Arab American University

Faculty of Graduate Studies

The Potential Effectiveness of Lean 5S Tool in Promoting Employee Performance in the Ministry of Finance, West Bank, Palestine

الفاعلية المحتملة لأداة لين 5S في تعزيز اداء موظفي وزارة المالية- الضفة الغربية -فلسطين

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This thesis was submitted in partial fulfillment of the requirements for the Master's degree in quality management

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Declaration

I understand the nature of plagiarism, and I am aware of the University's policy on this. The work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted by others elsewhere for any other degree or qualification.

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Signature	
Date	

Dedication

To my father who has always loved and supported me, not only During this research, but also throughout all of my life

To my beloved mother whose love, care, and support inspired Me to reach thus far

To my beloved sister Najwa Shalash for her support

I dedicate this study to those who have always encouraged me to Accomplish this mission.

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I am first grateful to ALLAH the Almighty for all His blessings in this life and for giving me good health, strength and ability to complete this study. All thanks and praise are due to ALLAH.

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Abstract

This study was conducted to identify the potential effectiveness of 5S practices pertaining to employees' performance in the Ministry of Finance, Ramallah -West Bank. To that end, the researcher has measured the employees' readiness rate for implementing the 5S practices, the role of employees' involvement in implementing the 5S practices, the employees' awareness of implementing the 5S practices and the effect of a clean workplace environment.

The researcher has used a mixed-method approach. Data were collected through the use of quantitative and qualitative methods. For data obtained through the quantitative method, the hypotheses of this study were tested and analyzed, using the Pearson Correlation Coefficient test; Statistical Package for Social Science (SPSS) version 21.0. Results showed that there was a significant correlation between employees' performance and their readiness to implement the 5S practices, employees' desire of contributions (involvement in) to implementation of the 5S practices, employees' awareness of implementing the 5S practices, and a clean workplace environment. In contrast, the qualitative data of the study was obtained through unstructured interviews.

Findings from this study showed that the Ministry of Finance employees' had a high level of readiness and awareness of implementing the 5S practices. The employees' desire of involvement and top management's role also appeared to be significant elements in driving the successful implementation of the 5S program. Furthermore, the clean workplace environments played an important role in enhancing employees' performance. In addition, the study findings also indicated that the general accountant, payroll and budget departments

were serious in following 5S practices in the workplace compared to other departments: Customs and Tax, Cash, Audit, IT, Accounts and Administration & Finance.

The consistency of most findings with past studies and related theories or quality models showed that 5S practices did play an effective role in influencing the employees' performance.

Moreover, most employees' agreed that the 5S practices were an effective technique that could improve housekeeping, environmental and employees' performance, health and safety standards in their workplaces. However, awareness and readiness of the employees were found to be a key factor in determining the success or failure of implementing the 5S program.

Finally, the researcher recommends that government institutions develop their operations through lean thinking. This aims at adopting lean thinking and its effect on optimizing the performance of employees' and public institutions.

***Keywords*:** Lean thinking, 5S practices, employees' performance, employees' readiness, employees' awareness, employees' involvement, clean workplace environments, Ministry of Finance.

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List of Abbreviations

SPSS	Statistical Package for Social Sciences
5S	Five S's (Sort, Set, Shine, Standardize and Sustain).
MUDA	Japanese word meaning futility; uselessness; idleness; superfluity; waste; wastage; wastefulness
NUMMI	New United Motor Manufacturing Inc.
US	United States
TPS	Toyota Production System
TQM	Total Quality Management
TEI	Total Employee Involvement
TPM	Total Productive Management
JIT	Just In Time
ISO	International Organization for Standardization
IIPM	Indian Institute of Production Management
SMED	Single Minute Exchange of Dies
QE	Quality Environment
LIFO	Last In First Out
FIFO	Fisrt In First Out
IIPM	Indian Institute of Production Management
HCS	Health Care Setting

Chapter One: Introduction

1.1. Overview

This chapter begins with an introductory overview of the research study. It provides a background of the study and a clear understanding of 5S tool. Then it moves to the research problem, its significance, and justification. Furthermore, the chapter spells out the objectives of this study, the research questions and research hypotheses.

The chapter concludes with research delimitations and its scope and thesis structure with the intention of organizing the literature review procedure.

