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Assessing the Potential of Applying Lean Six sigma in Microfinance Institutions in Palestine and its Impact on employee satisfaction: FATEN as a Case Study

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Thesis Approval

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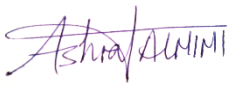
▪ **Dr. Ashraf Mimi / Internal Examiner**	

Dedication

To:

The soul of my Father

My family

All loved ones who contributed in this achievement

Appreciation and love.

Acknowledgment

Gratitude and thanks are always to God, my creator and creator of the earth and the heavens. Success and strength always come from God.

All thanks to Dr. Yahya Salahat, who accompanied us with every step and was with me in every letter I was writing in this thesis. He was like a candle that lights the path of knowledge.

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I am grateful to my husband for providing me with constant support and encouragement, and to my son Ezz, for the source of my happiness in this life.

Finally, I would like to express my appreciation to my family and friends who contributed to bringing this thesis to fruition, and the reward goes to the spirit of my father who taught me the love of science and knowledge.

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.

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List of Abbreviations

5S	Sorting, Set in Order, Shining, Standardize, Sustain
DMAIC	Define, Measure, Analyze, Improve, and Control
DMADV	Define, Measure, Analyze, Design, Verify
EBRD	European Bank for Reconstruction and Development
ERP	Enterprise Resource Planning
JIT	Just-in-Time
MCO	Microcredit Companies
MFIs	Microfinance Institutions
PDCA	Plan, Do, Check, Act
PMA	Palestinian Monetary Authority
PT	Palestinian Territories
TPM	Total Productive Maintenance
TPS	Toyota Production System
TQM	Total Quality Management
VSM	Value Stream Mapping

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Abstract

The emergence of microfinance institutions (MFIs) in the Palestinian Territories (PT) has become one of the basic tenets of the financial industry. Palestinian MFIs meanwhile work under the supervision of the Palestinian Monetary Authority (PMA). the need to improve and develop the microfinance sector is becoming more and more relevant to all financial sector participants. MFIs in PT have one principal financial activity, which is granting loans without providing other activities like taking deposits, transfers, money exchange, etc. MFIs in PA are an essential part of the Palestinian financial and economic system, as they have an important role in many economic indicators, sustainable economic development, and they are pushing the growth process forward.

As a service sector that offers loan services to Palestinians to support the sustainability of their businesses, MFIs should work on the continuous improvements of their processes as the Palestinian context has its unique particularity represented by high rates of unemployment and poverty. More specifically, having effective and efficient processes in MFIs through applying different tools of lean management and waste reduction would improve the quality, reduce the cost and ultimately guarantee the sustainability of MFIs and their customer satisfaction. To this end, the potential of applying lean management tools in the micro-financing sector in Palestine is investigated in this study. More specifically, a case study on one of the leading MFIs in Palestine, which is Palestine for Credit and Development - (FATEN) is considered for assessing the potential of applying the lean management tools in its operations.

Accordingly, a questionnaire was designed and distributed to a random sample of 187 employees working in FATEN. the results showed that it is possible to apply lean management tools in FATEN and this applies to competing institutions, as it generally has a positive

relationship with employee satisfaction as well. Thus, managers of financial institutions have to consider the application of lean management tools in their organizations to increase the quality of services provided and raise employee satisfaction, as it also requires the allocation of resources, and therefore, the senior management must take responsibility for implementing the tools of lean management and addressing the obstacles and limitations that hinder applying these tools.

Keywords: Microfinance institutions, effective and efficient processes, lean management, Six Sigma, MFIs in Palestine

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

All management tools are mainly cantered on continuous improvement of work processes to achieve goals through the people working in the organization or company. the idea of lean management originates from a system derived from the production system in the Japanese company Toyota about 70 years ago, but the foundations of this management depend on two main pillars, namely respect for people and continuous progress (Pyloric, 2022)

In general, and after applying the tools of lean management at the level of the total hierarchy in the organization, it results that all people within the organization have a clear path on how to accomplish the tasks assigned to them. the principles of lean management consist of five stages, and when combining these five stages (namely, defining the value, mapping the value stream, creating flow, using a pull system and, pursuing perfection) and making them rotate in one circle, it results in an effective system in managing the human staff, not to mention more efficient use of resources. Moreover, the gradual development starts thanks to the employee's desire for continuous improvement, which begins by defining the value and here we are talking about providing a product / service that the customer is willing to pay for, so you must first

determine the value that you want to provide and then move on to planning the value flow in the sense of setting the workflow within the company and including the procedures that must be done by these works, and then ensuring that the flow of this work will be continuous without any interruptions or problems, and thus a stable system will be established in the service delivery process or your production line, and this whole matter leads to continuous improvement, since the process continues to work and improve itself automatically. (Melton, 2005).

1.3 Microfinance Institutions In Palestine

Microcredit was introduced in the occupied Palestinian territory in the 1980s in response to the growing demand for financing from small and microenterprises, which were the backbone of production and employment in the Palestinian economy. Micro-credit associations were almost the only source of funding prior to the establishment of the Palestinian National Authority, which, through the Palestine Monetary Authority, has assumed the role of licensing and overseeing banks since 1995. the beneficiary base of microfinance organizations has expanded and the use of microfinance has diffused to all Palestinian governorates. This, in turn, has attracted the attention of donors given the role of micro financing as one of the key elements for development and the fight against poverty. This is especially so in light of the rising unemployment in the 1990s following Israel's limitation on the entry of Palestinian workers. The number of lending institutions, registered as NGO's or international organizations, has increased remarkably. Concurrently, more financial services have been introduced and the type and size of loans available has expanded. the successful development of the financial sector, of course, requires regulations to help these organizations grow, while simultaneously protecting the rights and obligations of the contracting parties. This task was entrusted to the Palestine Monetary Authority in 2008, which soon issued regulations in this regard (Dodeen, 2013).

In 2014, the PMA started to regulate the MFI`s under its umbrella after the president Mr. Mahmoud Abbas issued a presidential law in 2011 to manage the sector and the PMA issued instructions to license and govern to all MFI`s work in Palestine. At these days, 9 MFI`s from 11 work under PMA umbrella, and in this research we chose FATEN as our case study.

1.4 Background and Company Profile

FATEN. Palestine for Credit and Development - FATEN was established in 1999 as a private non-profit company registered in the Palestinian Ministry of Economy and licensed by the Palestinian Monetary Authority (PMA) since May 2014. the Foundation started its career by focusing on women, issuing group loans helping women and marginalized community establishing their own business. It has been seeking to improve the level of its financial services in Palestine, started by providing loans to micro, small and medium projects, and now expanded its services to meet all the financial needs of the different economic sectors, creating new job opportunities and reducing poverty rates and unemployment. FATEN is today one of the largest national institutions, with more than 37 branches spread throughout the country. It covers more than 500 different sites especially the refugee camps, rural areas and marginalized community, with a staff of 282 employees and more than 39,713 borrowers. (32.56%) of women. FATEN works hard to keep up with the information and technology developments in the field of finance and contributes to the process of construction and development in accordance with the international policies and practices to meet the requirements of good governance, accuracy and transparency. FATEN Foundation received local, regional and international awards for its role and excellence in providing financial and non-financial services, including the "Leadership Award" in the Arab world, and its clients have won many awards, including the "Queen Sabika of Bahrain" and "Planet Finance" awards. The organization is committed to Its slogan "Helping people to help themselves". This slogan

stems from its vision to serve the unfortunate segments in the Palestinian society, believing that the prosperity and success of these segments are inseparable from the institution's prosperity and success. (https://www.faten.org/about_faten).

Based on the on information available on FATEN's website, FATEN offers the following loan packages to its customers (beneficiaries), each with a set of terms and conditions for application:

- Small business loans (up to 25,000 USD): This loan is designed to serve small and micro enterprises, who wish to develop their projects in all economic sectors including, commercial, agricultural, productive, and service, in which the family is involved in managing the project.
- Small and medium projects (up to 50,000 USD): This loan is designed for owners of productive enterprises, small companies and institutions working in all economic sectors, who wish to develop their projects. the loan aim to serve FATEN current customers as well as new ones.
- Social loans (up to 5,000 USD): This loan is designed to help Palestinian individuals and families wishing to pay various personal expenses such as purchasing a computer, paying college fees, Medical expenses or any other personal use of personal loan sections.
- Start with us loan (up to 25,000 USD): This loan is designed specifically for young people, entrepreneurs, entrepreneurs, educational, technical, administrative, financial, marketing, and any self-employment that they have the skills and abilities to start or develop their own business projects and further develop them.
- Housing loan (up to 25,000 USD): This loan is designed for Palestinian families wishing to buy or complete, or improve their place of residence. the loan will be used to buy an existing structure or to complete or expand an existing building, or to improve the place of residence.
- Renewable energy (green) loans (up to 25,000 USD): This loan is designed for owners and owners of productive projects, companies and institutions associated with all

economic sectors, who wish to develop their projects through the use and application of alternative (green) energy solutions in their commercial projects.

- Industrial sector loan (up to 100, 000 USD): Because the industrial sector has a clear developmental impact on the reality of the economy in general, and because it has a direct impact on developing and improving the quality of the local product, in addition to many other additional advantages such as the speed of this sector's response to the increase in the volume of employment and what it reflects on the unemployment rates, and to encourage the owners of these Projects to help them contribute more to the overall economy.
- Agricultural loans (up to 50,000 USD): It is specially designed for owners of small and micro agricultural projects, who wish to develop their agricultural projects. These projects are mainly based on the participation of the family (husband and wife or children) in managing and supervising the project.
- Women loans (up to 15,000 USD): This program was designed with easy terms and reduced interest within the mission and vision of the FATEN Foundation for Development on which it was founded and the Foundation's belief in the economic and social role of women and the importance of empowering them economically and socially. Her family financially alone without relying on the presence of (husband, brother, or father). the program is divided into an ambitious program, start with us, for women who want to launch their small projects, and a more ambitious program with us, to help women entrepreneurs develop and enlarge their projects.
- COVID-19 emergency fund (up to 50,000 USD): In light of the difficult economic impacts that have affected our national facilities and factories as a result of the spread of the Coronavirus (Covid-19) and the closure of all walks of life that has caused during the recent period. And to meet the needs of the beneficiaries of the institution and the

owners of production and development projects affected by the effects of the Coronavirus and the current economic crisis. It is now possible to apply for "sustainability finance" within the financing of small and medium enterprises.

1.5 The Research Problem

The emergence of microfinance institutions (MFIs) in the Palestinian Territories (PT) has become one of the basic tenets of the financial industry. Palestinian MFIs meanwhile work under the supervision of the Palestinian Monetary Authority (PMA). the need to improve and develop the microfinance sector is becoming more and more relevant to all financial sector participants. MFIs in PT have one principal financial activity which is granting loans without providing other activities like taking deposits, transfers, money exchange, etc.

MFIs in PA are an essential part of the Palestinian financial and economic system, as they have an important role in many economic indicators, sustainable economic development, and they are pushing the growth process forward, (Abdulkareem et al., 2013).

As a service sector that offers loan services to Palestinians to support the sustainability of their businesses, MFIs should work on the continuous improvements of their processes as the Palestinian context has its unique particularity represented by high rates of unemployment and poverty. More specifically, having effective and efficient processes in MFIs through applying different tools of lean management and waste reduction would improve the quality, reduce the cost and ultimately guarantee the sustainability of MFIs and their customer satisfaction. Lean management focuses on reducing waste in all processes by using tools and practices, including but not limited to, 5S methodology, Values Stream Mapping, Visual Management, Standardized Work, Poka-Yoke and Six Sigma. Applying such tools aims at giving customers what they want as the core goal of lean is customer focus, (Dennis, 2016). One of the challenges

that MFIs may encounter in this regard is assessing the potential of applying the lean management tools in their operations.

To this end, the potential of applying lean management tool in the micro-financing sector in Palestine is investigated in this study. More specifically, a case study on one of the leading MFIs in Palestine, which is Palestine for Credit and Development - (FATEN) is considered for assessing the potential of applying the lean management tools in its operations. Based on some initial observations, FATEN suffers from many inefficiencies in its operations including the long cycle time of loan processing and granting, high rate of rework transactions and applications and significant delays in completing some tasks.

It is expected that the outcomes of this study will further strengthen the microfinance sector and especially FATEN, by helping FATEN to think and act more strategically, to become better at business planning, and to suggest methods for evaluating activities and processes, thereby helping MFI`s and regulators to work more predictably in the volatile Palestinian environment.

1.6 Research Objectives

The main goal of this research is to assess the potential of applying lean management tools in FATEN. In accordance with this goal, the following objectives could be derived:

1. Examining the potential of applying lean management tools & six sigma in FATEN as perceived by staff.
2. Identifying the main lean management tools applicable in FATEN.
3. Identifying the main enabling factors for applying lean management tools & six sigma in FATEN.
4. Identifying the main obstacles for applying lean management tools & six sigma in FATEN.
5. Understand the relationship between the application of lean & Six Sigma tools and

employee satisfaction

1.7 The Significance of The Research

The significance of this study emerges from the significance of the sector it addresses. More specifically, within the unique particularity of the Palestinian context, having effective and efficient processes in the MFIs in Palestine is of great importance as the services offered (basically loans) by these MFIs aim to fulfill the needs of people in the Palestinian community who are in a dire need for these loans . Eventually, have lean processes in FATEN (which the case study in this research) would on one hand enhances its position and credibility among other MFIs in Palestine in microfinance sector and enhances its customers (beneficiaries) satisfaction and ultimately guarantees the sustainability and success of its processes.

This research is justified as, to the best of our knowledge, it is the first of its kind in Palestine that examines the potential of applying lean management tools & six sigma in an MFI, specifically, FATEN as a case study. the expected findings of the research would be of value to micro-financing sector in Palestine in general and in FATEN particularly. Also, it might benefit other researchers in other developing countries which might be interested in conducting similar research in the micro-financing sector in their own contexts.

1.8 Research Questions

This research aims at answering the following questions:

1. What is the potential of applying lean management tools & six sigma in FATEN as perceived by staff?
2. What are the main lean management tools & six sigma applicable in FATEN?
3. What are the main enabling factors for applying lean management tools & six sigma in FATEN.
4. What are the main obstacles for applying lean management tools & six sigma in FATEN?

5. What is the relationship between the application of lean management tools & six sigma and employee satisfaction?

In this research, a set of hypotheses had been formulated, to find the relationship between the dependent variables represented by satisfaction and the independent variables represented by a set of lean tools and six sigma tool, namely, Standard work, Multifunctional Workers, 5S, PDCA, DMAIC.

1.9 Research Hypotheses

Accordingly, the following set of hypotheses are developed to verify the applicability of lean management tools in FATEN company:

- H1a: There is a potential for applying Lean Management tools in FATEN as seen by employee demographics.
- There are many Lean and Six Sigma management tools that can be applied in Faten
- H2a: There are main enablers for the application of lean management tools in FATEN
- H3a: There are no obstacles that stand in the way of applying soft management tools at FATEN company.
- Is there a positive relationship between the application of lean management tools and six sigma and employee satisfaction?

1.10 Thesis Structure

This research includes six chapters. the first chapter explains the introduction of the research, presenting the background of the research in the first section, the statement of the problem, the goal and objectives, the significance of the research, and the proposed hypotheses that are clarified in the following sections. The last section in this chapter presents the structure of the message.

The second chapter presents a literature review of relevant previous studies. the first section explains the theoretical background of lean management and the most important studies that dealt with the impact of this management and its application in institutions, whether they are financial or commercial, or even private sector institutions of all kinds, such as industrial or retail sale. the next section deals with the relationship between lean management and its impact on the people working in the institutions that apply it. the proposed research hypotheses are presented in the last section.

The third chapter deals with the methodology of this thesis. the first section explains the research design and research methods, clarifying the choices of qualitative, quantitative and multiple methods, leading to the conclusion of designing research strategies. The next section deals with data collection techniques, sampling methods and data analysis using and the relationship between dependent and independent variables, where these variables were built based on what was found in the second chapter in the literature review.

