bear the responsibility of allocating resources for product innovation.

6.3 Research Limitations and Future Researches

This study encounters many limitations, firstly, this study examines the impact of TQM on innovation from the perspective of the firms that could be biased.

Secondly, not all the licensed Palestinian food firms implement TQM, thus, the target sample for this study was small. Thirdly, this study developed a model to examine the relationship between TQM and innovation within certain circumstances, thus, it is needed to be validated and retested in other situations.

At the end, future research might investigate the effect of moderating factors that could affect this relationship as firm's size, firm's age, firm's experience in implementing TQM, subsector, etc. Meanwhile, this study followed only the quantitative approach, where the qualitative approach and conducting interviews with the respondents were difficult due to COVID 19 pandemic, thus, future researches might follow both quantitative and qualitative approaches in order to enrich the findings.

Moreover, further researches could investigate more dimensions of innovation, particularly, radical innovation, incremental innovation.

Finally, the scope of this study is the food industry. Hence, the results are not applicable to other sectors. Therefore, further work could collect more comprehensive data and expand the research to include other industrial sectors.

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Appendix (A)

Assessing the Impact of Total Quality Management Practices on Innovation in Palestinian Food Industries

Dear Participant,

The researcher is conducting a study entitled:

Assessing the Impact of Total Quality Management on Innovation in Palestinian Food Industries

This study aims to investigate the impact of implementing the total quality management (TQM) on innovation in the Palestinian food industries in order to achieve the competitive advantage in the local and international market.

This study complements the requirements for obtaining a master's degree in the (Quality Management) program from the Arab American University.

In order to achieve this end, I request your help in providing honest, accurate, and objective answers to the questions contained in this questionnaire, which depend on your experience, bearing in mind that filling out the questionnaire takes approximately 8 minutes.

Emphasizing that all data will be treated confidentially and will only be used for scientific research purposes. If you have any questions, you can email me at the attached email.

Your participation in answering this survey is appreciated.

Best Regards.

Researcher: Rania Omar **r.omar3@student.aaup.edu**

Questionnaire

Part 1: General Information

Please answer the following question by placing (X) in the appropriate box:

1. Gender Male ☐ Female ☐
2. Age ☐ 20 years and Below ☐(21-40) ☐(41 and above)
3. Your education degree:

☐ Diploma

☐ Bachelor

☐ Master' degree

☐ PhD

☐ Other

4. Your position in the organization:

☐ Administrative Employee

☐ Head of division

☐ Technical Manager

☐ Quality Manager

☐ General manager

5. Experience years

☐ Less than 5 years

☐ From 5-10 years

☐ From 11-20 years

☐ More than 21years

6. Location:

☐ Jerusalem ☐ Ramallah ☐ Hebron ☐ Jenin ☐ Tukaram ☐ Bethlehem

☐ Qalqilya ☐ Jericho ☐ Salfit ☐ Tubas ☐ Nablus

7. The size of the organization (number of employees)

☐ 5 and below

☐ From 6 to 49

☐ From 50 to 249

☐ More than 250

8. The working years in the Palestinian market

☐ From 0 to 5 years

☐ From 6 to 10 years

☐ From 11 to 30 years

☐ More than 31 years

9. Your firm Food industry subsector:

☐ Meat products industry

☐ Processing and canning fruits and vegetables

☐ Industry, vegetable oils and fats

☐ Milk & Dairy Product

☐ Industry wheat flour & cereal products

☐ Sugars and sweets

☐ Pasta and noodles

☐ Soft drinks and non-carbonated

☐ Other food products

Part 2: Total Quality Management (TQM) practices

To assess the TQM practices employed by the Palestinian food industry, please indicate the level your organization implement TQM practices (5-point scale anchored by 5: "strongly agree" to 1: "strongly disagree").