1.2. Background

5S stands for five Japanese words beginning with “S”. These are Seiri, Seiton, Seiso, Seiketsu, and Shitsuke.They mean Sort, Set in order, Shine, Standardize, and Sustain. The 5S tool is one of the best lean methods, and a system of process improvement used to reduce waste, clean the workplace, and improve labor productivity (Parrillis & Rosinski, 2007). To these ends, 5S maintains an arranged workplace and applies visual cues to achieve more stable operational results. Through proper implementation of 5S, the workplace makes improvements in both the quality of employees' performance and increases organizational performance. (Parrillis & Rosinski, 2007). The Ministry of Finance in Ramallah was chosen for this study because of its large size, age, and the researcher’s work there. Thus the researcher has first hand information about the nature of work in the ministry and is aware of many problems in the workplace environment which include, inter alia, long waiting time for

clients seeking certain information, untidy offices, a lot of movements between Mininstry of Finance building offices, poor designed offices in accordance with the function required. This is in addition to unclear internal signs inside the building and unsatisfactory atmosphere in the ministry. All these challenges combined have led to clients' confusion within the offices, and crowdedness at the counter and waiting rooms and waste of their time.

This study has sought to examine what would happen to employees' performance if the necessities and possibilities of implementing the 5S tool were identified in the Ministry of Finance. The study has also endeavored to increase the employees' awareness of the implementation of the 5S and their readiness for implementation of this tool in the ministry. Several studies have found that employees' performance can be affected by the workplace environment.

In this study, the questionnaires have been administered to employees' in the departments in the ministry of finance in the West Bank. The population of this study was the total number of employees' in the ministries headquarter.

A simple random sampling method has been used; the data were collected and analyzed using the Statistical Package for Social Sciences (SPSS).

Finally, the researcher predicts a workplace environment to have a smooth flow of all work processes and reduce any of the eight waste elements such as waiting, transportation, motion…etc., thus affecting the employees' performance positively. Also the researcher

predicts the employees' desire of contribution, their readiness, and awareness to have a significant impact on the implementation of the 5S tool and 5S tool would have a significant effect on improvement of employees' performance.

After reviewing the relevant literature, the researcher has not found, within the limits of her knowledge, studies on the effect of the 5S tool on employees' performance in Palestine and in the public sector in particular. Therefore, this study is expected to fill in the gap and contribute to the increase the knowledge of implementation of the 5S tool in service sectors.

1.3. Research Problem

The workplace environment is one of the important features in any institution worldwide. However, minimum attention is given to it in developing countries in terms of its systematic and scientific organization (Masroor, 2009). Palestine is a case in point. Therefore, numerous Palestinian institutions suffer from poor workplace environments.

Studies have found that employees' performance is affected by the workplace environment. The work environment is defined as the condition that makes employees' perform their responsibilities comfortably (Gitonga & Gachunga, 2015).

Therefore, in order to maintain their excellent performance and make themselves more competitive, most institutions explore avenues for improvement of quality, increase of productivity, and reduction of cost. It has been recognized that the 5S tool are a good starting point for all improvement efforts to drive out waste, and ultimately improve a company's bottom line by improving products and services and lowering cost (Hirata, 2001).

The Ministry of Finance in Ramallah was chosen for this study because of its large size, age, and the researcher's work there. Thus the researcher has first hand information about the nature of work in the ministry and is aware of many problems in the workplace environment which include, inter alia, long waiting time for clients seeking certain information, untidy offices, a lot of movements between Mininstry of Finance building offices, poor designed offices in accordance with the function required, Searching for exact location of a document is very time consuming This is in addition to unclear internal signs inside the building and unsatisfactory atmosphere in the ministry. All these challenges combined have led to clients' confusion within the offices, and crowdedness at the counter and waiting rooms and waste of their time.

However, all these issues and many others affect employees' performance and lead to delivering poor quality services to both clients and employees'.

In the light of these hindrances, it is strongly believed that introduction and successful implementation of the 5S methodology in the ministry would make a big difference in the quality of employees' performance.

Therefore, in order to effectively apply and administer any methodology and the 5S methodology in particular, it is very important to identify the possibility and necessity of applying the 5S tool as perceived by the ministry's employees' perspective. This perspective can play a key role in the success or failure of the 5S implementation. Accordingly, this study finding would increase the ministry's employees' awareness and their organizational readiness for implementation of the 5S.

1.4. Research Significance and Justifications

The companies, interested in experimenting with lean, firstly prefer 5S tool as an entry point to get good results (Anderson and Mitchell, 2005). 5S acts as an important tool of lean; it focuses on improvement of the workplace environment of the institution and reduction of waste, costs and searching time. In addition, it improves cleanliness, makes identification of defects easier, decreases walking and motion, decreases accidents, improves flow, decreases errors, improves workplace visual management, and makes space utilization better. These benefits add up to overall enhancements in productivity by improving employees' performance.

Srinivasan (2010) suggests that 5S tool stands first in front of other lean tools for the institution development because it is the simplest, easiest, and the most effective technique to apply in any institution. Also, an institution needs 5S for successful implementation of other lean tools at the workplace. When 5S tool lack this, other lean tools become unsuccessful (Chapman, 2005).