Chapter four presents the analysis of the data collected. the first section deals with the results of descriptive statistics by analyzing the demographic profile of the respondents of FATEN Foundation, which the researcher adopted as a case study, the targeted workers in this study, and the demographic profile of each of them. While the next section presents the analysis of the collected data and testing the proposed hypotheses using SPSS to examine the effect of applying

lean management tools on evaluating the possibility of applying lean management tools in microfinance institutions in Palestine: FATEN as a case study.

The fifth chapter explains the interpretation of the results, including the possibility of applying lean management tools in microfinance institutions in Palestine. FATEN Foundation was taken as a case study; the employees within the institution. the next section deals with the theoretical implications of the research. Finally, the final section outlines research frontiers and prospects for upcoming contributions to the field.

Finally, Chapter Six draws conclusions from the research findings, and presents a set of recommendations based on the conclusions discussed.

Chapter Two

Literature Review

2.1 Overview

The research focuses on hypotheses that underlie this investigation. An overview of the literature on LSS approaches and operational performance is provided. As discussed in this chapter, poor implementation in the service business is fraught with difficulties. An empirical review supported the necessity for this study.

2.2 Origins of Lean Management

The LEAN idea is a representation of Toyota's Production System or style of production, and its originator Taiichi Ohno was the postwar plant manager for Toyota. Today's LEAN idea is described in the book "the machine that changed the world" by Professor James Womack (James P. Womack), Daniel Jones (Daniel T. Jones), and Daniel Rosa (Daniel Roos). LEAN, in general, refers to a way of thinking and a set of guiding principles that are intended to organize the production process (or services) and supply with the elimination of all activities that do not enhance the product or cause losses and the pursuit of ongoing system improvement.(Melović et al., 2016)

The concept of "Lean" as a paradigm for industrial organizations in the United States was first presented by Womack, Jones, and Roos in their book "the Machine That Changed the World," published in 1990. The authors' second book, titled "Lean Thinking," contributed to the growing popularity of lean in 1996. the Toyota Production System (TPS), which lean developed in the 1950s, served as the basis for the authors' study. Their findings led to discovering a new industrial model focused on the persistent elimination of waste from the processes involved in industrial operations. By implementing a continuous improvement cycle, each front-line staff

member was trained to become an "issue solver." the five ideas of Lean manufacturing that Womack and Jones have articulated are value specification, value stream mapping (VSM)/waste elimination, flow optimization, pull production system, and perfection or continuous improvement. Value specification is the first of these concepts 1996. In order to establish a seamless manufacturing process and an efficient loan process, any waste or value that is not contributed must be eliminated or reduced as much as possible over the product's life cycle. Eight of the most prevalent wastes associated with lean manufacturing include waiting, overproduction, excess inventory, and over processing, defects, motion, transportation and underutilized skills , all denoted by TIMWOODS or DOWNTIME. A recent study by Romero et al., (2018) investigated the possibility of digital waste in the new age of digitization as a result of "non-use (missed digital chances) and over-use (abused digital capabilities) of new digital manufacturing technologies." This was done because technological advancements have led to "missed digital chances" and "abused digital capabilities."

As a result of the fact that consumers expect consistently high-quality and value-added services from companies with whom they conduct frequent business, human resources play a far more significant role in delivering customer service than they do in manufacturing. According to Womack and Jones (1996), Lean thinking enables us to do more with fewer resources and brings us one step closer to providing our customers with precisely what they want. That is the interpretation that they are giving. they chose to name it "Lean Thinking" rather than "Lean Management" or "Lean Methods" since "Lean" refers to a style of thinking rather than a collection of techniques or instruments. According to the authors' book published in 1996 under the title "Lean Thinking," "value" is defined and recognized by the end customer in terms of a product or service that fulfils the customer's criteria and expectations.

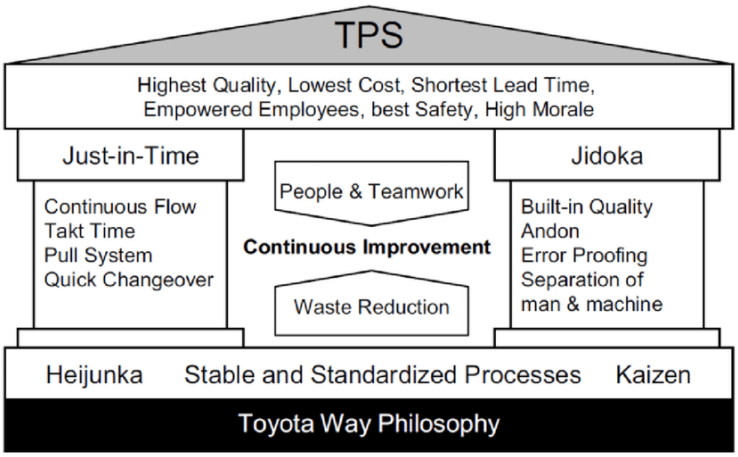

Figure 1: The Toyota Production System / Source: Liker (2004)

The term "lean manufacturing" was first used in 1991 by Massachusetts Institute of Technology professors James P. Womack, Daniel T. Jones, and Daniel Roos in their book, the Machine That Changed the World, in which they compared Japanese and American businesses. With the Toyota Production System (TPS), the Toyota Motor Company became the most effective. the TPS was acclaimed as the first system to operate in accordance with Lean principles. James P. Womack and Daniel T. Jones released a book in 2001.(Dekier, 2012)

According to (UNIT – I – LEAN MANAGEMENT – SBAA7030, n.d.)the primary principle of lean management is to reduce waste as much as is practical. In light of this, it is important to consider various lean management wastes. Such wastes might include:

• **Overproduction:** the issue with overproduction is that it results in excess inventory, as well as a need for additional storage space and staff.

• **Overprocessing:** This occurs when workers process products beyond what is actually necessary or typical.

• **Unnecessary movement:** This is when workers get up from their desks and wander around.

• **Unnecessary downtime**: A prime illustration of this is when workers wait aimlessly for supplies or directives from their managers.

• **Untapped employee creativity:** This occurs when an employer doesn't support or encourage a culture where staff members can suggest fresh ideas.

2.3 Lean Management Tools

There are many LSS tools used in companies, and some of them will be discussed in general terms

- **Kaizen:** Kaizen is a common tool that is applied to eliminate waste at all levels in any organization (Vamsi N, Jasti K, Kodali R (2014)). Kaizen is a Japanese practice of defining continuous process improvement in one type of business or all business (Kiran, 2017).
- **Just-in-Time:** JIT system identifies the hidden causes and problems in the value chain and reduces the production waste of the system (Kootanaee et al., 2013). JIT- based Quality management is a combination of inventory control, quality control, and production management functions that makes sincere efforts for quality improvement by two ways. First, it concentrates on the philosophical aspect of quality improvement by making the quality everyone’s responsibility and then focused on the effective implementation of quality control techniques (Kumar, 2010).
- **Visual Management:** the Visual Management is related to the workplace and environment that attempts to improve organizational performance through connecting and aligning organizational vision, core values, goals, and culture with other

management systems, work processes, workplace elements, and stakeholders (Liff & Posey, 2004). Visual Management can serve a broad range of functions for an organization (AlTabbaa & Ankrah, 2016).

- **Management by Objectives/SMART Objectives:** the SMART acronym is a tool created to assist groups and individuals in effectively and productively setting goals. the success of a project or initiative is determined by its specific and measurable objectives. Realistic and attainable goals inspire and engage people. All stakeholders must agree on the time frames for achieving the objectives, which is ensured by time-bound objectives.(Institute, 2014)
- **KPI:** KPI is described as a managerial control tool for swiftly identifying underperforming parts of the business, making decisions, and responding to issues as they arise. Additionally, they aid in the efficient utilization of resources and ongoing process improvement. the use of key performance indicators enables the presentation of goal achievement by condensing a big quantity of information into a manageable amount of key and detailed data.(Midor et al., 2020)
- **Kanban:** is a Japanese production control strategy that bases control on events that immediately affect production rather than on the production plan. Pre-magazines, interoperable items, and finished goods can all be almost completely eliminated with the help of the Kanban system (the stock is on the workstation). With the help of reserves, production capacity, and the flexibility of the production process, it is possible to make practically any product at any time. Raw materials are delivered from suppliers with hourly precision. On the other hand, production orders are carefully linked with client orders.(Rewers et al., 2016)

As for this research, a number of appropriate tools have been selected for companies that provide services, as follows:

- **5S:** 5S is a technique that originated from Japan and it was first developed by Hiroyuki Hirano. It includes five words Seiri, Seiton, Seiso, Seiketsu, and Shitsuke, which means Sort, Set in order, Shine, Standardize, and Sustain respectively (Chourasia & Nema, 2016). 5S is defined as a methodology that results in a workplace that is clean, uncluttered, safe, and well organized to help reduce waste and optimize productivity. It's designed to help build a quality work environment, both physically and mentally.
- **Standardized Work:** Standardized work is defined as work in which the sequence of job eleme.nts has been efficiently organized, and is repeatedly followed by a team member. Standardized work is a process whose goal is kaizen. If standardized work doesn't change, we are regressing, (Dennis, 2016).
- **Multifunctional Workers:** for two main reasons, multiskilled personnel are needed to staff the production facilities. First, it is frequently required to replace or minimize the components of the activity in order to accomplish process improvements. This in turn frequently necessitates redistributing the work. Work cells are frequently made to be operated, for example, by one, two, three, four, or five workers, depending on fluctuations in demand. Lean dynamics are lost if the workforce is not multiskilled. the core of flexibility in Lean Manufacturing is multiskilled labor.(Los, n.d.-a)
- **PDCA:** the PDCA framework offers a systematic strategy for issue solving and ongoing improvement.the Shewhart cycle serves as the foundation for PDCA, which was popularized by Dr. W. Edwards Deming, who is widely regarded as the founder of contemporary quality control. Deming observed that the Japanese attendees condensed the cycle's steps to the conventional plan, do, check, and act during his lectures in Japan in the early 1950s. It's noteworthy to note that Deming favored plan, do, study, and act since the English translation of the Japanese word "stuLiterature reviewdy" has implications that are more similar to Shewhart's intention than those of the word

"check." This model has been used for 60 years and is still applicable today. (Chakraborty, 2016)

Plan: Speculate about a problem's causes and potential solutions.

Do: Implement a solution.

Check: Evaluate the results.

Act: Return to the plan step if the results are unsatisfactory, or standardize the solution if the results are satisfactory

2.4 Origins of Six Sigma:

Six sigma is a methodology for process improvement and a statistical concept that aims to define the variation inherent in any process. the six sigma method ultimately lowers process costs and boosts customer satisfaction because it is based on the central tenet that variation in a process creates opportunities for error, which creates risks for product defects..(Los, n.d.-b)

Six Sigma historically has a clear relationship to the quality improvement methods created by Deming and Juran. Similar to biological evolution, Six Sigma demonstrates "survival of the fittest" in terms of methodology and approaches. It is dependent on an extremely sophisticated management system for its implementation.(Vashishth et al., 2019)

According to (Sigma & Sigma, n.d.) A corporate technique known as Six Sigma uses statistical tools and a well-structured continuous improvement methodology to eliminate errors and process variability. It is a quality discipline that emphasizes superior products and services. Numerous businesses have used Six Sigma to save operational costs, boost sales and income, improve reliability, incorporate innovation into goods and services, and increase productivity and profitability. A Six Sigma program's goal is to minimize process variation to the point where the likelihood of a fault occurring is almost nonexistent. This entails raising the standard of excellence and exceeding clients' expectations.

Motorola, GE, and other firms that adopted the Six Sigma improvement attest to the enormous contributions made by the improvement, particularly the financial outcomes. the DMAIC

(Define, Measure, Analyze, Improve, Control) process for quality improvement and the DMADV (Define, Measure, Analyze, Design, Verify) process for process design are the two types of implementation processes used in the Six Sigma methodology. these processes are used for product (including service), process, and system development. Industries frequently employ DMAIC to enhance the quality of their products, however DMADV is rarely used during the product design phase. there are, according to some academics, two problems with the Six Sigma improvement. the two challenges are brought on by some issues that crop up throughout the product, process, or system's design phase.(Yang et al., 2022)

2. 5 Six Sigma Tools

To find the underlying reasons for variation and to understand and minimize it, Six Sigma use the potent DMAIC framework and statistical methods.

The DMAIC model is a data-driven quality strategy that is used to analyze and improve business processes in a methodical manner. It is a crucial component of a Six Sigma project, but it can also generally be used as a stand-alone quality improvement method or in conjunction with other process improvement projects.(Selvi & Majumdar, 2014)

there are five phases to it:

Define: Defining the goal and its requirements includes: identifying the necessary resources and responsibilities, outlining an organizational structure that is conducive to achieving the goals, identifying the components and determining an expected completion date for the project, and securing management support.(Smętkowska & Mrugalska, 2018)

Measure: measure the current operation or output. Identify the data that is accessible and its source. Create a strategy to collect it. then, using a narrative to convey the issue, compile the data and summarize it. Typically, graphical tools are used for this.(Hambleton, 2007)

Analyze: The third stage in the DMAIC model is analysis, which involves examining the data and process map to identify the root causes of faults and potential improvement areas. Gaps between current and desired performance are discovered, opportunities for improvement are prioritized, and sources of variance are found.(Shaikh & Kazi, 2015)

Improve: Enhance phase the next step is to get better. A corrective action plan must be put into place in order to achieve Six Sigma quality improvement after the sources and root causes of quality issues have been found.(Setiawan & Setiawan, 2020)

Control: the last stage of a Six Sigma quality improvement program is control. At this stage, implementation results are being assessed. the production process with the suggested improvement is regulated by building a control chart to determine if it is statistically controlled or not.(Setiawan & Setiawan, 2020)

2.6 lean six sigma (LSS)

In this section, the concept LSS is defined, the importance of this concept is highlighted, and Finally, several different LSS tools are defined

2.6.1 lean six sigma (LSS) concept

Compared to manufacturing contexts, the definition of LSS is far more difficult in service settings. the reason for this is that services are intangible. Due to the subjective nature of the concept of service quality, numerous academics, researchers, and practitioners from all over the world have contributed their own definitions. the list below includes a few of these meanings.

According to (Grudowski et al., 2015) Lean and Six Sigma ideas can be applied together to complement one another and so increase the efficacy of both in improving the organization. Where many of the pillars of this methodology were mentioned, such as achieving customer satisfaction through the quick delivery of high-quality goods or services that meet their

expectations, meeting customer requirements through process optimization by reducing variance and waste, and tea, lean six sigma actually helps an organization reduce waste and improve quality more effectively than each of its elements individually.