	TQM Practices	**Level**				
		1	2	3	4	5
	Customer Focus	**Strongly disagree**	**Disagree**	**Undecided**	**Agree**	**Strongly Agree**
Q.1	Your organization depends on customers to identify their wants and needs.					
Q.2	Your organization followed up the customer complaints according to an approved procedure in this regard.					
Q.3	Your organization takes the customer suggestions into consideration when introducing new products.					
Q.4	Your organization measures the customer satisfaction according to an approved procedure.					
Q.5	There are clear baselines for the relations with the customer.					
Q.6	The loyalty of the customers belongs to the firm and its products.					
Leadership						
Q.1	There is a clear plan for the senior management to implement total quality management.					
Q.2	Top management participates with all employees in the organization's vision and future goals.					
Q.3	Top management is committed to providing the necessary infrastructure for the implementation of total quality management.					

Q.4	Top management provides the necessary financial support for training programs to develop the knowledge and skills of employees.					
Q.5	Top management is concerned with removing obstacles to the implementation of the principles of total quality.					
Q.6	Top management promotes a culture of innovation and creativity.					
People Involvement						
Q.1	Employees are involved in making decisions.					
Q.2	Employees are trained and their capabilities upgraded.					
Q.3	Employees are rewarded for their achievements.					
Q.4	Employees are appreciated by their managers when they achieve a high level of performance.					
Q.5	Your organization is motivating the employees morally.					
Q.6	Your organization measures employee satisfaction on an ongoing basis.					
Process Approach						
Q.1	Processes are designed to ensure that quality is applied at all stages. employees.					
Q.2	Your organization seeks to simplify operating procedures.					
Q.3	Your organization documents all operations in a clear and understandable manner for all employees.					
Q.4	Your organization applies the statistical methods to adjust operations according to the required specifications.					
Q.5	There are standards operation procedures that clarify the responsibilities and authorities of the employees.					

Q.6	Your organization has a monitoring and control system for the operations processes.					
Systematic Approach to Management						
Q.1	Working policies are clear and known by all employees.					
Q.2	Quality is assured at all levels of the organization.					
Q.3	The working system is characterized as participative cooperative and integrative.					
Q.4	There is an effective communication channels between the general directorate, department managers and employees.					
Q.5	The workers are trained in the updated processes.					
Q.6	The system is constantly reviewed and updated.					
Continuous Improvement						
Q.1	You are always thinking about how to do your job better.					
Q.2	Your organization grants the flexibility to its employees to introduce new ideas for continuous improvement.					
Q.3	There is a clear policy regarding improvement of products, processes and systems.					
Q.4	Your organization seeks to reduce the time required to produce the product.					
Q.5	Your organization seeks to reduce the production costs.					
Factual Approach to decision making						
Q.1	The decisions are made based on available data and statistics.					
Q.2	The decisions that are made are applicable.					
Q.3	Data is checked for accuracy before relying on it to make the decisions.					

Q.4	There are approved methods for data collection and analysis.					
Q.5	Your organization provides appropriate conditions for the exchange of information.					
Q.6	Your organization renews the sources of information.					
Mutual Beneficial Suppliers relations						
Q.1	The suppliers provide the organization with information about the raw materials.					
Q.2	The suppliers provide the organization with information about the components of raw materials for generating new products.					
Q.3	The information is exchanged with the suppliers about manufacturing processes.					
Q.4	Your organization seeks to establish long-term relationships with suppliers.					
Q.5	The suppliers are evaluated according to approved criteria.					

Part 3: Innovation

To assess the innovation performance employed by the Palestinian food industry, please indicate the level of innovation in your organization (5-point scale anchored by "strongly disagree" and "strongly agree").

	Innovation	Level				
		1	2	3	4	5
	Product Innovation	**Strongly disagree**	**Disagree**	**Undecided**	**Agree**	**Strongly Agree**
Q.1	Your organization has a special department for research and development of new products.					
Q.2	Your organization dedicates resources to introduce new products.					