On the other hand, using the 5S tool in workplace help institution save resources because they force it to look at every tool and process. If any tool or process is inefficient, it can change how things are done, or it discards them. Also, the 5S tool can help any institution to improve quality and safety, standardize processes and improve performance. The employees are also likely to be more productive once they use the 5S tool to change and reorganize the environment.

Furthermore, 5S tool is an integrated system composed of highly integrated elements that focuses on the elimination of all forms of waste and non-value added activities.

On the other hand**,** Performance is the outcome of the work of the employees' in performing tasks in accordance with the specified target (Anggriawan et al., 2015).

Companies must have quality employees' to be able to produce a good performance and accordingly leave an impact on the quality of the company itself. Good performance does not only come from employees' but also can be achieved through habituation or work culture applied in the company.

According to Mahanani (2014), performance can be influenced by the work culture applied in the company.

Based on a number of studies, work design and organizational culture can influence work motivation which then influences employees' work performance (Al-Musadieq, 2018). Also, Salaheldin (2009) has demonstrated through an empirical analysis that 5S tool have a significant contribution to the effectiveness and efficiency of organizational performance. Moreover, Daraei et al. (2015) has demonstrated that through proper implementation of 5S, the quality of employees' performance could be improved and organizational performance could be increased. Therefore, in order for employees' performance to be consistent, the company must pay attention to the environment in which employees' carry out their duties.

The work philosophy applied in the company is the 5S philosophy. The 5S tool focus on creating and maintaining a clean, effective, efficient, and high-quality workplace and can be

a benchmark for whether a job will work or not. If the 5S tool are implemented well then the work will run well and if not then it will experience difficulties (Septaviani, 2012). Another study describes the benefits of cleaning the workplace which include reduced equipment failure, improved product quality, improved safety at work, and a cheerful work environment (Sorooshian et al., 2012). Moreover, Lingareddy has demonstrated that the 5S tool are adopted to reduce waste, clean the workplace, and improve labor productivity (Lingareddy et al., 2013).

According to Wahyudi (2017)'s viewpoint, 5S tool, applied conjointly to the company, can influence employee performance.

However, The Ministry of Finance was chosen for this study for two main reasons. The first reason is its size. The size of an institution can play an important role in the implementation of lean practices including manufacturing and service companies (Ahmed et al., 1991; Moch, 1976). However, the argument of the size effect can be developed in favor of both hindering and enhancing lean adoption. Large companies enjoy economies of scale and have a higher level of human and financial resources that enable them to capitalize in innovations (Bayo-Moriones et al., 2008; Hannan and Freeman, 1984). Therefore, they are more likely to implement innovative systems such as the 5S tool.

The second reason is the age of the institution. Like its size, the effect of age of the institution is often argued to be important and can be developed in two directions: positive and negative. The older institution usually enjoys more resources in terms of experience and money, thus making the adoption of innovative systems such as lean system more realistic (Galende and de la Fuente, 2003).

However, some researchers highlight the negative effect of age. They argue that in old institutions, employees are used to doing tasks in a specific way and resist introduction of changes. In other words, introducing an important change system such as a lean system (Kennedy and Widener, 2008) is more likely to be met with strong resistance (Shah and Ward, 2003).

Against this background, the researcher believes this makes this study more interesting and challenging. The age of an institution may have an important contribution to the success of lean implementation.

The researcher also thinks this study is one of the few studies that has addressed the effect of 5S tool on enhancing employees' performance especially in Palestine's service sectors. The researcher believes this study will give a new knowledge about lean philosophy and the 5S tool in particular and it will be a great step towards higher education which in turn will assist the Arab and Palestinian societies.

1.5. Research Objectives

RO1: To investigate the readiness for implementation of the 5S practices in terms of organization and staff at Ministry of Finance and their effect on employees' performance, thus enabling it to adopt implementation of the 5S practices as a first step towards applying Lean Thinking in a governmental institution.

RO2: To examine the desire of employees to contribute to implementing the 5S tool and identification of their role in implementing the 5S tool.

RO3: To examine employees' awareness of the 5S practices, since the possibility of implementing the 5S practices has become easier and more acceptable, and it will enhance employees' performance.

RO4: To examine the significance of clean workplace environment in promoting the employees' performance.

RO5: To examine the statistical differences in the responses of the research participants according to demographic variables.

RO6: To examine the potential relationship between the 5S tool and improvement of performance from the Ministry of Finance employees' perspective.

1.6. Research Questions:

RQ1: What is the readiness of Ministry of Finance employees for implementation of the 5S tool?

RQ2: How can employees' desire to contribute to the implementation of the 5S tool enhance their performance?

RQ3: How can employees' awareness of implementation of the 5S tool enhance their performance?

RQ4: How can a clean workplace environment enhances employees' performance?