LSS is Combining the two results in a comprehensive improvement mindset that uses potent data-driven tools to tackle issues quickly and transformatively at lower costs. the secret is figuring out the best way to combine the two methods. Taking the Lean approach, for instance, of concentrating on what provides value while utilizing Six Sigma techniques to assist understand and minimize variation.(Bevan et al., 2005)

In addition Lean Six Sigma is a structured methodology for process improvement that is exacting, data-driven, and goal-oriented. It combines two approaches that have been developed by organizations like Motorola, GE, Toyata, and Xerox, to mention a few. Lean and Six Sigma processes and techniques are being combined to create a potent engine for enhancing quality, effectiveness, and speed in every area of company.(N & S, 2011)

LSS can also be defined as a potent tool that can affect organizational processes and stakeholder/customer satisfaction.(Tampubolon & Purba, 2021)

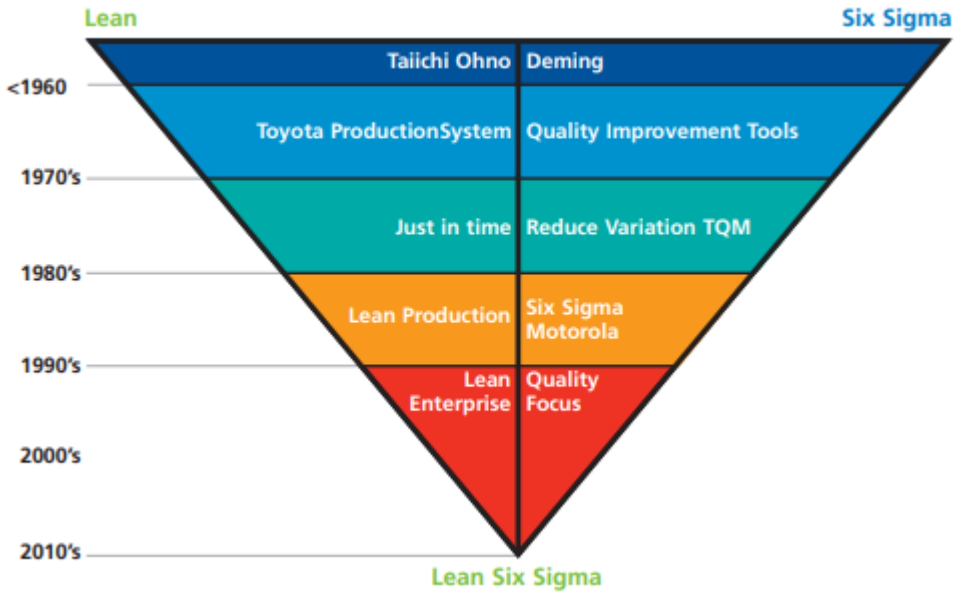

Figure 2: History of Lean and Six Sigma adapted / from LeanSigma.com

2.7 Previous Studies In Palestine

In Palestine (Aderibigbe, 2018) worked on Improving the Bank Account Opening Process Using Lean Six Sigma Methodology at Palestine Islamic Bank, for this purpose the research strategy has been designed according to major two models; DMAIC Model & PDSA Model in parallel with its accompanying tools especially those used in data collection.

the results showed that the test carried out in one of the branches reduced the average time for a new bank account from 38 minutes to 14.7 minutes by 61.4 minutes to reduce the customer's time in the bank by canceling some steps that were taken in the external offices after the customer left the bank.

In another study in Palestine (Dandis, 2018) about Challenges in Applying Lean Manufacturing Principles in Palestinian SMEs, the descriptive method was employed by the researcher. Due to the small study population—22 companies—the comprehensive survey approach was adopted for the study sample. The questionnaire and the interview were the two instruments utilized to gather the data. Each participant in the study sample received a copy of the

questionnaire. there were 58 items in the survey. the data was then processed, and the outcomes were then obtained and examined using the spss statistical analysis application.

the most important challenges were as follows, which are challenges related to workers, challenges related to management, challenges related to financial matters, challenges related to organizational matters, challenges related to the occupation and challenges related to the nature of the application of lean manufacturing.

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

A systematic examination or action to learn new information about already known facts is called research (Kohtari, 2004).

(Pawar, 2020) classifies the types of research as follows:

1. Pure Research or Basic Research: the investigation done to discover novel insights, fresh data, and fundamental truths about human knowledge.
2. Applied Research: Finding solutions, imparting knowledge, and incorporating social research results into decisions to address issues with significant risks are the core goals of applied research. One can tackle particular problems by using experimental research, well-established theories, principles, case studies, and multidisciplinary study.
3. Descriptive research: the study that establishes "the way things are." You may learn a lot by watching, therefore behavior observation research and survey research are both possible components of descriptive research.

4. Analytical Research: It has to do with using analytical instruments to carry out analysis on a certain phenomenon. Analytical research makes use of information and facts that are already available and analyzes them to produce a critical assessment.
5. Fundamental Research: Experimentation and theoretical study must be done primarily to gain the new information. It broadens the researcher's scientific knowledge and has no intended or immediate applications, however their findings might be helpful in the future.
6. Conceptual Research: the research is carried out using data and observations that already exist on the subject. It can be applied to the creation of new theories or fresh interpretations of abstract ideas and notions.
7. Empirical Research: This kind of research relies on data collection that inspires experimentation, observation, or the use of scientific tools.
8. Longitudinal Research: In this kind of research, we spend a lot of time (weeks, months, and years) observing subject variables without interfering with the subject.
9. Laboratory Research: the settings for laboratory research must allow for technological research, measurements, and experiments.
10. Exploratory Research: This study is being done to address issues that are not quite clear. It aids in subject selection, research design, and data gathering methodology.
11. Conclusion Oriented Research: This study focuses on redesign inquiries to identify problems and prepare for conceptualization.

Based on the above types of research, an exploratory research method was used in this study. As the aim of this study is to investigate the potential of applying lean management tools in Microfinance Institutions in Palestine: FATEN as a Case Study, as the possibility of applying these tools in these institutions has not been examined before.

3.3 Research Approach

Research approaches are plans and the procedures for research that span the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation

3.3.1 Main Research Approaches

The Qualitative Approach: involves non-standardized methods of data collecting, such as focus group and individual interviews, and then applies methods of analysis (such as categorization) that produce or utilize non-numerical data (Creswell John W., 2009).

The Quantitative Approach: This strategy is typically connected to a deductive strategy. According to Creswell (2009), quantitative research is the process of gathering, evaluating, and interpreting data that leads to the study objectives by putting experimentation, surveys, and data collection methodologies into practice.

Mixed Research Design: In this method, quantitative and qualitative research designs are combined to better comprehend the study topic and provide answers to the research questions.(Creswell John W., 2009). As explained above, in this research, a deductive quantitative approach is applied

3.4 Research Strategy

A research strategy is a plan or set of steps that defines the approach you will take to conduct research on a particular topic. they help guide your research efforts and ensure that you are gathering relevant and reliable information. the following are some of the steps that the researcher followed to develop the research strategy:

- Determining the questions related to the research: they were identified in the first chapter of this thesis, and based on the evidence collected and then analyzed, the questions raised can be answered.

- Determining the research objectives: they were identified in the first chapter of this thesis.
- Determining your own research methods: there are many different methods that you can use to conduct research, and since this research is a descriptive and analytical research, the researcher chose the questionnaire as a tool for collecting data and then analyzing it on the SPSS program, where the questionnaire was built based on what was seen in the studies previous.
- Determining the sample for the study: the study population is the number of employees in FATEN which is 360 employees. A random sample is determined from this population as is shown in the following discussion below.
- Data collection and analysis: All data were collected using the Google form, as well as paper filling in some branches, and they were analyzed using the SPSS statistical analysis program.
- Communicating the results: All the results were presented in the last chapter, and these results were discussed in the light of previous studies and their results.

By following these steps, a clear and systematic research strategy was developed that helped the researcher to conduct effective and purposeful research.

3.5 Research Methodology

To achieve the objectives of this research, a deductive quantitative methodology has been applied as in Figure 3.

- Phase 1: The scope of the study and the issue to be solved were established at this point, and the necessity and justifications for doing the study were outlined. To determine the applicability of lean management strategies to financing institutions and FATEN as a case study, as well as to identify and close the gap to make a contribution to this area, a

thorough literature review was done. As a result, research questions are created and testing hypotheses are suggested. the research plan is organized in the end to accomplish the study goals.

- Phase 2: Data collection involved identifying the research's target audience, deciding how many representative samples to use, and choosing a technique to gather the necessary information, such as designing a survey plan and distributing it online to the chosen sample.

- Phase3: A statistical tool called SPSS was used to analyze and interpret the data in order to investigate the correlations between the variables and evaluate the given hypotheses. Finally, explanations of the findings and suggestions were provided.

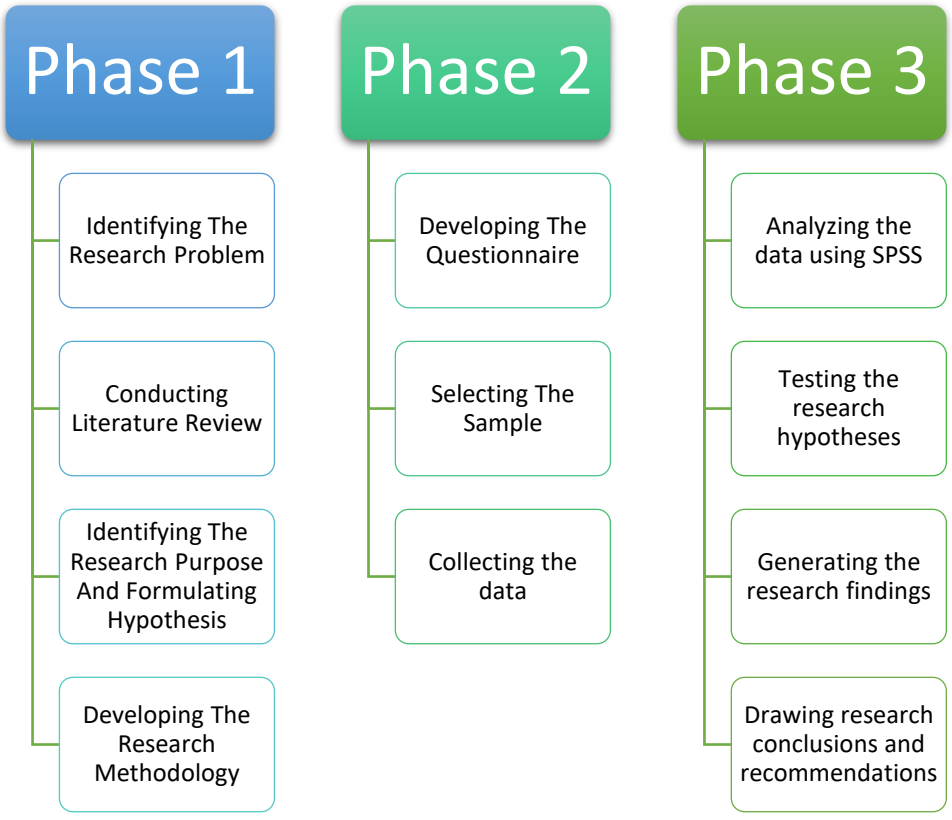

Figure 3: Research Diagram Flow Chart

3.6 Data Collection- Questionnaire Design

Indeed, any text-based tool that provides survey participants with a series of questions to answer or statements to reply to by marking a page, writing a number, or checking a box on paper or online is referred to as a questionnaire (Young, 2015).

Close-ended questions were predetermined for the responders in this study. the Five-Point Likert Scale was chosen as the scale to be used; it consists of a number of statements (items) that have been presented for the real or imagined event under study. Participants were asked to rate how much they agree or disagree with the given statement on a metric scale (or items). the comments in this case are inextricably related because when viewed as a whole, they all reveal a certain component of the attitude toward the issue (Joshi et al., 2015).

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

The questionnaire comprises of six 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 response's cooperation and finally the researcher's full contact details for any inquiries.

the first section consists of the first tool which is 5S: sort, set in order, shine, standardize and sustain.

the second section consist of the second tool which is PDCA: plan, do, check, act, the third section consists of the third tool which is Standard Work, and the forth section consists of the forth tool which is Multifunctional Workers, and the fifth section is about the last tool which is six sigma (DMAIC). As for the sixth section, it is about the relationship of using lean management tools to employee satisfaction.

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 last section deals with the facts about the demographic profile of the respondents; gender, age, qualification, position and years of experience, the geographical location, working years in the FATEN

In this research, an Arabic electronic (online) questionnaire was utilized using Microsoft forms, sent by email to 260 targeted employees, as well as the respondents are contacted by email to clarify any ambiguity in the questionnaire items.

the starting data collection phase was in June 2022 and ended at the beginning of July 2022. the data elicited by the items was stored anonymously on the Microsoft forms database to be analyzed.

3.7 Sampling Techniques

(Kumar et al., n.d.) defines a sample as an assortment of things—people, things, or things—chosen from the universe. It represents a segment or subset of the entire population. Additionally, the major goal is to choose a sample that accurately reflects the entire population. the sample kinds are:

Purposive Sampling: is a qualitative methodology that chooses samples based on predetermined theoretical criteria.

Convenience Sampling: is the practice of choosing participants who are accessible but unrepresentative of the general population. This prevented it from being generalized.

Random Sampling: is a typical survey technique because it gives every instance in the population an equal chance of being chosen.

This research aims to explore the possibility of applying lean management tools in financial institutions and FATEN as a case study. Thus, FATEN employees are the target group (study population) in this study.

A total of 360 employees in FATEN firms in all food subsectors were randomly sampled from a population. Steven Thompson formula, (Thompson, 1987) is used to calculate the sample size:

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

Where,

n= the sample size

N=population size

P=proportion of property offers and neutral (0.5)

d=error margin (5%)

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

Accordingly, our sample size is 187 . Only 112 of the 187 could be obtained from the surveyed employees, which means about 60% response rate.

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 employees.

Chapter Four

Data Analysis and Results

4.1 Overview

This chapter presents the analysis of the collected data. the first section explains the results of descriptive statistics by analyzing the demographic features of the respondents from the targeted employees. After that, the analysis of the collected data and testing the proposed hypotheses using the SPSS program is presented to examine the applicability assessing the Potential of Applying Lean Management Tools in Microfinance Institutions in Palestine FATEN as a Case Study.

4.2 Descriptive Analysis of Demographics

The questionnaire was distributed amongst the employees of FATEN, the target sample size was 187 respondents, but we could get 112 valid questionnaires only. Table 1 describes the demographics of the sample in terms of frequency and percentages.

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

4.2.1 Demographic Profile for the Targeted Firms' Respondents

Table 1 Demographic Profile for the Targeted Firms' Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Gender	Female	45	40.2	40.2	40.2
	Male	67	59.8	59.8	100
Educational Level	Diploma	4	3.6	3.6	82.1
	Bachelors	88	78.6	78.6	78.6
	Masters	20	17.9	17.9	100
Years of Experience	0-5	41	36.6	36.6	36.6
	10-Jun	13	11.6	11.6	48.2
	15-Nov	6	5.4	5.4	53.6
	16-20	47	42	42	95.5
	More than 20	5	4.5	4.5	100
Place of residence	Jericho	5	4.5	4.5	4.5
	Hebron	7	6.3	6.3	10.7
	Jerusalem	3	2.7	2.7	13.4
	Bethlehem	6	5.4	5.4	18.8
	Jenin	10	8.9	8.9	27.7
	Ramallah & Al Bireh	39	34.8	34.8	62.5
	Salfit	4	3.6	3.6	66.1
	Tulkarem	7	6.3	6.3	72.3
	Gaza	20	17.9	17.9	90.2
	Qalqilya	5	4.5	4.5	94.6
	Nablus	6	5.4	5.4	100
Place of Work	Office	74	66.1	66.1	66.1
	Office & Field	35	31.3	31.3	97.3
	Field	3	2.7	2.7	100
Number of years of service in the company	1 -5	55	49%		
	6-10	46	41%		
	>10	11	10%		

4.2.1.1 Gender and Ages:

The analysis shows that 60% of the respondents from the targeted employees were male, whilst 40% of the respondents were female as illustrated.

Meanwhile, 64% of the respondents' ages were ranging from 26 and 35, 17% of their ages were ranging from 18 and 25, 17% of their ages were ranging from 36 and 45, 1% of their ages were ranging from 46 and 55,and 1% of their ages were 55 and above.

4.2.1.2 Educational Level

About 79% of the respondents have a bachelor's degree,18% of them have a master's degree, 4% of them have diploma degree.

4.2.1.3 Years Of Experience

42% of the respondents have (16-20) years of experience, and 37% of them ranging from (0-5) years of experience, meanwhile 12% of their experience was (6-10) years, 5% of them ranging from (11-15), and 5% of their experience was more 20 years.

4.2.1.4 Place Of Residence

Most of the employees reside in Ramallah and Al Bireh with frequency percent 35%, meanwhile, 18% of them reside in Gaza, 9% in Jenin, 6% each of Hebron and Tukaram, 5% in each of Jericho, Bethlehem, Qalqilia, and Nablus, 4% in Salfit and 3% in Jerusalem.