Q.3	The new products are distinguished by innovative and competitive taste, design and packaging.					
Q.4	Your organization obtains new ideas from customers to improve the products.					
Q.5	The quantity of the new products is increasingly introduced into the market.					
Q.6	The launching of new products gives the organization a competitive advantage.					
Process Innovation						
Q.1	The traditional operation systems are updated to provide everything that is new and expected.					
Q.2	Your organization provides financial resources to improve the performance of production processes.					
Q.3	Processes of production are re-designed according to the customer needs.					
Q.4	Manufacturing processes are gradually being automated.					
Q.5	The equipment used in the manufacturing process has already been updated.					
Q.6	New technologies contribute to increase sales compared to traditional technologies.					
Organizational innovation						
Q.1	The organizational structure has high degree of flexibility.					
Q.2	Your organization has made a major organizational change that has not been done before.					
Q.3	The workplace has been rearranged.					
Q.4	There are complex formal procedures within the organizational structure that limit innovation.					

Q.5	Employees have the ability to offer new solutions to problems they encounter at work.					
Q.6	New operation procedures are created to meet the changeable needs of the customers.					
Q.7	There is a flexibility for creating new ideas at all administrative levels.					
Marketing Innovation						
Q.1	Your organization creates an unconventional marketing method in placement of the new products.					
Q.2	Your organization creates innovative pricing marketing method.					
Q.3	Your organization conducts the market survey in innovative methods.					
Q.4	Your organization allocates the financial resources for the marketing activities.					
Q.5	Your organization conducts innovative marketing campaigns.					
Q.6	Your organization seeks to find new market segment.					

Any comments you would like to express----------

Thank you for your Cooperation

Appendix (B)

الجامعة العربية الأمريكية
ARAB AMERICAN UNIVERSITY
FACULTY OF GRADUATE STUDIES

السيدات/ السادة المحترمون

تجري الباحثة دراسة بعنوان :

"تقييم أثر ادارة الجودة الشاملة على الابتكار في الصناعات الغذائية الفلسطينية"

حيث تهدف هذه الدراسة الى قياس أثر تطبيق ادارة الجودة الشاملة على تعزيز الابتكار في الصناعات الغذائية الفلسطينية من أجل تطوير هذه الصناعة لتلبية احتياجات الزبون وتحقيق الميزة التنافسية في السوق المحلي والدولي.

وتأتي هذه الدراسة استكمالاً لمتطلبات الحصول على درجة الماجستير في برنامج (إدارة الجودة) من الجامعة العربية الأمريكية.

ومن أجل تحقيق هذه الغاية، أرجو مساعدتكم في توفير إجابات صادقة، دقيقة، وموضوعية على الأسئلة الواردة في هذا الاستبيان والتي تعتمد على خبرتكم، علماً بأن تعبئة الاستبانة تستغرق 8 دقائق تقريباً.

مع التأكيد على أنه سيتم التعامل مع جميع البيانات بسرية تامة ولن يتم استخدامها الا لأغراض البحث العلمي. اذا كان لديكم أي استفسار، يمكنكم مراسلتي على البريد الإلكتروني المرفق

r.omar3@student.aaup.edu

مع فائق الاحترام والتقدير

اشراف: د.يحيى صالح **الطالبة: رانيه عمـر**

أولاً: البيانات الشخصية

الرمز	السؤال
1	**الجنس :** ❑ انثى ❑ ذكر
2	**العمر** ❑ (أقل من 20) ❑ (21-40) ❑ (41 وما فوق)
3	**المؤهل العلمي:** ☐دبلوم ☐ بكالوريوس☐ماجستير☐دكتوراة ☐ غير ذلك
4	**الوظيفة:** ☐ **موظف اداري** ☐**رئيس قسم** ☐ **مدير فني**☐ **مدير الجودة**☐ **المدير العام**
5	**عدد سنوات الخبرة** ☐ اقل من5 ☐ 5-10 ☐11-20 ☐ أكثر من 21 سنة
6	**مكان المنشأه :** ☐القدس☐رام الله ☐نابلس☐ طولكرم ☐ جنين☐قلقيلية☐طوباس ☐ سلفيت☐الخليل☐بيت لحم☐أريحا
7	**حجم المنشأة (عدد الموظفين)** ☐ 5 وأقل ☐ 6-49 ☐ 50-249 ☐ أكثر من 250
8	**عمر المنشأه(سنوات):** ☐ 0-5 ☐ 6-10 ☐ 11-30 ☐ أكثر من 31 سنة