RQ5: Are there any statistical significant differences in the responses of the research participants which could be attributed to demographic variables?

RQ6: Do the independent variables (Employees' Readiness, Employees'desire of contributions, Employee's awareness for implementing the 5S tool and clean

workplace environments positively explain the variation in the dependent variable (Employees' performance)?

1.7. Research Hypotheses

H1: There is a significant relationship at $\alpha \leq 0.05$ between employees' readiness for implementation of the 5S practices and their performance.

H2: There is a significant relationship at $\alpha \leq 0.05$ between employees' desire of contributions (involvement) to implementation of the 5S practices and their performance.

H3: There is a significant relationship at $\alpha \leq 0.05$ between employees' awareness of implementation of the 5S practices and their performance.

H4: There is a significant relationship at $\alpha \leq 0.05$ between a clean workplace environment and employees' performance.

H5: There are statistical significant differences at $\alpha \leq 0.05$ in the responses of the research participants due to demographic variable (Gender, Age, Poistion, Educational level, Experience and Departements).

H6: The employees' readiness, employees' awareness, employees'deire of contribution and workplace environments positively explain the variation in employees' performance.

1.8. Limitations of The Study

The study questionnaires provide a generalizable study of the relationship between the Lean 5S tool and the performance of the Ministry of Finance employees' in its Ramallah headquarters. To carry out an in-depth study of this topic, qualitative research methods have been suggested. Interviews or case studies on some definite cases have also been recommended for cross-validation of the results found in this study and uncovering of the reasons behind them.

Employees' awareness can be considered another limitation since they are not familiar with lean tools and the 5S tool in particular. This has compelled the researcher to conduct a lot of unstructured interviews to explain what lean is and what the 5S tool is.

Another limitation of this study was the lack of studies related to adoption and adaptation of Lean Thinking in Palestine. The surrounding region has also limited somehow the results of this research.

A third limitation or problem that the researcher throughout the research couldn't avoid was the time constraint factor. Time constraint included the time the researcher had to collect data from the respondents due to coronavirus pandemic and accordingly the frequent absences of the ministry employees'.

1.9. Scope of The Study

To achieve the aim and objectives of this research study, the scope of the study mainly focused on the Ministry of Finance's employees' working in its headquarters in Ramallah.

The scope of data collection in this study was limited to the following:

The employees working in the ministry's different departments were randomly selected. The reason for choosing the ministry's employees' in its headquarters is that more than 50% of them work in the same area under the same conditions.

Moreover, the systematic literature review of this study focused on the background and importance of Lean, understanding of the 5S tool and challenges facing their implementation of Lean tools. This is in addition to the techniques and effects of their implementation on employees' performance.

1.9.1. Conceptual Framework

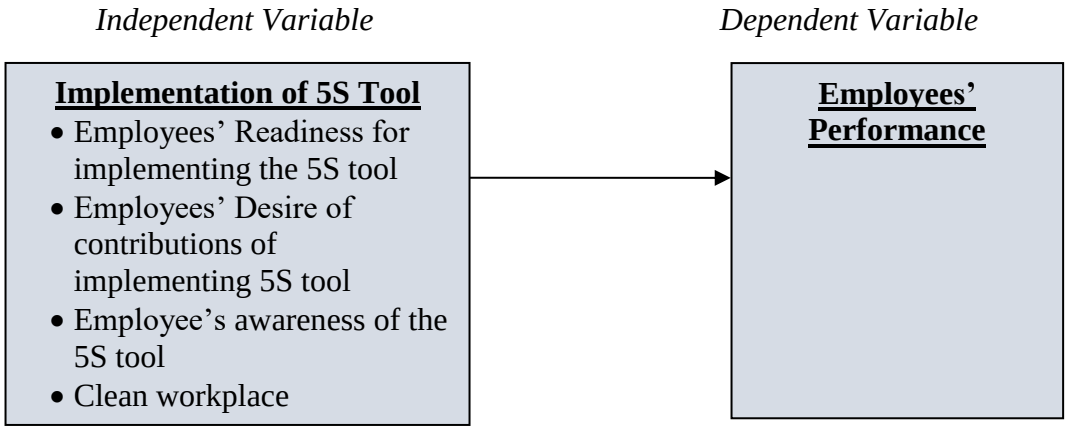

FIGURE 1.1: EFFECTIVENESS OF IMPLEMENTATION OF 5S TOOL AND EMPLOYEES' PERFORMANCE

The conceptual framework in **Figure 1.1** above shows that employees' readiness, contributions, awareness, cleanliness of workplace environment in the institution do play vital roles in promoting the employees' performance (dependent variable). Both independent (employees' readiness, desire of involvement, awareness, and clean workplace environment) and dependent (employees' performance) variable are interdependent.