4.2.1.5 Place Of Work

About 66% of the respondents, do office work, 31% of them work in the office and in the field, and 3% of them they only work in the field.

4.2.1.6 Number Of Years Of Service In the Company

the number of years of work in the company for the respondents was 49% from (1-5) years, while 41% of from (6-10) years, and for those who have 10 years or more account 10%.

4.3 Reliability

Reliability was measured on the level on the domain as well as the tool itself, Cronbach's Alpha was calculated, and the results are presented in Table 2. By looking at the results presented, all of the items show accepted to excellent level of internal consistency.

Alpha values were described as excellent (0.93–0.94), strong (0.91–0.93), reliable (0.84–0.90), robust (0.81), fairly high (0.76–0.95), high (0.73–0.95), good (0.71–0.91), relatively high (0.70–0.77), slightly low (0.68), reasonable (0.67–0.87), adequate (0.64–0.85), moderate (0.61–0.65), satisfactory (0.58–0.97), acceptable (0.45–0.98), sufficient (0.45–0.96), not satisfactory (0.4–0.55) and low (0.11).(Taber,.2018).

Table 2 Reliability Measurements

Domain/Tool	**Cronbach's Alpha**	**Number of Items**	**Reliability Level**
Sort	0.771	5	Acceptable
Set in Order	0.828	6	Good
Shine	0.900	7	Good
Standardize	0.853	5	Good
Sustain	0.885	4	Good
5S	**0.931**	**27**	**Excellent**
Plan	0.812	5	Good
Do	0.830	6	Good
Check	0.889	6	Good
Act	0.858	7	Good
PDCA	**0.944**	**24**	**Excellent**
Standard Work	**0.876**	**5**	**Good**
Multifunctional Workers	**0.778**	**5**	**Acceptable**
Define	0.896	7	Good
Measure	0.912	5	Excellent
Analyze	0.892	4	Good
Improve	0.751	3	Acceptable
Control	0.926	7	Excellent
6 Sigma	**0.967**	**26**	**Excellent**
Lean vs. Satisfaction	**0.941**	**12**	**Excellent**

As shown in the table above, Cronbach's Alpha is excellent for 6 tools, good for 10 tools, and acceptable for 3 tools. No tool is weak or unacceptable, which means that the reliability of the measurement is very good. This indicates the existence of basic features that enable us to start applying these tools.

4.4 Mean Values for Items, Domains, Tools

In the following section, the mean values were calculated for each item and then the mean item for the domain and as a result, the mean item for the tool was calculated

4.4.1 5S tool:

Table 3 shows the item mean for the items used to calculate the 5S tool, the valuating scale was a five-point Likert scale and thus the mean values in the table reflect the following:

1- 1.00 – 1.79 → Strong disagreement
2- 1.80 – 2.59 → Disagreement
3- 2.60 – 3.39 → Neutral
4- 3.40 – 4.19 → Agreement
5- 4.20– 5.00 → Strong agreement.

Having a look at the mean values in Table 3, we can see that all the mean values are in the range of agreement, Which means that the average employee agrees with the premise that the company/organization has the potential to implement the 5S tool.

Table 3 5S Tool Item Mean

Item	Mean	Std. Deviation
Set in order /Safety equipment is easily accessible and in good condition.	4.25	0.854
Set in order /Tools and equipment are well organized for easy access and return.	4.18	0.819
Set in order /All equipment and tools necessary for the work are placed in their designated places	4.14	0.847
Set in order /The tools necessary to work are placed in places close to the employee	4.11	0.809
Shine /Equipment and tools are kept clean and in good condition.	4.11	0.842
Shine /The lighting is sufficient and the lighting angle and intensity are appropriate.	4.09	0.977
Sort The corridors and stairs are free of unnecessary equipment/items	4.04	0.999
shine/ Shelves, cupboards and surfaces are kept clean and in good condition.	4.02	0.93
Standardize / Everyone knows their responsibilities, when and how.	4	0.859
Sustain /I also apply the 5S methodology outside of work life (home and street) so that it becomes part of my daily culture.	3.98	0.794
Shine /The floor is clean and there are no signs of damage.	3.97	1.044
Set In Order /There are visual indicators present to identify work areas.	3.96	0.934

Sort /The workplace does not contain unnecessary wall stickers and advertisements	3.88	1.1
Standardize / The procedures to maintain the three previously mentioned points are displayed.	3.88	0.871
Standardize / Standard working procedures have been developed documenting the mechanism for applying the 5S methodology	3.88	0.928
Shine / The room is well-ventilated.	3.85	1.202
Sustain / Regular reviews and updates are performed using the developed SOPs checklists and measures.	3.85	0.83
Standardize / 5S checklists, schedules, and procedures are defined and used.	3.84	0.792
Sustain / All employees are trained to apply the 5S methodology in the company.	3.84	0.926
Sustain / Regular revisions are carried out using the checklists and measures for the standard operating procedures that have been developed.	3.84	0.823
Sort / There are no safety risks in my workplace (electricity, water, chemicals, etc...	3.83	1.162
Shine / The walls and ceilings are in good condition and free of dirt and dust.	3.81	1.135
Standardize / Visual controls and display panels are used and updated regularly.	3.79	1.015
Set In Order / Labels are placed on cabinets, shelves, and files, allowing instant identification.	3.78	1.088
Shine / The noise level in the working environment is acceptable.	3.76	1.024
Sort / No unnecessary papers, files, or devices are stored	3.64	1.122
Sort /The workplace does not have unnecessary equipment/tools/furniture	3.6	1.248

As shown in the table above, the mean for all statements is more than 3.6, which means that the lowest mean indicates agreement, and the rest of the statements are either agreement or strong agreement. the highest mean is for the first statement "Safety equipment is easily accessible and in good condition." and it is 4.25, which indicates strong agreement. In addition, the lowest mean value is for the last statement "the workplace does not have unnecessary equipment/tools/furniture" and it is 3.6 indicating agreement. All other questions range between these two indications, whether agreement or strong agreement. This confirms the hypothesis that there are enablers that enable us to apply lean management tools.

Table 4 5S Tool Mean Values.

Domain/Tool	Mean	Std. Deviation
Set In Order	4.0685	0.65819
Shine	3.9439	0.81251
Standardization	3.8786	0.71097
Sustain	3.8772	0.72829
Sort	3.7982	0.81583
5S	**3.9133**	**0.57035**

Table above shows that the highest mean is for set-in-order domain and equals 4.0685, following is the domain Shine with a mean of 3.9439, next is Standardization domain with a mean of 3.8786, and sustain with a mean of 3.8772, and finally sort domain with a mean of 3.7982. In addition, the table above shows that the mean values of all tools are more than 3.7, which indicates an overall agreement of the tools, and we can see an overall agreement to the application of this tool in the organization in Table 4 above, which presents the mean values for the five S tool's domains followed by the overall mean of the tool itself. there are some variations in the agreement level for the favor of the set-in-order domain, but it is still at the same agreement level.

4.4.2 PDCA

The same likert scale was applied to measure the agreement level to the PDCA tool, and the same method was used to evaluate the output, Table 5 below describes the mean values for the items.

Reviewing the mean values provided in Table 5, it is clear that all but one of the items means are in the level of 3.51 – 4.5 which means that there is a general agreement level, and the one other item is in the level if greater than 4.2 which means that there is a strong

agreement, in the overall evaluation it is clear that the company/ organization apply the PDCA tool, this is also reflected and confirmed clearely in Table 5 below.

Table 5 PDCA Mean

Item	Mean	Std. Deviation
Plan / FATEN has a clear mission, vision, and goals.	4.57	0.611
Do / FATEN is constantly making improvements to the services offered.	4.46	0.656
Do / The Management employs modern technology to raise the level of work efficiency.	4.42	0.666
Plan / FATEN has annual and strategic operational plans.	4.38	0.573
Do / The management develops and updates procedures whenever necessary.	4.37	0.555
Action / There are electronic systems to manage and facilitate procedures to improve quality.	4.35	0.549
Do / The management sets a timetable for the implementation of the set goals.	4.31	0.644
Check / There is a clear channel for employees to receive and act on their suggestions.	4.24	0.688
Plan / The specific goals of the company are measurable.	4.21	0.699
Plan / Systems and regulations are characterized by being quick to respond to changes according to the plans laid down.	4.2	0.613
Action / The results of the improvement are employed in other similar processes.	4.14	0.551
Action / The company's management adjusts its plans according to the evaluation results of the implemented projects.	4.13	0.737
Check / The results of the measurement of previous operations are used when performing subsequent operations.	4.12	0.654
Action / FATEN publishes periodic reports to employees on the nature of work progress and the level of its services.	4.1	0.849
Check / There are clear criteria to measure the extent to which results have improved.	4.09	0.705
Action / New plans are approved based on previous reviews.	4.08	0.699
Check / The Management pays attention to employee feedback.	4.07	0.846
Do / Employees are trained to perform work procedures correctly.	4.05	0.938
Action / The relevant personnel are trained to apply the improvements.	4.03	0.811
Check / There is a quality officer to follow up on comments and suggestions.	4.01	0.833
Action / FATEN develops its message according to its market position.	3.99	0.815
Do / Unnecessary actions that can be dispensed with are eliminated.	3.98	0.771
Do / Activities and processes are evaluated in a planned and organized manner with the aim of change and improvement.	3.97	0.832
Plan /Employees participate in setting goals.	3.89	0.894

As shown in the table above, all the means are more than 3.89, and most of them range between 4.01-4.57, which means that they are ranging between agreement and strong agreement. the highest mean is for is for the item “FATEN has a clear mission, vision, and goals.” and it equals 4.57. Meanwhile, the lowest mean is for the item “Employees participate in setting goals” and it equals 3.89.

Table 6 PDCA Domain and Tool Mean Scores

Phase	**Mean**	**Std. Deviation**
Do	4.2664	.52584
Plan	4.2500	.51953
Action	4.1161	.53229
Check	4.0833	.61268
PDCA	**4.1789**	**.47929**

As indicated in the table above, scores range between 4.1 and 4.2 and this agrees with the above tables and values range between agreement and strong agreement.

4.4.3 Six Sigma

As for the six sigma tool, same analysis methodology was followed to investigate the agreement level of the employees to the application of the six sigma tool. Table 7 below shows the item average of each of the items constituting the six sigma score. The mean scores of all items, domains, tool lie in the range of agreement and thus.

Table 7 Six Sigma Tool Item Mean

Item	**Mean**	**Std. Deviation**
Define / FATEN is developing its services and systems to provide better service.	4.39	0.62
Define / The company has policies that help in providing services to beneficiaries.	4.37	0.52
Measure / FATEN uses technological methods to collect and analyze data.	4.36	0.613
Define / FATEN has the necessary capabilities to provide a better service.	4.35	0.625
Define / Achieving beneficiary satisfaction is one of the main objectives of the company.	4.34	0.609
Control / There is a special section in FATEN to study the complaints of the beneficiaries.	4.31	0.63
Define / The company sets a clear plan for each of its branches.	4.29	0.592
Define / FATEN encourages its employees to excel in order to provide better service to its beneficiaries.	4.24	0.726

Improve / FATEN significantly upgrades its services.	4.23	0.6
Control / FATEN documents new improvements for regular and consistent approval.	4.23	0.615
Measure / FATEN evaluates all its activities to ensure that customers are satisfied.	4.21	0.673
Measure / FATEN conducts periodic studies to measure customer satisfaction and know their needs.	4.19	0.704
Measure / There are specific criteria to measure the extent to which the desired goals are achieved.	4.18	0.713
Control / FATEN provides services in accordance with what is specified in the plans.	4.17	0.628
Control / FATEN develops a plan for each stage of service.	4.16	0.665
Analyze / FATEN seeks to know and analyze the problems that occur with the beneficiaries.	4.13	0.741
Define / FATEN studies the market to determine what fulfils the demands of its customers.	4.12	0.825
Analyze / FATEN compares the differences between the current and future situation.	4.12	0.72
Control / FATEN seeks to develop control processes to monitor changes in the company.	4.09	0.692
Improve / FATEN has a budget dedicated to improving and developing the quality of services.	4.05	0.769
Control / FATEN makes sure that old methods and practices are not returned.	4.05	0.847
Analyze / FATEN uses SWOT analysis to assess its position.	4.01	0.833
Improve / FATEN has the necessary environment to improve employee performance.	3.98	0.859
Control / FATEN develops alternative plans to face possible problems.	3.98	0.816
Analyze / FATEN determines the necessary tools for the statistical analysis of the studies conducted.	3.93	0.802
Measure / FATEN is training some employees to master the use of statistical tools.	3.8	0.909

As shown in the table above, means range between 3.8 -which is the lowest mean value- and 4.39 -the highest mean value. Which agrees with the previous tables and indicates an overall agreement that range between agreement and strong agreement.

Table 8 Six Sigma Tool Mean Score

Domain/ Tool	Mean	Std. Deviation
Define	4.2985	.51188
Measure	4.1464	.62730
Control	4.1429	.58667
Improve	4.0893	.61347
Analyze	4.0469	.67411
DMAIC	**4.1448**	**.53424**

The table above shows that mean values range between 4.0 and 4.2, which indicates agreement and strong agreement. The highest mean is for the first domain "Define" and it equals 4.2985m while the lowest is for Analyze domain and it equals 4.0469, FATEN staff agree that the company has good features to enable it to promote the use of the DMAIC tool.

4.4.4 Employee Satisfaction

The following items were used to investigate the agreement level of the employees to the correlation between applying the lean concepts and the satisfaction, Table 9 below shows the agreement level to each item and the mean score for the overall scale which is located in the bottom row. The average employee agrees that applying the concept of lean organization brings satisfaction since all the mean values are in the range of 4.2 – 4.5.

Table 9 Lean Organization Vs. Employee Satisfaction

Item	Mean	Std. Deviation
Attention to the suggestions and ideas of employees contributes to bringing a positive and motivating feeling to work	4.49	0.553
The presence of electronic automation helps in developing performance positively.	4.48	0.6
Eliminating long and unnecessary procedures helps increase work productivity.	4.43	0.532
Employee training contributes to raising work efficiency and thus empowering employees to do their work.	4.42	0.653
Arranging offices in an organized manner helps to bring a positive and motivating feeling to work.	4.38	0.674
Having systems and regulations at work helps me to complete my work smoothly.	4.37	0.571
Determining the goals of the company helps determine your goals in your work.	4.36	0.598

The development and improvement of the procedures help me gain practical experience.	4.36	0.553
Having a channel dedicated to raising problems and suggestions contributes to the development of my work.	4.35	0.625
The arrangement of your work area affects your performance positively.	4.3	0.769
Arranging your work areas helps you find the necessary work tools.	4.29	0.592
Organized work areas increase your motivation to work.	4.27	0.632
Lean Vs. Satisfaction	**4.3755**	**0.47776**

The highest mean value is for the item "Attention to the suggestions and ideas of employees contributes to bringing a positive and motivating feeling to work" and it equals 4.49, meanwhile the lowest mean is for the item "Organized work areas increase your motivation to work." and it equals 4.27. This means that Mean values in the above table range between 4.2 and 4.9, which means that all mean values indicate strong agreement.

4.5 Correlations

Table 10 Correlations Between Different Tool Mean Values and Satisfaction Mean Values.

Variable	Satisfaction	
5S	Pearson Correlation	.365**
	Sig. (2-tailed)	.000
PDCA	Pearson Correlation	.581**
	Sig. (2-tailed)	.000
DMAIC	Pearson Correlation	.644**
	Sig. (2-tailed)	.000
Standard Work	Pearson Correlation	.577**
	Sig. (2-tailed)	.000
Multi-Functional Workers	Pearson Correlation	.416**
	Sig. (2-tailed)	.000

Employee satisfaction was measured and the correlations between the various methods are shown in Table above. the table clearly shows that satisfaction and all other tools for measuring a lean organization have a positive significant correlation ($P < .05$), despite the fact that the correlation coefficients' values don't necessarily indicate a strong correlation in any of the cases ($r < 0.7$).