9	أنواع المنتجات التي تنتجهاالمنشأه: □لحوم تصنيعية□صنيع وتعليب الخضروات والفواكه□صناعة الزيوت والدهون النباتية□حليب وألبان□دقيق القمح ومنتجات الحبوب وأعلاف□ السكاكر والحلويات□ المعكرونة والشعير□ المشروبات الغازية وغير الغازية والعصائر صناعة منتجات أخرى

ثانياً: متغيرات الدراسة

إلى أي مدى توافق على الفقرات التالية حيث أن الإجابة (1 –غير موافق اطلاقاً، 5– أوافق بشدة)

القسم الأول: ادارة الجودة الشاملة TOTAL QUALITY MANAGEMENT PRACTICES						
المحور الأول: التركيز على الزبون (Customer Focus)						
الرقم	الفقرة	غير موافق اطلاقا 1	غير موافق 2	محايد 3	موافق 4	موافق بشدة 5
CF1	يتم إجراء استطلاعات مستمرة من أجل التعرف على احتياجات ورغبات الزبائن.					
CF2	يتم متابعة شكاوى الزبائن وفق اجراء معتمد بهذا الخصوص.					
CF3	يتم أخذ اقتراحات الزبائن بعين الاعتبار عند طرح منتجات جديدة.					
CF4	يتم قياس رضا الزبائن وفق أجراء معتمد بهذا الخصوص.					
CF5	توجد اسس واضحة للعلاقات مع الزبون.					
CF6	الزبائن تنتمي للمؤسسة ومنتجاتها.					
المحور الثاني: القيادة (Leadership)						
الرقم	الفقرة	غير موافق اطلاقا 1	غير موافق 2	محايد 3	موافق 4	موافق بشدة 5
LEAD1	توجد خطة واضحة لدى الإدارة العليا لتطبيق إدارة الجودة الشاملة.					
LEAD2	تشارك الأدارة العليا جميع الموظفين في توجهاته وتطلعاتها المستقبلية.					
LEAD3	تلتزم الأدارة العليا بتوفير البنية التحتية اللازمة لتطبيق إدارة الجودة الشاملة.					

LEAD4	تقوم الأدارة العليا بتوفير الدعم المالي اللازم للبرامج التدريبية الخاصة بتطوير معارف ومهارات العاملين.					
LEAD5	تهتم الأدارة العليا بإزالة العقبات أمام تطبيق مبادئ الجودة الشاملة.					
LEAD6	تعزز الإدارة العليا ثقافة الابتكار والأبداع.					
المحور الثالث: اشراك العاملين(People Involvement)						
الرقم	**الفقرة**	**غير موافق اطلاقا 1**	**غير موافق 2**	**محايد 3**	**موافق 4**	**موافق بشدة 5**
PEOPI1	يتم اشراك العاملين في اتخاذ القرارات.					
PEOPI 2	يتم تدريب العاملين ورفع قدراتهم.					
PEOPI 3	يتم مكافأة العاملين على انجازاتهم.					
PEOPI 4	يحظى الموظفون بتقدير رؤسائهم عندما يحققون مستوى عاليا من الأداء.					
PEOPI 5	تحرص المؤسسة على تحفيز العاملين معنويا.					
PEOPI 6	تقيس المؤسسة رضا الموظفين بشكل مستمر.					
المحور الرابع:نهج العمليات(Process Approach)						
الرقم	**الفقرة**	**غير موافق اطلاقا 1**	**غير موافق 2**	**محايد 3**	**موافق 4**	**موافق بشدة 5**
PA1	تم تصميم العمليات بحيث تضمن تطبيق الجودة في كل المراحل.					
PA2	تسعى المؤسسة إلى تبسيط اجراءات التشغيل .					
PA3	توثق المؤسسة جميع العمليات بشكل واضح ومفهوم لكل الموظفين.					
PA4	تستخدم الأساليب الاحصائية لضبط العمليات وفق المواصفات المطلوبة.					
PA5	يوجد اجراءات عمل توضح المسؤوليات والصلاحيات للموظفين.					
PA6	يتوفر في المؤسسة نظام رقابة وتحكم في العمليات.					