In addition, out of this conceptual framework, the researcher wanted to identify how an effective implementation of the 5S tool (which are influenced by employees' readiness, awareness, desire of contribution, and clean workplace environments) has a positive impact on employees' performance.

1.10. Delimitations of The Study

▪ **Geographical**: This study has covered the Ministry of Finance employees' in its Ramallah headquarters

▪ **Population and Sample**: The population of the study included nine departments located in the ministry's headquarters. The researcher administered the questionnaire to 300 ministry's employees. Of these, the researcher collected data from 260 participants. The sample size was chosen to provide adequate information on reliability and achieve a certain degree of validity.

▪ **Knowledge:** The study focused on the 5S tool as the starting point of lean tools in order to examine the potential effect of implementing them (by measuring the employees' readiness, desire of contribution, awareness, and the workplace environments) on employees' performance improvement, thus helping in adopting Lean Thinking gradually in the ministry. A systematic extensive literature review was conducted to review the previous related studies which dealt with and addressed these factors.

▪ **Approach and Instrument:** The researcher used the quantitative survey research to measure the desired objectives. The technique was a questionnaire which was developed for this purpose. The overriding purpose of the questionnaire was first to meet the research

objectives, and then to answer the questions of the study, and lastly to collect the data to support its findings and discussion, as well as help in writing out the recommendations.

▪ **Time:** The questionnaire survey (distribution and collection) was administered over three weeks: March 7- 30, 2021.

1.11. Research Design

To achieve the research objectives, the following stages were followed:

- The problem was specified by developing the research themes: aims, objectives, hypotheses, and key research questions, as well as research strategy. The researcher also developed a research approach and technique she also conducted a thorough review of relevant literature in the field. Groups of main factors were well defined to support the initial questionnaire building. A conceptual framework was also planned in this stage.
- Questionnaires were developed based on the extensive literature review.
- Questionnaires were tested for reliability and validity by the supervisor and six professionals at the Arab American University, Ramallah and Al-Quds University, Jerusalem.
- Pre-testing of the questionnaire was done to ensure the quality of the collected data.
- A pilot study was conducted in order to explore the strengths and weaknesses of the questionnaire, to make necessary changes, and to get valuable feedback.
- The main questionnaire was administered to 300 employees' working at the Ministry of Finance

- Quantitative and qualitative data analysis methods, including statistical analysis (validity and reliability tests and Pearson correlation analyses) were conducted, using SPSS v.21.
- Findings were concluded and recommendations were suggested.

1.12. Structure of The Study

This study has been divided into five chapters to create a good flow of the information.

Chapter 1: Introduction

This chapter begins with the background of the research. It introduces the reader to the research topic. It covers the statement of the problem, justification of the study, research objectives, questions, hypotheses, research delimitations, research design, research limitations, research contribution to knowledge as well as research outline.

Chapter 2: Literature Review

This chapter is devoted to a review of the literature relevant to the research problem of the study. The first section describes the lean concept. It gives a background of the concept, and an explanation of its principle. The second and the third sections describe the type of MUDA (Waste) describe the concept of the 5S tool, its historical background, elements, significance, success factors and obstacles of its implementation. They also describe where we the 5S can be implemented. The chapter concludes with a description of the 5S in service sectors and the scholars' different opinions about the concept.

Chapter 3: Research Methodology

This chapter dwells on the research design and method. It also details technique used in the analysis and the manner related to data collection.

Chapter 4: Data Analysis and Discussion

Chapter four is devoted to the study's findings and their discussion. The researcher provides an analysis and discussion of the findings and holds a comparison between them and findings of previous studies.

Chapter 5: Conclusions and Recommendations

References

Appendices

Chapter Two: Review of Literature

2.1. Overview

This chapter is devoted to a review of the literature relevant to the research problem of the study. The first section describes the lean concept. It gives a background of the concept, and an explanation of its principle. The second and the third sections describe the type of MUDA (Waste) describe the concept of the 5S tool, its historical background, elements, significance, success factors and obstacles of its implementation. It also describes where the 5S can be implemented. The chapter concludes with a description of the 5S in service sectors and the scholars' different opinions about the concept.

2.2. What is Lean?

Upon investigation of the word "lean", one finds that it means a belief in something flexible. It can possibly give an image of athletic people. According to Sayer and Williams (2007) *lean is "light weight, in the sense of speed and agility with a sort of edge or underlying aggressiveness that recalls the rhyme 'lean and mean.'"* This means that lean is not only a physical condition but it is also a discipline. Lean principles are not only to make people flexible, but to keep them in that shape. It's a way of life. Sayer and Williams (2007) believe that lean people are *"committed to being lean; they act in a certain way in their habits and routines. Lean isn't a fad or diet – it's a way of life."*

The term “Lean” was first introduced by Womack, Roos and Jones in 1988. Their book *The Machine that Changed the World* describes the result of a five-year study of the world’s automobile manufacturing industry.