4.9 Normality Tests for Dependent Variables

Kolmogorov Smirnov test was performed for the dependent variables of interest to enable us to determine the testing procedure, for all the variables of interest, the P-value was found to be less than 0.05 which means that we reject the null hypothesis indicating that the distribution of the variables of interest follow the normal distribution, i.e. our variables do not follow the normal distribution and thus we will use the non-parametric tests to test our hypotheses.

Table 10 Normality Tests for Dependent Variables

Variable	**Statistic**	**Df**	**Sig.**	**Result**
Standard Work	.248	112	.000	Does not follow the Normal Distribution
Multifunctional Workers	.128	112	.000	Does not follow the Normal Distribution
Five S	.090	112	.026	Does not follow the Normal Distribution
PDCA	.116	112	.001	Does not follow the Normal Distribution
DMAIC	.137	112	.000	Does not follow the Normal Distribution
Lean Vs. Satisfaction	.168	112	.000	Does not follow the Normal Distribution

4.6 Lean Management and Demographics

4.6.1 Lean Management and Area Of Residence

In the below section of the analysis, each of the components used to measure the ability of application of the lean management in FATEN will be tested to check if it's affected by the demographics of the respondents, Table below shows the relation between the area of residence and the lean management components, as could be seen, all null hypotheses could not be rejected and no relation could be found between any of the lean management components and the area of residence.

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Table 11 Non-parametric Testing for the dependent Variables and the Area of Residence

Null Hypothesis	Test	Sig.	Decision
The Distribution of 5S is the same across all categories of area of residence.	Independent Samples – Kruskal Wallis	0.340	Fail to reject the Null Hypothesis
The Distribution of PDCA is the same across all categories of area of residence.	Independent Samples – Kruskal Wallis	0.477	Fail to reject the Null Hypothesis
The Distribution of Standard Work is the same across all categories of area of residence.	Independent Samples – Kruskal Wallis	0.746	Fail to reject the Null Hypothesis
The Distribution of Multifunctional Work is the same across all categories of areas of residence.	Independent Samples – Kruskal Wallis	0.404	Fail to reject the Null Hypothesis
The Distribution of 6 Sigma is the same across all categories of the area of residence.	Independent Samples – Kruskal Wallis	0.436	Fail to reject the Null Hypothesis
The Distribution of Lean vs. Satisfaction is the same across all categories of an area of residence.	Independent Samples – Kruskal Wallis	0.902	Fail to reject the Null Hypothesis

The above table shows the non-parametric testing for the dependent variables and the area of resident, as shown above, No association could be observed between any of the lean management components and the place of residence, and all null hypotheses could not be rejected.

4.6.2 Lean Management and Age

Table 12 Non-parametric Testing for the Relation of Age and the Lean Management Components

Null Hypothesis	Test	Sig.	Decision
The Distribution of 5S is the same across all categories of age.	Independent Samples – Kruskal Wallis	0.934	Fail to reject the Null Hypothesis
The Distribution of PDCA is the same across all categories of age.	Independent Samples – Kruskal Wallis	0.985	Fail to reject the Null Hypothesis
The Distribution of Standard Work is the same across all categories of age.	Independent Samples – Kruskal Wallis	0.755	Fail to reject the Null Hypothesis
The Distribution of Multifunctional Work is the same across all categories of age.	Independent Samples – Kruskal Wallis	0.972	Fail to reject the Null Hypothesis
The Distribution of 6 Sigma is the same across all categories of age.	Independent Samples – Kruskal Wallis	0.785	Fail to reject the Null Hypothesis
The Distribution of Lean vs. Satisfaction is the same across all categories of age.	Independent Samples – Kruskal Wallis	0.550	Fail to reject the Null Hypothesis

Table above illustrates the non-parametric testing of the relation of age and lean management component; it is shown that no relation between the any of the components and the age, all p values are more than 0.05. This means that all null hypotheses could not be rejected

4.6.3 Lean Management and Gender

Table 13 Non-parametric Testing for the Relation of Gender and the Lean Management Components.

Null Hypothesis	Test	Sig.	Decision
The Distribution of 5S is the same across all categories of gender	Independent Samples – Mann Whitney – U Test	0.062	Fail to reject the Null Hypothesis
The Distribution of PDCA is the same across all categories of gender	Independent Samples – Mann Whitney – U Test	0.027	Reject the Null Hypothesis
The Distribution of Standard Work is the same across all categories of gender	Independent Samples – Mann Whitney – U Test	0.010	Reject the Null Hypothesis
The Distribution of Multifunctional Work is the same across all categories of gender	Independent Samples – Mann Whitney – U Test	0.126	Fail to reject the Null Hypothesis
The Distribution of 6 Sigma is the same across all categories of gender	Independent Samples – Mann Whitney – U Test	0.203	Fail to reject the Null Hypothesis
The Distribution of Lean vs. Satisfaction is the same across all categories of gender	Independent Samples – Mann Whitney – U Test	0.379	Fail to reject the Null Hypothesis

Using the data in Table above, we were able to reject the null hypothesis and demonstrate that there is a relationship between the PDCA component and the Standard Work component and gender at a 95% confidence level. Lean Management was also evaluated to see if it differed by gender. As all other p values are higher than 0.05, it was unable to establish a relationship between other factors and gender.

4.6.4 Lean Management and Educational Level

Table 14 Non-parametric Testing for the Relation of Educational Level and the Lean Management Components.

Null Hypothesis	**Test**	**Sig.**	**Decision**
The Distribution of 5S is the same across all categories of educational level.	Independent Samples – Kruskal Wallis	0.710	Fail to reject the Null Hypothesis
The Distribution of PDCA is the same across all categories of educational level.	Independent Samples – Kruskal Wallis	0.556	Fail to reject the Null Hypothesis
The Distribution of Standard Work is the same across all categories of educational level.	Independent Samples – Kruskal Wallis	0.935	Fail to reject the Null Hypothesis

The Distribution of Multifunctional Work is the same across all categories of educational level.	Independent Samples – Kruskal Wallis	0.917	Fail to reject the Null Hypothesis
The Distribution of 6 Sigma is the same across all categories of educational level.	Independent Samples – Kruskal Wallis	0.676	Fail to reject the Null Hypothesis
The Distribution of Lean vs. Satisfaction is the same across all categories of educational level.	Independent Samples – Kruskal Wallis	0.707	Fail to reject the Null Hypothesis

As illustrated in table 14 above, all the p values are higher than 0.05%, and there is no relation between the educational level and the lean management components. It is also shown that all the null hypothesis could not be rejected.

4.6.5 Lean Management and the Nature Of Work

Table 15 Non-parametric Testing for the Relation of Nature of Work and the Lean Management Components.

Null Hypothesis	**Test**	**Sig.**	**Decision**
The Distribution of 5S is the same across all categories of nature of work	Independent Samples – Kruskal Wallis	0.729	Fail to reject the Null Hypothesis
The Distribution of PDCA is the same across all categories of nature of work.	Independent Samples – Kruskal Wallis	0.569	Fail to reject the Null Hypothesis
The Distribution of Standard Work is the same across all categories of nature of work.	Independent Samples – Kruskal Wallis	0.212	Fail to reject the Null Hypothesis
The Distribution of Multifunctional Work is the same across all categories of nature of work.	Independent Samples – Kruskal Wallis	0.612	Fail to reject the Null Hypothesis
The Distribution of 6 Sigma is the same across all categories of nature of work.	Independent Samples – Kruskal Wallis	0.150	Fail to reject the Null Hypothesis
The Distribution of Lean vs. Satisfaction is the same across all categories of nature of work.	Independent Samples – Kruskal Wallis	0.093	Fail to reject the Null Hypothesis

Table above shows that all the values are higher than 0.05 which means that there are no relations between the nature of work and the lean management components and all the decisions reveal that the null hypothesis could not be rejected.

4.6.6 Lean Management and the Years Of Experience

Table 16 Non-parametric Testing for the Relation of Years of Experience and the Lean Management Components.

Null Hypothesis	Test	Sig.	Decision
The Distribution of 5S is the same across all categories of years of experience.	Independent Samples – Kruskal Wallis	0.729	Fail to reject the Null Hypothesis
The Distribution of PDCA is the same across all categories of years of experience.	Independent Samples – Kruskal Wallis	0.569	Fail to reject the Null Hypothesis
The Distribution of Standard Work is the same across all categories of years of experience.	Independent Samples – Kruskal Wallis	0.212	Fail to reject the Null Hypothesis
The Distribution of Multifunctional Work is the same across all categories of year of experience.	Independent Samples – Kruskal Wallis	0.612	Fail to reject the Null Hypothesis
The Distribution of 6 Sigma is the same across all categories of years of experience.	Independent Samples – Kruskal Wallis	0.150	Fail to reject the Null Hypothesis
The Distribution of Lean vs. Satisfaction is the same across all categories of nature of work.	Independent Samples – Kruskal Wallis	0.093	Fail to reject the Null Hypothesis

The table above shows that there is no relationship between the years of experience and the lean management components, all the values are higher than 0.05, and all the decisions show that the null hypotheses could not be rejected.

4.7 Summary

In the above section, all components of the lean management were tested to have a relation with the demographic variables, and as explained most of the results were negative as all relations could not be proved but two, this could be a result of having positive responses most of the time, as the respondents tended to give positive answers to most of the questions which resulted in having very few respondents disagreeing to the items, domains and tools. This naturally would prevent us from knowing the details of those disagreeing to our paragraphs including the demographic variables, as our respondents have agreed to the ability of applications and the satisfaction they get when lean management is applied despite their area of residence, age, educational level, work nature and years of experience.

4.8 Regression Analysis

4.8.1.1 The Constant Variance Of Error Terms (Homoscedasticity)

To test the variance of error terms we used the following plot between Y and e, the following plot doesn't show the cone shape which means that the error terms have constant variance, i.e. assumption #2 is satisfied

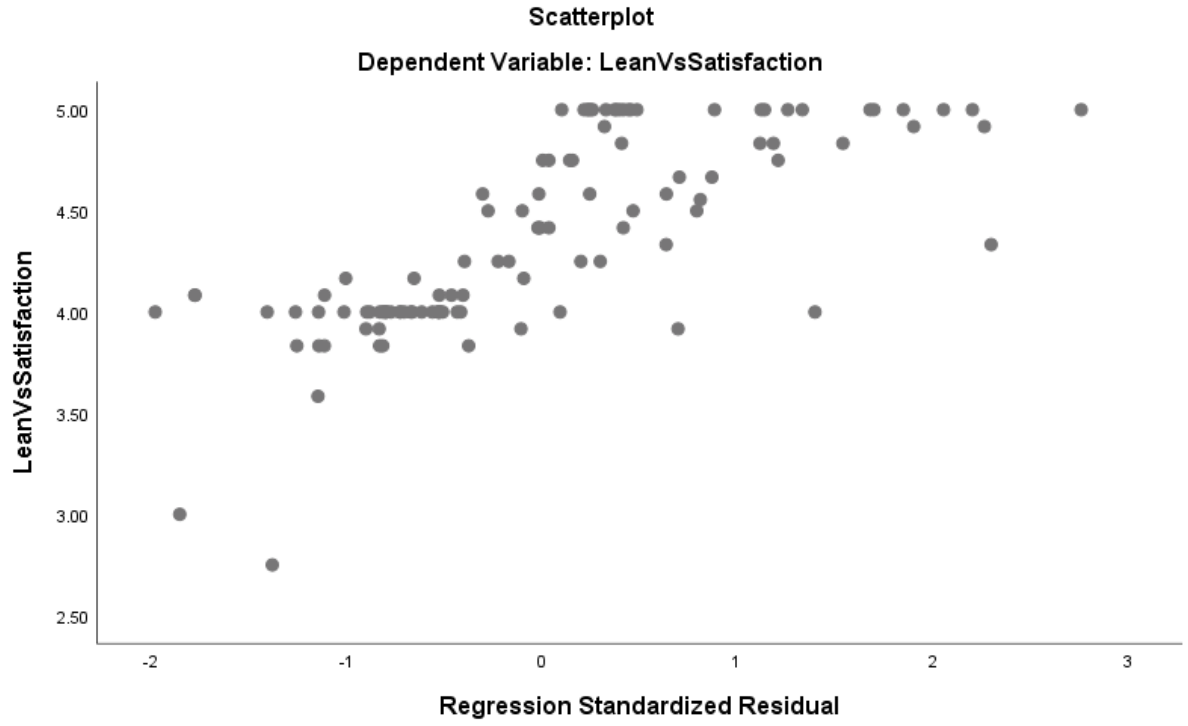

Figure 4 :Regression standardized residual

4.8.1 Regression Conditions

4.8.1.1 Correlation

To test the linearity of the regression function we chose the variables with continuous distribution (5S, PDCA, DMAIC, Standard Work, and Multifunctional Work) and tested its linear relationship with Satisfaction, we used the correlation to test the linearity of these variables; results are shown in Table 10. Since the P value <.05 then the correlation between the variables is significant and with a value of 0.365 – 0.644 we see a positive varying in magnitude linear relationship between our independent variables and satisfaction.

4.8.1.2 Independence of error terms

To test the independence of error terms we ran the Durban Watson test, the test statistic is near to 2.0 which indicates an acceptable value of autocorrelation, which indicates that assumption #3 is satisfied.

Table 17 the summary of multiple linear regression model

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.659[a]	.434	.407	.36778	1.912
a. Predictors: (Constant), DMAIC, Five S, Multifunctional Workers, StandardWork, PDCA					
b. Dependent Variable: Lean Vs Satisfaction					

As shown in table above, which provides the summary of multiple linear regression model, the adjusted R square equals 0.407 and this indicates that the explanatory variable do explain 40.7% of (y), the dependent variable.

4.8.1.2 Normality Of Error Terms

To test the normality of error terms (ei) we plotted the predicted value of the dependent variable (Ŷ), we also made a histogram for the residuals, the plots below do not show violation to the normality condition.

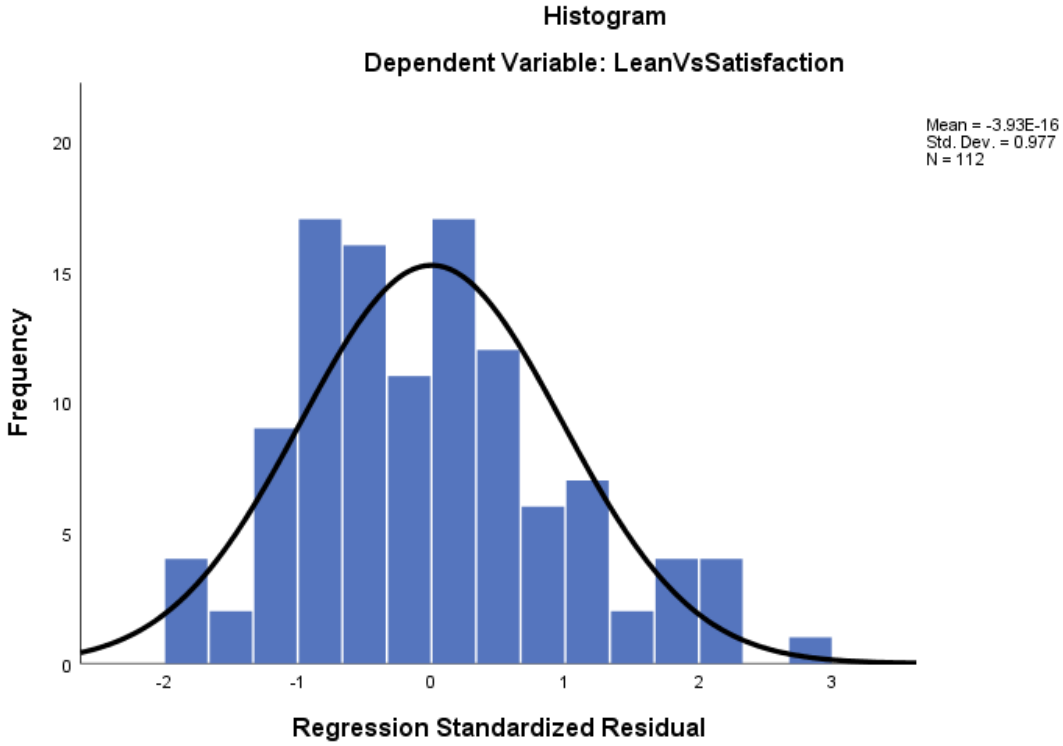

Figure 5: Normality of error terms

4.8.2 Multiple Linear Regression

After checking all assumptions for regression, we ran the regression model the result is clear in the below three tables which we will explain one by one.