المحور الخامس: نهج النظام (Systematic approach to management)						
الرقم	الفقرة	غير موافق اطلاقا 1	غير موافق 2	محايد 3	موافق 4	موافق بشدة 5
SAM1	سياسات العمل واضحة ومعلومة من قبل جميع الموظفين.					
SAM2	يتم تأكيد الجودة في جميع مستويات العمل في المنشأة.					
SAM3	يتسم نظام العمل في المنشأه بالمشاركة والتعاون والتكامل.					
SAM4	توجد قنوات اتصال فعالة بين الأدارة العامةو مديرو الدوائر والعاملين.					
SAM5	يتم تدريب العاملين على العمليات التي تم تحديثها.					
SAM6	يتم مراجعة وتحديث النظام بشكل مستمر.					
المحور السادس: التحسين المستمر (Continuous Improvement)						
الرقم	الفقرة	غير موافق اطلاقا 1	غير موافق 2	محايد 3	موافق 4	موافق بشدة 5
CI1	تفكر دائماً في كيفية أداء وظيفتك بشكل أفضل.					
CI 2	تمنح المؤسسة الحرية لموظفيها لطرح افكار للتحسين المستمر.					
CI 3	توجد سياسة واضحة بما يتعلق بتحسين المنتجات والعمليات والأنظمة.					
CI 4	تسعى المؤسسة لتقليل الزمن اللازم لأنتاج المنتج.					
CI 5	تسعى المؤسسة لتقليل تكاليف الانتاج.					
المحور السابع: اعتماد الحقائق في اتخاذ القرارات(Factual Approach to Decision Making)						
الرقم	الفقرة	غير موافق اطلاقا 1	غير موافق 2	محايد 3	موافق 4	موافق بشدة 5
FAD1	يتم اتخاذ القرارات بناءً على البيانات المتوفرة والإحصائيات.					
FAD2	القرارات التي يتم اتخاذها قابلة للتطبيق.					

FAD3	يتم فحص وتحليل البيانات لمعرفة مدى دقتها قبل الاعتماد عليها.					
FAD4	توجد طرق معتمدة لجمع البيانات وتحليلها.					
FAD5	توفر المؤسسة الظروف المناسبة لتبادل المعلومات.					
FAD6	تجدد المؤسسة المصادر التي تزودها بالمعلومات.					
المحور الثامن: العلاقة مع الموردين(Mutually Beneficial Supplier Relations)						
الرقم	**الفقرة**	**غير موافق اطلاقا 1**	**غير موافق 2**	**محايد 3**	**موافق 4**	**موافق بشدة 5**
MBSR1	يقدم المورد المعلومات الخاصة بالمواد الخام التي يوردها للمؤسسة.					
MBSR2	يقدم المورد المعلومات حول مكونات المواد الخام للمنتجات المراد تجديدها.					
MBSR3	يتم تبادل المعلومات مع المورد حول عمليات التصنيع.					
MBSR4	تسعى االمؤسسة لأقامة علاقات طويلة الأمد مع الموردين.					
MBSR5	يتم تقييم الموردين حسب معايير معتمدة .					
القسم الثاني– الأبتكار Innovation						
المحور ألأول: الأبتكار في المنتجات(Products Innovation)						
الرقم	**الفقرة**	**غير موافق اطلاقا 1**	**غير موافق 2**	**محايد 3**	**موافق 4**	**موافق بشدة 5**
PI1	يوجد في المؤسسة قسم خاص بالبحث والتطوير للمنتجات.					
PI2	يوجد لدى المؤسسة موارد مخصصة لطرح منتجات جديدة.					
PI3	تتميز المنتجات الجديدة بطعم وتصميم وتغليف مبتكر ومنافس.					
PI4	تحصل المؤسسة من الزبائن على أفكار جديدة من أجل تحسين المنتجات.					