It describes the transfer of manufacturing ideas from craft production to mass production to lean production (Poppendieck 2002). According to Womack and Jones (2003), the objective of their book was to send a wake-up message to the operators in the manufacturing industry caught in the old-fashioned world of mass-production. The book reports how Japanese car manufacturers were accomplishing excellence performance in almost all areas such as quality, time-to-market, productivity and service levels.

So when Womack, Roos and Jones investigated Toyota Company, they saw that the company required smaller amount of effort to design and make their products. It required less investment to attain the set level of production capacity, lesser inventory at every step and even had less number of employees’ and less employees’ injuries. In addition, they saw Toyota had fewer suppliers compared with other companies. (Sayer and Williams, 2007).

Womack and Jones concluded that a company like Toyota, which tries to use less of everything, is a Lean company. This is how the term “Lean” became associated with the business industry - the skills to achieve more with less.

Therefore, it is important to know that Lean Thinking strategies are methods of how to develop business and increase company productivity, and improve quality and efficiency of its products or services (Sayer and Williams 2007).

According to Womack and Jones (1996), Lean Thinking can be defined as a way to recognize and provide value to a customer, by minimal waste of resources, line up value-creating actions in the best sequence, conduct activities without interruption, and perform them more and more effectively (Womack and Jones, 1996). In other words, it is about doing more with less human effort, less time, less equipment, and less space, while providing customer with exactly what they want. This can be obtained by focusing on flow, streamlined processes, visual management and continuous improvement.

According to Sayer and Williams (2007), Lean organisation means using lesser amount of human effort to perform the work, lesser material to make products and services, shorter time to develop them and less energy and space to produce them. The company becomes familiar with customer demand and developed high quality products and services in the most efficient and economical way possible.

Table 1-1 The Lean Enterprise versus Traditional Mass Production

	Mass Production	*Lean Enterprise*
Primary business	A product-centric strategy. Focus is on exploiting economies of scale of stable product designs and non-unique technologies.	A customer-focused strategy. Focus is on identifying and exploiting shifts in competitive advantage.
Organizational structure	Hierarchical structures along functional lines. Encourages functional alignments and following orders. Inhibits the flow of vital information that highlights defects, operator errors, equipment abnormalities, and organizational deficiencies.	Flat, flexible structures along lines of value creation. Encourages individual initiative and the flow of information highlighting defects, operator errors, equipment abnormalities, and organizational deficiencies.
Operational framework	Application of tools along divisions of labor. Following of orders, and few problem-solving skills.	Application of tools that assume standardized work. Strength in problem identification, hypothesis generation, and experimentation.

FIGURE 2.1: MASS PRODUCTION VS LEAN ENTERPRISE

SOURCE: SAYER AND WILLIAM (2007)

Several years ago Lean Thinking became a universal movement; it has been adopted by many companies around the world. According to Lean Enterprise Institute (2016), Lean Thinking began to take basis in all sectors, including oil and gas industry. Many companies have even tried to implement the principles and tools beyond the Toyota manufacturing.

The term “Lean’ has made a certain set of ideas and concepts such as giving attention to and focus on customer value, keeping things moving in a value-added and useful way, respecting people and focusing on long-term vision and relationships, accepting a philosophy of continuous development, providing exactly what is needed on time. All this is based on

customer demand, using techniques for reducing and minimizing waste, (Sayer and William, 2007).

2.3. Origins of Lean Production

Early automobiles were craft produced from 1880s (Womack, Roos and Jones, 1990). According to Taylor and Brunt (2002), a craft producer uses highly skilled workers who make exactly what the customer wants. The craft production represents a very expensive way of production, and faces challenges it can't solve. Mass production, developed by General Motors' Alfred Sloan and Henry Ford 1920, introduced economy alternative to manufacturing (Womack, Roos and Jones, 1990). The mass producer uses hardly skilled professionals to design products made by relatively unskilled workers who operate single-purpose machines.

This way of manufacturing goods assists a high volume production as the products are standardized, but since the machinery is so expensive, the mass-producer needs to add many buffers, such as extra workers, extra supplies and extra space to ensure smooth production (Taylor and Brunt, 2002). The Toyota approach to manufacturing can be seen as a contrast to the mass-production and the craft production as it combines the advantages of both. The lean producer employs teams of multi -skilled workers, and more flexible and automated machines to produce a higher volume of products in a wider variety and uses fewer resources, and his products have fewer defects and better quality (Taylor and Brunt, 2002). The strategies and mentality of Lean were developed around 1950s, as Taiichi Ohno, together with Eiji Toyoda at the Toyota Motor Company in Japan, established the concept of Lean Production (Womack, Roos and Jones, 1990).