In the first table we can see that the adjusted R square equals to 0.407 which means that the explanatory variables (x_i) explain 40.7% of the dependent variable (y), which is a considerable amount as other variables may also contribute to the change in the dependent variable y (Satisfaction)

Table 18 Multiple linear regression model summary

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.659[a]	.434	.407	.36778	1.912
a. Predictors: (Constant), DMAIC, FiveS, MultiFunctionalWorkers, StandardWork, PDCA					
b. Dependent Variable: LeanVsSatisfaction					

In the second table we can check the goodness of fit for the whole model depending on the ANOVA table, it is clear that the P value < 0.05 which means that we reject the null hypothesis and that the model is significant as a whole

Table 19 Multiple linear regression ANOVA

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.999	5	2.200	16.263	.000[b]
	Residual	14.338	106	.135		
	Total	25.336	111			
a. Dependent Variable: LeanVsSatisfaction						
b. Predictors: (Constant), DMAIC, FiveS, MultiFunctionalWorkers, StandardWork, PDCA						

Depending on the last table we can find the final model as in the below equation

$y = 1.972 + 0.427x_1$ Where

- Y = Satisfaction
- X_1 = DMAIC

and this means that increasing the application of DMAIC in FATEN by 1unit will result in an increase in Satisfaction by 0.427 units, while other variables did not show significant relation to the Satisfaction as all other P values are greater than 0.05.

Table 20 Multiple linear regression Coefficientsa

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.972	.311		6.335	.000
	StandardWork	.152	.103	.193	1.480	.142
	MultiFunctionalWorkers	.011	.070	.016	.150	.881
	FiveS	-.119	.091	-.142	-1.310	.193
	PDCA	.104	.161	.105	.649	.518
	DMAIC	.427	.152	.477	2.803	.006
a. Dependent Variable: LeanVsSatisfaction						

4.8.3 Regression Tables and Charts

4.8.3.1 Tables

Variables Entered/Removed[a]			
Model	Variables Entered	Variables Removed	Method
1	DMAIC,FiveS, MultiFunctionalWorkers, StandardWork, PDCA[b]	.	Enter
a. Dependent Variable: LeanVsSatisfaction			
b. All requested variables entered.			

As shown in the table above, the DMAIC, Fives, Multifunctional Workers, Standard work, and PDCA variables are entered and none of them is removed, and the method used is enter.

Table 21 Coefficient correlation

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.659[a]	.434	.407	.36778	1.912
a. Predictors: (Constant), DMAIC, FiveS, MultiFunctionalWorkers, StandardWork, PDCA					
b. Dependent Variable: LeanVsSatisfaction					

The models summary table above shows that the Coefficient correlation is .659, which is 65.9%, and indicates that the variables are moving in unison. the coefficient of determination (R square) is .434, which means 43.4%., and the adjusted square is .407, which equals 40.7%, this indicates the percentage of explanation occurring.

Table 22 analysis of variance (ANOVA)

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.999	5	2.200	16.263	.000[b]
	Residual	14.338	106	.135		
	Total	25.336	111			
a. Dependent Variable: LeanVsSatisfaction						
b. Predictors: (Constant), DMAIC, FiveS, MultiFunctionalWorkers, StandardWork, PDCA						

The table above shows the analysis of variance (ANOVA), the F value is 16.263, and the sig is .000, which is less than 0.1, this indicates that the null hypothesis is rejected and the true means of the varieties are different.

Table 23 VIF results

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.972	.311		6.335	.000		
	Standard Work	.152	.103	.193	1.480	.142	.314	3.185
	MultiFunctionalWorkers	.011	.070	.016	.150	.881	.495	2.019
	FiveS	-.119	.091	-.142	-1.310	.193	.452	2.212
	PDCA	.104	.161	.105	.649	.518	.206	4.860
	DMAIC	.427	.152	.477	2.803	.006	.184	5.435

a. Dependent Variable: LeanVsSatisfaction

The VIF results are less than 10, which indicates that there is no problem of multicollinearity between the variables.

Table 24 Collinearity Diagnosticsa

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions					
				(Constant)	StandardWork	MultiFunctionalWorkers	FiveS	PDCA	DMAIC
1	1	5.958	1.000	.00	.00	.00	.00	.00	.00
	2	.018	17.996	.23	.00	.59	.00	.00	.00
	3	.010	24.577	.48	.23	.25	.00	.01	.03
	4	.008	27.153	.07	.02	.14	.94	.00	.02
	5	.004	37.395	.16	.71	.01	.00	.16	.16
	6	.002	59.550	.05	.04	.00	.05	.83	.79

a. Dependent Variable: LeanVsSatisfaction
b.

There are 6 dimensions in the above table, dimensions with high eigenvalue indicates a large contribution to the data, while dimensions with low eigenvalue indicate low contribution to the data, which is a sign of multicollinearity. there are 3 dimensions with a condition index of more than 15, which means a possibility of problems with multicollinearity. and 2 dimensions are more than 30 which indicates a strong problem with multicollinearity.

Table 25 Residuals Statisticsa

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.2574	4.9628	4.3755	.31478	112
Residual	-.72780	1.01492	.00000	.35940	112
Std. Predicted Value	-3.552	1.866	.000	1.000	112
Std. Residual	-1.979	2.760	.000	.977	112

a. Dependent Variable: LeanVsSatisfaction

4.12.3.1 charts

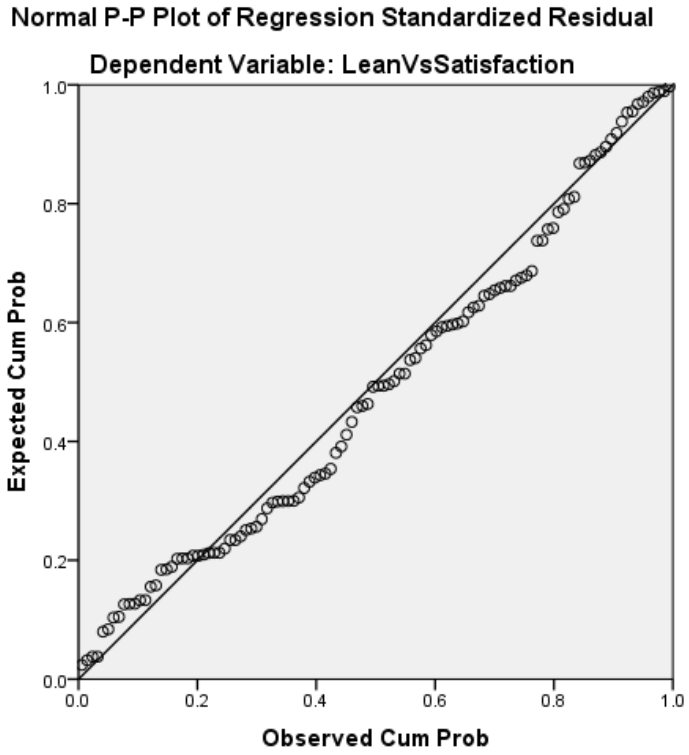

Figure 6: observed cum prob

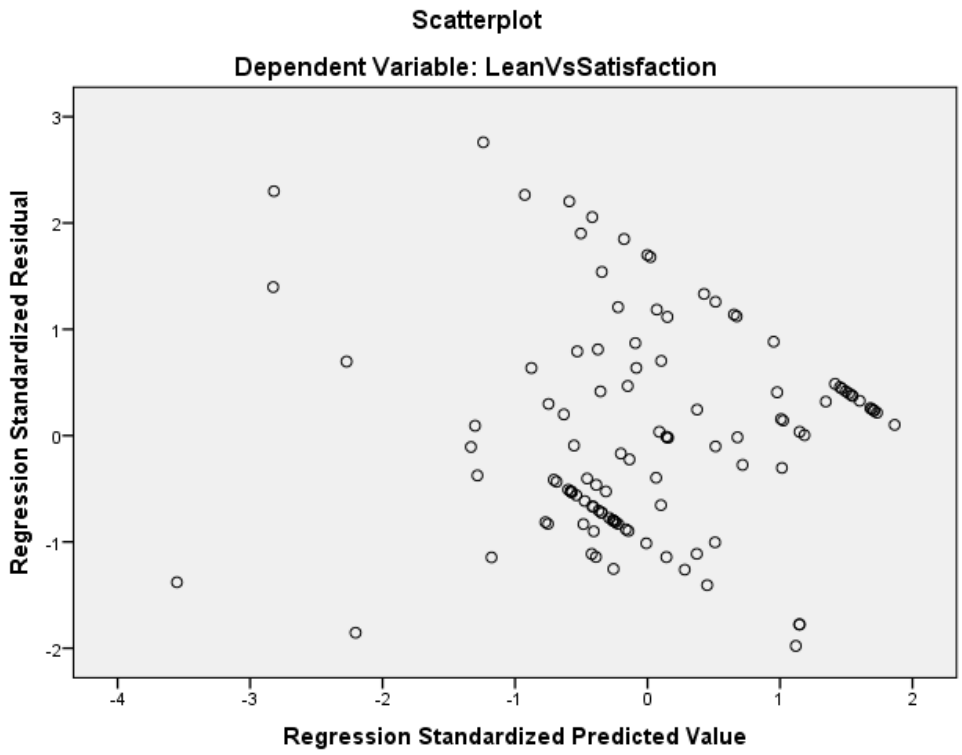

Figure 7: regression standardized predicted value

The previous charts show the normality of the distribution of the residuals, and the data are gathered around the line which means that the residuals follow a normal distribution.

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

This study reveals not only the potential for using lean management tools in financial institutions, but also the most significant tools that can be used to assist financial institution managers in gaining competitive advantage within these institutions, in light of the significance of lean management through the application of lean management tools. the following sections highlight some of the theoretical implications that the examination of the results reveals.

By closely examining the researcher about the FATEN company and its reality, as she is one of its employees, the researcher believes that the results completely reflect the reality, as the institution’s move to a building dedicated to it after years of moving around in apartment-like buildings was a qualitative leap for this institution, not to mention that this building is equipped with all the necessary tools according to the recommendations of the regulatory authorities, at an estimated cost of five million dollars, in a vital location in the city of Ramallah. All this helped this institution to further improve and advance in applying lean management tools.

The researcher believes that the higher management actually supports the issue of applying lean management tools without prior announcing the intention to do so, as it provides all logistical and moral support in supporting the institution's progress in terms of applying lean tools in management in all its aspects, this confirms the hypothesis that there are enablers that enable us to apply lean management tools

5.2.1 Applying the Lean Management Tools In Its Operations

5.2.1.1 5S Tools

The researcher's findings show that the safety equipment is easily accessible and in good condition. and that all these tools are well organized for easy access and return, and that all equipment and tools necessary to work are placed in the places designated for them and close to the employee concerned with them, and they are kept in a way that maintains their cleanliness and ensures the continuity of their work, and this indicates that the productivity of employees will be high if available. these tools and equipment were arranged and easy to access, and this is consistent with the study prepared by Ahuja & Khamba, (2008), and the results showed, but to a slightly lesser degree, that lighting, flooring, wall leaflets and ventilation are also influential, as the presence of these tools contributes to reducing costs in many cases, both directly or indirectly, and also these results appear to be consistent with the study prepared by (Dennis, 2016). the researcher believes that this result is likely because the Foundation has developed a new building equipped according to the modern specifications that were set by the best engineers, technicians and experts, and this building was equipped at the end of the year 2020. In another match with another study, it was shown that the logistical preparation of workers inside the facility contributes to more employee satisfaction. (Abdulkareem et al., 2013).

5.2.1.2 PDCA

On the other hand, the results showed with regard to the PDCA mechanism, which is one of the most important mechanisms of business management and quality development, that there is a great consensus that the institution has a clear goal and vision and that it is always in a clear continuation to improve services. Operational planning and strategic planning in the long term, and the results indicate the existence of this planning very clearly. the results also show the presence of facilitation and support from senior management in the matter of setting policies and supervising their implementation within the institution within a clear and predetermined timetable. As for the third step, which is the step that by examining and checking any errors, the results showed that the institution evaluates the path by receiving employee suggestions or by setting measurable goals and extracting periodic reports, as well as through internal questionnaires in the institution and rapid responses. To plan quickly in line with the change taking place and the latest result, also by training employees on the correct procedure and through planning Sometimes a thief from any redundant or unnecessary measures so that they are constantly updated as a corrective measure, not to mention the processes and activities that aim to change and improve the participation of employees in setting goals, and this is fully consistent with the results of the study that Ramadani and Gerguri, 2011). This result is consistent with the Chinese study, which concluded that the presence of a clear goal and good training for the employee has a direct impact on increasing productivity and job satisfaction within the organization, Hwang and Hong (2014).

5.2.1.3 6 Sigma

As for the six-sigma tool, it appears that there is a very clear agreement that the FATEN Foundation uses this tool efficiently within the institution. Where the employees of the FATEN Foundation agree that the organization uses the DMAIC tool, and what is meant here, for example, is that the organization is developing its services and systems to provide a better service and policies that help in providing services, not to mention the institution's use of modern technological methods in all the facilities and branches of the company, and therefore FATEN applies the principles of this tool in the axes the three are in terms of systems, policies, services and technology, and thus correspond to previous studies prepared in this regard, which is the study prepared by Masumbuko, Kerongo, and Wafula (2014). From the branches and also able to provide new improvements on a regular and consistent basis, and also suppress all activities necessary to achieve customer satisfaction through periodic studies to measure their satisfaction and knowledge of their needs and ultimately able to achieve the desired goals from each of the stages that were set in the planning stage, and this is also consistent with the results of the Gonzalez & Brito (2014).

5.2.1.4 The Main Enabling Factors for Applying Lean Management Tools & Six Sigma In FATEN:

By analyzing the questionnaire on the SPSS program, it was found that there are many factors and features that enable FATEN management to apply lean and six sigma management tools in its departments, and the most important of these factors is that FATEN has a new building fully equipped with safety equipment, and there is also an organization of work offices and places existence, in addition to that FATEN adopts automation and technology for all its operations, and this thus facilitates the smooth application of too.

In addition, the company has a clear vision and mission, and the goals are also smart, and every employee has specific goals from the beginning of the year, and this is an indication and evidence of the existence of foundations that enable us to implement LSS without obstacles.

5.2.1.2 Job Satisfaction

Regarding job satisfaction, the results clearly indicate a high degree of satisfaction, as employees showed a degree of complete agreement about listening to their suggestions in creating a positive and motivating feeling for work. Therefore, the employee contribution process creates this motivating feeling and enhances the degree of job satisfaction. Satisfaction is crowned more when automation is applied, and the researcher prefers this result, because automation reduces the volume of pressure and relieves pressure within the work environment, not to mention that the presence of fewer procedures leads to more productivity. the performance and job satisfaction of employees, and this is in agreement with the study he conducted (Huang, 2019).

As for the work environment itself and its relationship to a feeling of positive motivation only, the results showed that the presence of an arrangement of offices in an organized and coordinated manner has a clear positive impact on the feeling of employees. As for the presence of rules and regulations in a way that defines the company's goals and employee's tasks and goals compatible with the objectives of the public institution and the continuous development and improvement of these procedures constantly affects directly on the employee's performance within the work environment, not to mention that the presence of dedicated and pre-made channels for employees to listen to their complaints and problems also creates a positive incentive for the employee that there are those who listen to him, his problems and his needs, and therefore the arrangement of work areas within the organization and the arrangement of regulations and instructions would create satisfaction. It is clear among employees as a result of the positive feeling and motivation for all these factors affecting the general psychology of employees, and this is consistent with the exploratory study conducted in Hong Kong, which dealt with these factors and their positive impact on employees in 27 organizations in Hong Kong (Hau and chow 2011).