PI5	يوجد زيادة في عدد المنتجات الجديدة التي تطرح في السوق.					
PI6	يمنح إطلاق منتجات جديدة ميزة تنافسية للمنشأة.					
المحور الثاني: الابتكار في العمليات (Process Innovation)						
الرقم	**الفقرة**	**غير موافق اطلاقا**	**غير موافق**	**محايد**	**موافق**	**موافق بشدة**
		1	**2**	**3**	**4**	**5**
PRI1	يتم الخروج عن الأنظمة التقليدية في العمليات لتقديم كل ما هو جديد ومتوقع.					
PRI2	توفر المؤسسة الموارد المالية لتطوير أداء العمليات الانتاجية.					
PRI 3	يتم اعادة تصميم العمليات في الانتاج وفق حاجة الزبون.					
PRI4	يتم تحويل العمليات التصنيعية تدريجياً الى اتوماتيكية.					
PRI5	سبق وتم تحديث الأجهزة المستخدمة في عمليات التصنيع.					
PRI6	تساعد التقنيات الحديثة على زيادة المبيعات مقارنة مع التقنيات التقليدية.					
المحور الثالث– الابتكار التنظيمي: Organizational Innovation						
الرقم	**الفقرة**	**غير موافق اطلاقا**	**غير موافق**	**محايد**	**موافق**	**موافق بشدة**
		1	**2**	**3**	**4**	**5**
OI1	الهيكل التنظيمي للمؤسسة يتمتع بدرجة عالية من المرونة.					
OI2	سبق وقامت المؤسسة بأجراء تغيير تنظيمي كبير لم يسبق من قبل.					
OI3	سبق وتم تنظيم مكان العمل بشكل جديد.					
OI4	توجد اجراءات رسمية معقدة داخل الهيكل التنظيمي يحد من الابتكار.					
OI5	لدى الموظفين القدرة على تقديم حلول جديدة للمشكلات التي تواجههم في العمل.					
OI6	يتم ابتكار اجراءات عمل جديدة تلبي احتياجات الزبون.					

OI7	يوجد حرية للأبتكار في كل المستويات الادارية.					
المحور الرابع– الأبتكار في مجال التسويق: Marketing Innovation						
الرقم	**الفقرة**	**غير موافق اطلاقا** 1	**غير موافق** 2	**محايد** 3	**موافق** 4	**موافق بشدة** 5
MI1	يتم عرض المنتجات الجديدة بطريقة تسويقة غير تقليدية.					
MI2	يتم تسعير المنتجات بطريقة تسويقية مبتكرة.					
MI3	تقوم المؤسسة باعتماد أساليب جديدة لدراسة احتياج السوق الفلسطيني.					
MI4	يوجد دعم مادي كافي لنشاطات التسويق للمنتجات الجديدة.					
MI5	تقدم المنشأة حملات تسويقية جديدة.					
MI6	تبحث المؤسسة عن أسواق جديدة تستهدفها.					

أية ملاحظات أخرى تودون اضافتها:

نشكركم على حسن تعاونكم

الجامعة العربية الأمريكية- جنين

كلية الدراسات العليا

تقييم تأثير إدارة الجودة الشاملة على الإبداع في الصناعات الغذائية الفلسطينية

إعداد

رانيه أحمد عمر

إشراف

د. يحيى صالح

تم تقديم هذه الرسالة استكمالاً لمتطلبات درجة الماجستير في تخصص

إدارة الجودة

تشرين الثاني/2021

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الملخص

إن العولمة وزيادة المنافسة في القطاع الصناعي يدفع قطاع الصناعة لتطبيق مبادئ إدارة الجودة الشاملة (TQM) لتحقيق الميزة التنافسية المرجوة. ولكن الميزة التنافسية المستدامة لا تتطلب فقط تطبيق إدارة الجودة الشاملة، بل تتطلب أيضًا تعزيز وتشجيع الابتكار. ولذلك تهدف المنشآت الصناعية إلى تحقيق جودة عالية في المنتجات بالإضافة إلى قدرة ابتكارية عالية في الأداء.