2.4. Where to Implement Lean?

Lean can be found wherever there is waste anywhere and whenever there is a chance for improvement. Generally, it can be found everywhere. Lean is not restricted to any specific part of an organization or a function within a company; it is flexible.

Womack and Jones (1990) Defined Lean as a business improvement plan. A common confusion regarding Lean is that many people define it as a manufacturing quality program; however, this is not the case. The philosophy, principles of Lean are applicable anywhere and are most helpful when applied across the entire organisation (Allen, 2000). Practices and Functions of Lean are as follows: Lean Manufacturing or Lean Production, Lean Administration and Lean Office, Lean Thinking and Lean Management (James Womack and Daniel Jones 1996). Each of these types represents a part of Lean in its own way. Lean is all of these and even more, but its main emphasis is on the processes that create customer value (Bamber and et al, 2000).

Thus, Lean concentrates on the processes that create value, which in its turn is cross-functional. This means that the process is helped by many well-organized and skilful teams. In addition to this, individuals are cross-trained as well.

2.5. Principles of Lean

Lean principles function as a universal guide for its implementation (Womack and Jones, 1996; Porter and Barker, 2005), According to Womack and Jones (1996), the main principles which focus on the customer value and waste elimination of Lean strategies are as follows:

2.5.1. Specify Value from The Standpoint of the End Customer

It is essential to define the exact value from the viewpoint of the end customer, in terms of a specific product, with specific capabilities, obtainable by specific price and time. All the industrial thinking must recognize the Muda (Japanese word for waste) from the customer's opinion. The failure to specify the value correctly, before applying Lean techniques, can easily result in providing an incorrect product or service in a highly efficient way. (Womack and Jones, 1996).

2.5.2. Identify The Entire Value Stream for Each Service Family

Identify the whole value stream for each product or service and remove the waste. Identifying these value streams gives a perfect picture and displays the unnecessary phases which bring no value to the end service or product. Therefore, it can be removed (Womack and Jones, 1996).

Identifying the value stream helps in understanding how the values for the customers are built through the processes. The value stream can include people, equipment, tools, and technologies, as well as physical facilities, policies, procedures and communication channels.

2.5.3. Make Product or Service Flow

Make the remaining value creating steps flow efficiently towards the customer. This is achieved by working on each design, order, and product continuously from start to end, so that there is no downtime, waiting, or any kind of waste between the steps (Alcazar, 2003 and Montgomery, 2006). According to Toussaint & Gerard (2010), if value has been clearly defined, the value stream identified, and clear wasteful steps removed, the next step would

be to make the service flow continuously, organize and standardize processes around best practice.

2.5.4. Respond to Customer Pull

Let the customer pull the service or product from the value chain. In this way, there would be no waste in a way of overproduction. It means providing what the customers need only when they want it (Ranky, 2006a).In addition to recognizing the process, it might not be possible to decrease all non-value adding steps rapidly, and this principle aims to eliminate waste as much as possible by "pulling" the customer to the next process step.

2.5.5. Improve Continuously in Pursuit of Perfection

Pursue perfection within the whole chain. For a company that uses the Lean Thinking, it places a lot of emphasis on perfection. The idea of the total quality management is to systematically and continuously remove the root causes of poor quality and achieve zero defects (Ranky, 2006a). According to Toussaint & Gerard (2010), perfection is a way to eliminate waste to attain an ideal process where value is produced at every single step. It should come to be part of organization culture, where Lean becomes "the way we do things around here", so that non-value adding activity is continuously isolated, and the steps, time and necessary information are there to serve the customer (Daniel T. Jones, 2016).

In order to implement the lean principles, the top managers of the organization should commit themselves to making Lean Thinking a culture (Miller, 2005). Lean has to be locally led and be part of the organizational strategy (Mitchell, 2006).

From an operational side, there is a need to integrate more than one approach to meet the requirements of Lean Thinking. The set of approaches may differ from one process to another. In addition, many approaches may need adjustment in order to be combined with other approaches.

The principles of Lean have extended its applicability to production, service industry, the military, and construction processes. They touch on the efficiency and universality of the concept. Liker (2004) claims that every type of organization business can benefit from Lean not by copying the tools used by Toyota in a particular manufacturing process but rather by increasing principles that are the right ones for the businesses or organization and by practicing them to achieve high performance that continues to add value to the society and customers.

In fact, the principles of Lean are equally effectively applicable to all manufacturing and business functions – from product development and engineering to distribution and logistics, sales and marketing, human resource, and purchasing (Strategic Direction, 2005).