5.2.1.3 Demographic Analysis

All factors related to lean management have been tested for demographic variables and it can be said that there are mostly positive responses, with respondents tending to give positive answers to most questions resulting in very few respondents who disagree with the items, areas and tools. Therefore, it is natural that it is difficult to know the respondents who do not agree with what is stated in the paragraphs or that they tend to have a negative answer, but in general, and as a result of the research, based on what was mentioned in the analysis, it can be said that our respondents agreed on the performance and satisfaction for them within the institution, which they receive. Therefore, when applying Lean management, they are formed regardless of their region of residence, age, educational level, years of experience and oth.er demographic factors.

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 presents examining the potential of using lean management tools in financial institutions in Palestine. there was almost unanimity on the relationship between managing the use of soft management tools in financial institutions and employee performance and gaining a competitive advantage within these institutions in previous studies, with some conflicting arguments about this relationship. Moreover, it is not possible to investigate the impact of using lean tools on financial institutions in Palestine in particular. Thus, this research adds to the body of literature to examine the impact of managing the possibility of using soft management tools on Palestinian financial institutions, and FATEN Institution was taken as a case study.

Based on an extensive literature review, a set of relevant hypotheses were formulated, and a new paradigm was developed to examine the effect of using soft management tools. According to the analysis of the data collected from a sample of FATEN employees, this study presents results related to all aspects of lean management that have been used in major international institutions and companies. for example, in 5s tools, the study concluded that safety tools are easily accessible and in good condition. and that all these tools are well organized for ease of access and return, but the share of lighting and satisfaction with them was relatively less, but the use of this administration remains a good level for this institution. Therefore, any institution in Palestine that prepares a new building must consider this point well, given that there is control

from the official and semi-official authorities on the need to achieve it in order to obtain the necessary approvals for licensing the building.

On the other hand, the results showed with regard to the PDCA mechanism, which is one of the most important mechanisms for business management and quality development, that there is a great consensus that the institution has a clear goal and vision and that it is always in a clear continuation to improve services.

As for the 6-sigma tool, this management is used efficiently within the institution, which indicates that all activities are subject to appropriate arrangement and scheduling.

Regarding job satisfaction, the results clearly indicated a high degree of satisfaction, as the employees showed a degree of complete agreement to listen to their suggestions in creating a positive and motivational feeling for work.

6.2 Recommendations

In light of the results achieved, several recommendations were made to financial institutions operating in Palestine after taking FATEN as a case study model in this research. Leverage lean management tools to drive innovation by rigorously and effectively applying lean management toolkits. Specifically, providing a good work environment in terms of logistical security and availability of tools is very important in the process of providing psychological comfort and providing an environment for organizational and professional innovation. the study also stressed the importance of involving all employees and enabling them to achieve employee satisfaction, which leads to the advancement of the organization. Moreover, the planning approach and using pre-prepared plans within a specific timetable and presenting clear goals leads to more control over the production process within the organization and provides a better environment for employees and contributes to faster completion of tasks with less effort and time. On the other hand, this study sheds light on all the soft management tools used globally and the extent of their

application within the financial institutions in Palestine and the extent of the impact of this application on the performance of the institution and the degree of employee satisfaction. and harmony with it.

Thus, top management in financial institutions should not only use these tools as a way to improve productivity, but also as a way to encourage and enhance innovation and develop professional and organizational performance within the organization.

The study concluded a set of recommendations, the most important of which are:

- Focusing on the financial institutions on addressing the obstacles and restrictions facing the use of these tools and generalizing their use in other relevant Palestinian financial institutions.
- Motivating employees by applying lean management tools as they contribute to increasing their job satisfaction
- Using lean management tools to promote leadership and innovation among employees, not just focusing on productivity
- Giving more financial support in the application of lean management tools within the organization, as it is reflected in the axes and joints of the organization
- Expressing and announcing the desire to apply these tools by the senior management and declaring them in front of the employees themselves to give more focus on them.
- Paying attention to the logistical environment of the employees in terms of the building, lighting and air conditioning, because of their impact on job satisfaction, employee productivity and psychological support

6.3 Research Limitations and Future Research

This study faces several limitations. First, this study examines the possibility of applying lean management tools in Palestinian financial institutions from the perspective of firms that can be biased at times.

Secondly, not all financial institutions in Palestine that are licensed by the Palestinian Monetary Authority applied it. Also, the target sample for this study was small, due to the capabilities of the researcher and also the lack of full cooperation on the part of the institution, which always has special reasons related to it in not showing all the data. Thirdly, this study developed a model to examine the applicability of lean management tools in FATEN organization only, therefore, there is a need to validate and re-test it in other situations or other similar organizations.

In the end, future research may look at using these tools on other institutions that have different characteristics and capabilities such as company size, company age, and company experience in applying these tools. Thus, future research may follow both quantitative and qualitative methods in order to enrich the results.

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Appendix (A)

Dear Participant,

The researcher is conducting a study entitled:

Assessing the Potential of Applying Lean Six sigma in Microfinance Institutions in Palestine and Impact on employee satisfaction: FATEN as a Case Study

This study aims to assessing the potential of applying lean management tools in microfinance institutions in Palestine: FATEN as a Case Study.

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 5 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: Haneen Khdour **h.abdallahkhdour@student.aaup.edu**

First section: "Lean Management tools"

This section consists of 5 parts, please answer all of them, by placing a circle around the number that represents the best description, so that the score is divided from (1-5) as shown below, noting that the higher number indicates the higher degree of approval while the .lower number indicates the lowest degree of approval

first tool (5s)

#	Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
	(Sort)					
5s1	The workplace does not have unnecessary equipment/tools/furniture					
5s2	The workplace does not contain unnecessary wall stickers and advertisements					
5s3	The corridors and stairs are free of unnecessary equipment/items					
5s4	There are no safety risks in my workplace (electricity, water, chemicals, etc.					
5s5	No unnecessary papers, files, or devices are stored					
	(Set In Order)					
5s6	All equipment and tools necessary for the work are placed in their designated places					
5s7	Tools and equipment are well organized for easy access and return.					
5s8	Safety equipment is easily accessible and in good condition.					
5s9	The tools necessary to work are placed in places close to the employee					
5s10	There are visual indicators present to identify work areas.					

5s11	Labels are placed on cabinets, shelves and files, allowing instant identification.					
(Shine)						
5s12	The floor is clean and there are no signs of damage.					
5s13	Walls and ceilings are in good condition and free of dirt and dust.					
5s14	Shelves, cupboards and surfaces are kept clean and in good condition.					
5s15	Equipment and tools are kept clean and in good condition.					
5s16	The room is well-ventilated.					
5s17	The lighting is sufficient and the lighting angle and intensity are appropriate.					
5s18	The noise level in the working environment is acceptable.					
(Standardize)						
5s19	Visual controls and display panels are used and updated regularly.					
5s20	The procedures to maintain the three previously mentioned points are displayed.					
5s21	5S checklists, schedules, and procedures are defined and used.					
5s22	Everyone knows their responsibilities, when and how.					
5s23	Standard working procedures have been developed documenting the mechanism for applying the 5S methodology					
(Sustain)						

5s24	All employees are trained to apply the 5S methodology in the company.					
5s25	Regular revisions are carried out using the checklists and measures for the standard operating procedures that have been developed.					
5s26	Regular reviews and updates are performed using the developed SOPs checklists and measures.					
5s27	I also apply the 5S methodology outside of work life (home and street) so that it becomes part of my daily culture.					
Second tool: (PDCA) Continuous Improvement						
#	**Statement**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
Plan						
PLA1	FATEN has annual and strategic operational plans.					
PLA2	FATEN has a clear mission, vision and goals.					
PLA4	Employees participate in setting goals.					
PLA5	The specific goals of the company are measurable.					
PLA6	Systems and regulations are characterized by being quick to respond to changes according to the plans laid down.					
Do						
DO1	FATEN is constantly making improvements to the services offered.					
DO2	The management sets a timetable for the implementation of the set goals.					
DO3	The management develops and updates procedures whenever necessary.					

DO4	Employees are trained to perform work procedures correctly.					
DO5	Unnecessary actions that can be dispensed with are eliminated.					
DO6	The Management employs modern technology to raise the level of work efficiency.					
Check						
CH1	The Management pays attention to employee feedback.					
CH2	There is a clear channel for employees to receive and act on their suggestions.					
CH3	There is a quality officer to follow up on comments and suggestions.					
CH4	Activities and processes are evaluated in a planned and organized manner with the aim of change and improvement.					
CH5	There are clear criteria to measure the extent to which results have improved.					
CH6	The results of the measurement of previous operations are used when performing subsequent operations.					
Action						
ACT1	There are electronic systems to manage and facilitate procedures to improve quality.					
ACT2	FATEN publishes periodic reports to employees on the nature of work progress and the level of its services.					

ACT3	The company's management adjusts its plans according to the evaluation results of the implemented projects.					
ACT4	FATEN develops its message according to its market position.					
ACT5	New plans are approved based on previous reviews.					
ACT6	The results of the improvement are employed in other similar processes.					
ACT7	The relevant personnel are trained to apply the improvements.					
Third tool: "Standard Work"						
#	**Statement**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
SW1	The management adopts the establishment of preventive controls to prevent the recurrence of problems.					
SW2	Employees strive to avoid delays in the delivery of agreed work.					
SW3	The management establishes standards and procedures for each process to facilitate the employees' performance of their work.					
SW4	The management works to arrange work procedures in a way that prevents wastage in the movements and operations of the employee.					
SW5	The management endeavors to put in place minimum operating procedures to reduce wastage resulting from lengthy and unnecessary procedures.					
Forth tool: Multifunctional Workers						
#	**Statement**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**

MW1	The management provides employees with the ability to work in different departments in the same department.					
MW2	The management seeks to diversify the skills of employees by adopting job rotation method.					
MW3	The management seeks to provide employees with a variety of technical skills through training programmes.					
MW4	The performance of employees in the organization decreases when they are transferred to other departments or units.					
MW5	Employees respond to the job rotation method without resistance.					
fifth tool: (DMAIC)Six Sigma						
#	**Statement**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
(Define)						
DEF1	The company has policies that help in providing services to beneficiaries.					
DEF2	The company sets a clear plan for each of its branches.					
DEF3	FATEN encourages its employees to excel in order to provide better service to its beneficiaries.					
DEF4	Achieving beneficiary satisfaction is one of the main objectives of the company.					
DEF5	FATEN is developing its services and systems to provide better service.					

DEF6	FATEN has the necessary capabilities to provide a better service.					
DEF7	FATEN studies the market to determine what fulfils the demands of its customers.					
(Measure)						
MEA1	FATEN evaluates all its activities to ensure that customers are satisfied.					
MEA2	FATEN uses technological methods to collect and analyze data.					
MEA3	There are specific criteria to measure the extent to which the desired goals are achieved.					
MEA4	FATEN conducts periodic studies to measure customer satisfaction and know their needs.					
MEA5	FATEN is training some employees to master the use of statistical tools.					
(Analyze)						
ANA1	FATEN uses SWOT analysis to assess its position.					
ANA2	FATEN seeks to know and analyze the problems that occur with the beneficiaries.					
ANA3	FATEN determines the necessary tools for the statistical analysis of the studies conducted.					
ANA4	FATEN compares the differences between the current and future situation.					
(Improve)						

IMP1	FATEN has a budget dedicated to improving and developing the quality of services.					
IMP2	FATEN has the necessary environment to improve employee performance.					
IMP3	FATEN significantly upgrades its services.					
(Control)						
CON1	FATEN develops a plan for each stage of service.					
CON2	FATEN seeks to develop control processes to monitor changes in the company.					
CON3	FATEN develops alternative plans to face possible problems.					
CON4	FATEN makes sure that old methods and practices are not returned.					
CON5	There is a special section in FATEN to study the complaints of the beneficiaries.					
CON6	FATEN provides services in accordance with what is specified in the plans.					
CON7	FATEN documents new improvements for regular and consistent approval.					

The second section: the relationship of lean/lean management tools with employee satisfaction

A circle is placed around the score representing the answer 5 is the highest and 1 is the weakest

#	Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
SAT1	The arrangement of your work area affects your performance positively.					
SAT2	Organized work areas increase your motivation to work.					
SAT3	Arranging your work areas helps you find the necessary work tools.					
SAT4	Arranging offices in an organized manner helps to bring a positive and motivating feeling to work.					
SAT5	The arrangement of your work area affects your performance positively.					
SAT6	Determining the goals of the company helps determine your goals in your work.					
SAT7	Having systems and regulations at work helps me to complete my work smoothly.					
SAT8	The development and improvement of the procedures help me gain practical experience.					
SAT9	Eliminating long and unnecessary procedures helps increase work productivity.					
SAT10	The presence of electronic automation helps in developing performance positively.					

SAT11	Attention to the suggestions and ideas of employees contributes to bringing a positive and motivating feeling to work					
SAT12	Having a channel dedicated to raising problems and suggestions contributes to the development of my work.					
SAT13	Employee training contributes to raising work efficiency and thus empowering employees to do their work.					

Section Three: Demographic information and other questions	
#	**the question**
PER01	Place of residence: ☐ Hepron ☐ Nablus ☐Jerusalem ☐ Ramallah ☐ Bethlehem ☐ Salfit ☐ Qalqilia ☐ Tulkarim ☐ Tubas ☐ Jenin ☐ Jericho ☐ Gaza
2PER0	Age in years: ☐More than 55 55-46 ☐ 45-36 ☐ 35-26 ☐ 25-18 ☐
3PER0	Gender : ☐ Male Female
4PER0	Qualification PH.d ☐ MA ☐ BA ☐ Diploma ☐ Secondary ☐
5PER0	Work nature : ☐ Field work ☐ Office Work
6PER0	Years of experience
7PER0	Number of years of service at the company
8PER0	Occupation/position

Appendix (B)

الجامعة العربية الأمريكية
ARAB AMERICAN UNIVERSITY
FACULTY OFGRADUATE STUDIES

السيدات/ السادة المحترمون

تجري الباحثة دراسة بعنوان :

تقييم إمكانية تطبيق أدوات الإدارة الخالية من الهدر والستة سيجما في مؤسسة التمويل الأصغر في فلسطين و اثرها على رضا الموظفين: فاتن كدراسة حالة

حيث تهدف هذه الدراسة الى فحص مدى امكانية شركة فاتن لتطبيق ادوات الادارة الخالية من الهدر من أجل تطوير خدماتها وتلبية احتياجات الزبون وتحقيق الميزة التنافسية في السوق المحلي والدولي.

وتأتي هذ 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 5 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

البريد الالكتروني h.abdallahkhdour@student.aaup.edu

الطالبة:حنين خضور

القسم الاول: ادوات الادارة الخالية من الهدر "Lean Management tools"

يتكون هذا القسم من 5 أجزاء يرجى الإجابة عنها جميعها، بوضع دائرة حول الرقم الذي يمثل أفضل وصف، بحيث أن الدرجة مقسمة من (1-5) كما هو موضح أدناه، مع الإشارة إلى أن الرقم الأعلى يدل على درجة المو افقة الأعلى بينما الرقم الأقل يدل على درجة المو افقة الأقل .