لقد قام العديد من الباحثين بدراسة العلاقة بين إدارة الجودة الشاملة والابتكار، حيث وجد بعض الباحثين أن العلاقة بينهما إيجابية بينما وجد البعض الآخر أن هذه العلاقة سلبية، حيث تهدف هذه الدراسة إلى الكشف عن تأثير ممارسات إدارة الجودة الشاملة ، تحديداً: التركيز على العملاء ،القيادة، إشراك العاملين، نهج العمليات، نهج النظام في الإدارة، التحسين المستمر و اعتماد الحقائق في اتخاذ القرارات وعلاقة المنفعة المتبادلة مع الموردين، وذلك على الابتكار من حيث: ابتكار المنتجات ، الابتكار في العمليات ، الابتكار التنظيمي والابتكار التسويقي في الصناعات الغذائية الفلسطينية. ولتحقيق هذه الغاية، فإن مشاهدات الإدارة العليا في هذه المصانع حول تطبيق مبادئ إدارة الجودة الشاملة والإبتكار في هذه الصناعة، تم جمعها من خلال استبيان إلكتروني تم تصميمه وتوزيعه على عينة عشوائية مكونة من 75 مصنع.

تم استخدم نموذج المعادلة الهيكلية لطريقة المربعات الصغرى الجزئية The partial least squares structural equation modelingلتحليل البيانات الكمية التي تم جمعها.

أظهرت النتائج أن تطبيق إدارة الجودة الشاملة في مصانع الأغذية الفلسطينية له تأثير ايجابي كبير على الابتكار، مما يؤكد ما توصل له بعض الباحثين من وجود علاقة ايجابية بين إدارة الجودة الشاملة والابتكار، كما أن كل مبدأ من مبادئ إدارة الجودة الشاملة له تأثير مختلف على الابتكار، حيث تم اكتشاف تأثير إيجابي كبير لمبدأ إشراك العاملين على كل من الإبكار في العمليات والابتكار التنظيمي. كما أن تطبيق نهج العمليات وتطبيق نهج النظام في الإدارة يؤثران بشكل إيجابي على الابتكار التنظيمي. بالإضافة إلى ذلك، أظهرت هذه الدراسة التأثير الإيجابي المهم للغاية للعلاقة ذات المنفعة المتبادلة مع الموردين على الابتكار التسويقي.

ومن جهة أخرى، أشارت النتائج أنه لا يوجد أي تأثير مهم لأي من ممارسات إدارة الجودة الشاملة على الإبتكار في المنتجات.كما أن المبادئ الأخرى لإدارة الجودة الشاملة وتحديداً، التركيز على العملاء،القيادة،التحسين المستمر، و اعتماد الحقائق في اتخاذ القرارات ليس لديها أي تأثير على أي نوع من الابتكار.

من الجدير بالذكر أن التنفيذ الفعال لإدارة الجودة الشاملة يدفع بشكل كبير في خلق بيئة مناسبة للإبتكار، حيث لا يتعين على مصانع الأغذية الفلسطينية النظر إلى إدارة الجودة الشاملة كوسيلة لتحسين الجودة فقط، ولكن أيضًا كوسيلة لتشجيع وتعزيز الابتكار وذلك من خلال إزالة العقبات والقيود التي تواجه استخدام ممارسات إدارة الجودة الشاملة في هذا القطاع. ومن ناحية أخرى، على الإدارة العليا في هذه المصانع إيلاء اهتمام خاص لطرح منتجات جديدة لتلبية احتياجات الزبائن المتغيرة، حيث لا يتطلب الابتكار في المنتجات تطبيق إدارة الجودة الشاملة فحسب بل أيضا تخصيص الموارد اللازمة.