1- تنظيم موقع العمل (Hshlamon, 2017)" 5s"

الرقم	البند	مو افق بشده (5)	مو افق (4)	محايد (3)	غير مو افق (2)	غيرمو افق بشده (1)
	(Sort) التصنيف					
5s1	مكان العمل خال من المعدات/ الادوات/ الاثاث غير الضرورية					
5s2	مكان العمل لا يحتوي على ملصقات جدارية واعلانات غير ضرورية					
5s3	الممرات والسلالم خالية من المعدات/اي امور غير الضرورية					
5s4	لا يوجد مخاطر تتعلق بالسلامة في مكان عملي (كهرباء، ماء، كيماويات..الخ					
5s5	لا يتم تخزين اوراق او ملفات او اجهزة غير ضرورية					
	(Set In Order) تنظيم موقع العمل					
5s6	المعدات والادوات اللازمة للعمل جميعها توضع في اماكن مخصصة لها					
5s7	الأدوات والمعدات منظمة بشكل جيد لسهولة الوصول اليها وإعادتها.					
5s8	معدات السلامة يسهل الوصول إليها وفي حالة جيدة.					
5s9	يتم وضع االادوات اللازمة للعمل في اماكن قريبة من الموظف					
5s10	يوجد مؤشرات مرئية موجودة لتحديد مناطق العمل					
5s11	يتم وضع بطاقات على الخزائن والرفوف والملفات يسمح بالتعرف الفوري عليها					
	(Shine) النظافة					
5s12	الأرضية نظيفة ولا توجد علامات تلف.					
5s13	الجدران والأسقف في حالة جيدة وخالية من الأوساخ والغبار					
5s14	يتم الحفاظ على الرفوف والخزائن والأسطح نظيفة وفي حالة جيدة.					
5s15	يتم الحفاظ على المعدات والأدوات نظيفة وبحالة جيدة.					

5s16	وجود حركة جيدة للهواء من خلال الغرفة.					
5s17	الإضاءة كافية وزاوية الإضاءة وشدتها مناسبة.					
5s18	مستوى الضوضاء في بيئة العمل مقبول					
	(Standardize) التنميط					
5s19	يتم استخدام أدوات التحكم المرئية ولوحات العرض وتحديثها بانتظام.					
5s20	يتم عرض إجراءات الحفاظ على الثلاثة S الاولى التي تم ذكرها سابقا					
5s21	يتم تحديد واستخدام قوائم مراجعة 5S والجداول والإجراءات.					
5s22	الكل يعرف مسؤولياته ومتى وكيف.					
5s23	تم تطوير اجراءات عمل قياسية توثق الية تطبيق منهجية ال5S					
	Sustain التثبيت					
5s24	يتم تدريب جميع الموظفين على تطبيق منهجية ال5S في المؤسسة					
5s25	يتم إجراء عمليات تدقيق منتظمة باستخدام قوائم المراجعة والتدابير لاجراءات العمل القياسية التي تم تطويرها					
5s26	يتم إجراء عمليات مراجعة وتحديث منتظمة باستخدام قوائم المراجعة والتدابير لاجراءات العمل القياسية التي تم تطويرها					
5s27	اقوم بتطبيق منهجية ال 5S ايضا في خارج الحياة العملية (المنزل و الشارع) بحيث تصبح جزء من ثقافتي اليومية					
	2- التحسين المستمر–Continuous Improvement (PDCA)					
الرقم	**البند**	**مو افق بشده (5)**	**مو افق (4)**	**محايد (3)**	**غير مو افق (2)**	**غيرمو افق بشده (1)**
	Plan (التخطيط)					
PLA1	يوجد لشركة فاتن خطط تشغيلية سنوية واستراتيجية.					
PLA2	يوجد لشركة فاتن رسالة ورؤية واهداف واضحة					
PLA4	يشارك الموظفون في وضع وتحديد الاهداف					
PLA5	الاهداف المحددة للشركة قابلة للقياس					

PLA6	تتسم النظم واللوائح بانها سريعة الاستجابة للمتغيرات وفق الخطط الموضوعة					
Do (التنفيذ)						
DO1	تعمل فاتن تحسينات مستمرة على الخدمات المقدمة.					
DO2	تحدد الادارة جدولا زمنيا لتنفيذ الاهداف الموضوعة					
DO3	تجري الادارة تطويرا وتحديثا للاجراءات كلما لزم الامر					
DO4	يتم تدريب الموظفين على تنفيذ اجراءات العمل بشكل صحيح					
DO5	يتم الغاء الاجراءات غير الضرورية والتي يمكن الاستغناء عنها					
DO6	توظف الادارة التكنولوجيا الحديثة لرفع مستوى كفاءة العمل					
Check (فحص)						
CH1	تهتم الادارة بالتغذية الراجعة من الموظفين					
CH2	يوجد قناة واضحة للموظفين لاستلام اقتراحاتهم والعمل عليها					
CH3	يوجد موظف جودة لمتابعة حل الملاحظات والمقترحات					
CH4	يتم تقييم الانشطة والعمليات بصورة مخططة ومنظمة بهدف التغيير والتحسين					
CH5	يوجد معايير واضحة لقياس مدى تحسن النتائج					
CH6	يتم الاستفادة من نتائج قياس العمليات السابقة عند تنفيذ العمليات اللاحقة.					
Action (التصرف)						
ACT1	يوجد انظمة الكترونية لتسيير وتسهيل الاجراءات لتحسين الجودة.					
ACT2	تنشر فاتن تقارير دورية للموظفين عن طبيعة سير العمل ومستوى خدماتها.					
ACT3	تعدل إدارة الشركة على خططها وفق نتائج التقييم للمشاريع المنفذة.					
ACT4	تقوم فاتن بتطوير رسالتها حسب وضعها في السوق.					
ACT5	يتم اعتماد خطط جديدة بناء على عمليات الفحص السابقة					
ACT6	يتم توظيف نتائج التحسين في العمليات المشابهة الأخرى.					
ACT7	يتم تدريب الموظفين المعنيين على تطبيق التحسينات.					

3- "العمل القياسي Standard Work"						
الرقم	البند	مو افق بشده (5)	مو افق (4)	محايد (3)	غير مو افق (2)	غيرمو افق بشده (1)
SW1	تتبنى الادارة وضع ضوابط رقابية ووقائية لمنع تكرار المشاكل					
SW2	يسعى الموظفون الى تجنب تأخير تسليم العمل المتفق عليه					
SW3	تضع الإدارة معايير وإجراءات قياسية لكل عملية لتسهيل أداء الموظفين لأعمالهم					
SW4	تعمل الادارة على ترتيب إجراءات العمل بطريقة تمنع الهدر في تحركات وعمليات الموظف					
SW5	تسعى الإدارة إلى وضع الحد الأدنى من إجراءات التشغيل لتقليل الهدر الناتج عن الإجراءات الطويلة وغير الضرورية.					
4- Multifunctional Workers متعدد الوظائف						
الرقم	البند	مو افق بشده (5)	مو افق (4)	محايد (3)	غير مو افق (2)	غيرمو افق بشده (1)
MW1	توفر الإدارة للموظفين القدرة على العمل في أقسام مختلفة في نفس الدائرة					
MW2	تسعى الإدارة إلى تنويع مهارات الموظفين من خلال اعتماد طريقة التناوب الوظيفي.					
MW3	تسعى الإدارة إلى تزويد الموظفين بمجموعة متنوعة من المهارات الفنية من خلال برامج التدريب.					
MW4	ينخفض أداء الموظفين في المنظمة عند نقلهم إلى أقسام أو وحدات أخرى.					
MW5	يستجيب الموظفون لطريقة التدوير الوظيفي دون مقاومة.					
MW6						
ستة سيجما -Six Sigma(DMAIC)						

الرقم	البند	مو افق بشده (5)	مو افق (4)	محايد (3)	غير مو افق (2)	غيرمو افق بشده (1)
	(Define) التحديد					
DEF1	يتوافر في الشركة سياسات تساعد في تقديم الخدمات للمستفيدين					
DEF2	تقوم الشركة بوضع خطة واضحة لكل فرع من فروعها					
DEF3	تشجع شركة فاتن موظفيها على التميز لتقديم خدمة افضل للمستفيدين					
DEF4	يعد تحقيق رضا المستفيدين من الاهداف الرئيسية للشركة					
DEF5	تعمل شركة فاتن على تطوير خدماتها وانظمتها لتقديم خدمة افضل					
DEF6	تتوفر في شركة فاتن الامكانيات اللازمة لتقديم خدمة افضل					
DEF7	تقوم شركة فاتن بدراسة السوق لتحديد ما يحقق رغبات زبائنها					
	(Measure) القياس					
MEA1	تقيس شركة فاتن كافة أنشطتها لضمان تلبية رضا الزبائن					
MEA2	تستخدم شركة فاتن اساليب تكنولوجية لجمع البيانات وتحليلها					
MEA3	يوجد معايير محددة لقياس مدى تحقيق الاهداف المطلوبة					
MEA4	تقوم شركة فاتن بعمل دراسات دورية لقياس رضا الزبائن ومعرفة احتياجاتهم					
MEA5	تقوم شركة فاتن بتدريب بعض الموظفين لاتقان استخدام الادوات الاحصائية					
	(Analyze) التحليل					
ANA1	تستخدم شركة فاتن تحليل SWOT لتقييم وضعها					
ANA2	تسعى شركة فاتن الى معرفة وتحليل المشاكل الحاصلة مع المستفيدين					
ANA3	تقوم شركة فاتن بتحديد الادوات اللازمة للتحليل الاحصائي للدراسات التي تتم					
ANA4	تقوم شركة فاتن بمقارنة الاختلافات بين الوضع الحالي والمستقبلي					

(Improve) التحسين						
IMP1	يوجد في شركة فاتن ميزانية مخصصة لتحسين جودة الخدمات وتطويرها					
IMP2	تتوفر في شركة فاتن البيئة اللازمة لتحسين اداء الموظفين					
IMP3	تقوم شركة فاتن بتحديث خدماتها بشكل ملحوظ					
(Control)الرقابة						
CON1	تقوم شركة فاتن بوضع خطة لكل مرحلة من مراحل تقديم الخدمة					
CON2	تسعى شركة فاتن لتطوير العمليات الرقابية لمراقبة التغييرات الحاصلة في الشركة					
CON3	تقوم شركة فاتن بوضع خطط بديلة لمواجهة المشاكل الممكن حدوثها					
CON4	تقوم شركة فاتن من التأكد من عدم الرجوع للاساليب والممارسات القديمة					
CON5	يوجد في شركة فاتن قسم خاص لدراسة شكاوى المستفيدين					
CON6	تقوم شركة فاتن بتقديم الخدمات بشكل يتطابق مع ما تم تحديده بالخطط					
CON7	تقوم شركة فاتن بتوثيق التحسينات الجديدة لاعتمادها بشكل موحد وثابت					

القسم الثاني: علاقة ادوات الادارة الرشيقة/ الخالية من الهدر برضا الموظفين

يتم وضع دائرة حول الدرجة التي تمثل الاجابة 5 هي الاعلى و1 هي الاضعف

الرقم	البند	مو افق بشده (5)	مو افق (4)	محايد (3)	غير مو افق (2)	غيرمو افق بشده (1)
SAT1	يؤثر ترتيب منطقة عملك على أدائك بشكل ايجابي					
SAT2	تزيد مناطق عملك المنظمة من دافعيتك للعمل					
SAT3	ترتيب مناطق عملك تساعدك بالعثور على ادوات العمل اللازمة					
SAT4	ترتيب المكاتب بشكل منظم يساعد في جلب شعور ايجابي ومحفز للعمل					
SAT5	ان تحديد اهداف الشركة يساعد في تحديد اهدافك في عملك					

SAT6	ان وجود انظمة ولوائح في العمل تساعدني على اداء عملي بسلاسة					
SAT7	ان التطوير والتحسين في الاجراءات يساعدني على اكتساب خبرة عملية					
SAT8	ان الغاء الاجراءات الطويلة وغير الضرورية يساعد في زيادة انتاجية العمل					
SAT9	وجود الاتمتة الالكترونية يساعد في تطوير الاداء بشكل ايجابي					
SAT10	الاهتمام باقتراحات وافكار الموظفين يساهم في جلب شعور ايجابي ومحفز للعمل					
SAT11	ان وجود قناة مخصصة لرفع المشاكل والمقترحات					
SAT12	تدريبات الموظفين نساهم في رفع كفاءة العمل وبالتالي زيادة					

القسم الثالث: المعلومات الديموغرافية واسئلة أخرى	
الرمز	**السؤال**
PER01	مكان الإقامة: المحافظة ☐ القدس ☐ بيت لحم ☐ رام الله والبيرة ☐ الخليل ☐ نابلس ☐ سلفيت ☐ قلقيلية ☐ طولكرم ☐ طوباس ☐ جنين ☐ أريحا والأغوار ☐ محافظات غزة
PER02	Age in years: ☐ 25-18 ☐ 35-26 ☐ 45-36 ☐ 55-46 ☐ أكثر من 55
PER03	الجنس: ☐ ذكر ☐ انثى
PER04	المؤهل العلمي: ☐ ما دون الثانوية ☐ دبلوم ☐ بكالوريوس ☐ ماجستير ☐ دكتوراة فأعلى
PER05	طبيعة العمل: ☐ مكتبي ☐ ميداني
PER06	عدد سنوات الخبرة:
PER07	عدد سنوات الخدمة في الشركة:
PER08	الوظيفة:

الجامعة العربية الأمريكية

كلية الدراسات العليا

تقييم إمكانية تطبيق أدوات الإدارة الخالية من الهدروالستة سيجما في مؤسسات التمويل الأصغرفي فلسطين: فاتن كدراسة حالة

إعداد

حنين خضور

إشراف

د. يحيى صلاحات

قدمت هذه الأطروحة استكمالاً لمتطلبات الحصول على درجة الماجستير في برنامج إدارة الجودة بكلية الدراسات العليا في الجامعة العربية الأمريكية- رام الله –فلسطين- 2023

الملخص

تلعب مؤسسات التمويل الأصغر (MFIs) في الأراضي الفلسطينية (PT) دوراً اساسيا في الصناعة المالية. وهي تعمل تحت مظلة وإشراف سلطة النقد الفلسطينية . ومن هذا المنطلق اصبح لازما على هذه المؤسسات تطوير نفسها وباستمرار من اجل البقاء وخدمة المجتمع الفلسطيني وخصوصا الطبقة ذات الدخل المحدود. حيث ان مؤسسات التمويل الأصغر تعمل على ايجاد التحسينات المستمرة لعملياتها وللخصوصية الفلسطينية الفريدة المتمثلة في ارتفاع معدلات البطالة والفقر. وبالتالي، فإن وجود عمليات فعالة وكفؤة في مؤسسات التمويل الأصغر من خلال تطبيق أدوات مختلفة للإدارة الرشيقة والحد من العمليات غير المنتجة بشكل حقيقي من شأنه أن يحسن الجودة ويقلل التكلفة ويضمن في النهاية استدامة مؤسسات التمويل الأصغر ورضا عملائها. تحقيقا لهذا الهدف، تناولت هذه الدراسة دراسة إمكانية تطبيق أداة الإدارة الرشيقة في قطاع التمويل الأصغر في فلسطين. وتحديدا تم النظر في دراسة حالة عن إحدى مؤسسات التمويل الأصغر الرائدة في فلسطين ، وهي فلسطين للائتمان والتنمية - (فاتن) لتقييم إمكانات تطبيق أدوات الإدارة الرشيقة في عملياتها.

وبناءً عليه تم تصميم الاستبيان وتوزيعه على عينة عشوائية قوامها 187 موظفًا يعملون في فاتن. أظهرت النتائج أنه يوجد ملامح تمكن من تطبيق أداة الإدارة الرشيقة في فاتن وهذا ينطبق على المؤسسات المنافسة ، حيث أن لها علاقة إيجابية بشكل عام برضا الموظفين . وبالتالي ، يتعين على مديري المؤسسات المالية النظر في تطبيق أدوات الإدارة الرشيقة في مؤسساتهم لزيادة جودة الخدمات المقدمة ورفع مستوى رضا الموظفين ، حيث يتطلب ذلك استغلال امثل للموارد المتاحة بالتنسيق الافضل مع الادارة العليا التي توزع المهام ووتتابع تطبيق هذه الادوات داخل المؤسسة وإزالة كافة معيقات تطبيق هذه الادوات.