FIGURE 2.2 :PRINCIPLES OF LEAN

(SOURCE: WWW.LEAN.ORG)

2.6. Introduction to 5S

Despite being a small country of population, Japan is still a leader in manufacturing industries in the world because of its management tools and techniques (Hitomi, 2004). The Japanese manufacturing industries, such as Toyota, Honda and Mitsubishi, are on the list of top places worldwide. It is worth noting that the Japanese do not only achieve high level of profitability and productivity at home, but they also achieve success in the company's operating overseas (Hitomi, 2004). Japan possesses limited amount of natural resources such as coal and oil. However, it has one of the richest human resources responsible for its competitive edge.

From several hundred years, the principles of Shintoism, Confucianism and Buddhism have been behind the embodiment of the philosophical concept of 5S in Japanese society (De Mente, 1994). The principle 'Shintoism' emphasizes 'cleanliness', 'Confucianism' emphasizes 'orderliness' and 'Buddhism' emphasizes deriving mystical fortitude from 'self-

discipline'. Japan has traditionally placed emphasis on cooperation, promotion and nurturing of values of trust, organizational commitment, self-restraint, and team working.

The formations of the aforementioned values have been contributed by the principles of Shintoism, Confucianism and Buddhism in Japan (Watsuji, 1952). During 1989-1991, Takasi Osada was the first person develop the framework of 5S based on five pillars based on Japanese initials: Seiri (organization), Setion (neatness), Sesio (cleaning), Seiketsu (standardization) and Shitsuke (discipline).

5S philosophy was developed in Japan and was legally introduced at the end of the 1960s, while the major framework for understanding and application of 5S were proposed by Osada in 1991 and Hirano in 1995. Firstly, 5S was implemented at Toyota Motor Corporation as part of its production system, namely Toyota Production System (TPS). Osada (1991) introduced 5S as a methodology for building and realizing quality environment in an organization.

Hirano (1995) stated that 5S steps are suggested to improve efficiency, strengthen performance, and provide continuous improvement in all segments of the organization.

These steps contain a structured improvement program with a series of identifiable steps related

To each other in progressive manner. As the words are borrowed from the Japanese language. Ho (1999b) has removed the complexity of Japanese words to make them easy to be understood and adopted by various organizations across the globe for the purpose of realizing significant organizational performance improvements.

Some companies find it difficult to imbibe 5S principles and argue that it's only a cleanup process and too difficult to implement them Hirano (1995) and Patten (2006) have emphasized that the 5S system is much more than a cleanup. 5S is a philosophy for systematically accomplishing overall organization cleanliness and standardization in the workplace that is motivating and pleasing to all employees' in the organization. 5S is also a philosophy for reforming the workplace and providing foundation for vital improvements in the workplace. 5S changes the employees' approaches towards their work, workplaces, and it improves communication among various business functions and departments. A well-organized workplace provides a safe and efficient production environment, which increases the employees' morale, promotes the feeling of ownership/ belonging, pride in their work and holding their responsibilities.

2.7. History of 5S

5S program initially originated in Japan between 1955 and 1960 when Toyota Production System (TPS) was visualized to affect significant organizational performance enhancements. At the initial stages of 5S program, only 1S and 2S elements of 5S program (Seiri, and Seiton) were introduced as a Japanese management system. Later on, between 1956 and 1972, 3S (Seiso) and 4S (Seiketsu) elements were further changed in order to avoid waste and improve standardization. The last element of 5S was introduced between 1973 and 1980 Years later, these five S elements were compiled and formulated in an organized framework and were initially explained by Osada (1989) and then by Hirano (1995). Both have had different perspectives for developing an understanding of 5S implementation in the organizations (JISHA, 1999; Becker, 2001; Gapp et al., 2008; Monden 1998; Gao and Lowa, 2014).

It is important to implement 5S in an organization to maximize the efficiency and effectiveness of workplace (Osada, 1991). Nakamura (1992) came out with a difference. Some Japanese organizations have adopted 5S, while others have adopted 3S and still others have introduced 6S in the organization (Zelinski, 2005). Shimbun (1995) considered 5S as a method which increases the level of safety, productivity, health, and functions as a visual control system.

5S is also described as a program which develops self-pride, regard for others, and team work among the employees' by solving the organization's growth problems through group effort. It also develops a sense of utilization and systematic organization of the efficient results from the workplace.

It also acts as a key for the continuation as success of the company in the competitive world (Mendes-de-Toledo and Andde-Farias-Filho, 2001).

The 5S has also been commonly used in TQM systems, where it has been stated as part of a series of quality initiatives (Yusof and Aspinwall, 2001; Ahmed and Hassan, 2003). 5S has developed as an efficient housekeeping tool and a system for keeping a good working environment (Ho, 1999a; Krasachol and Tannock, 1999).

Nowadays in this technological and dynamic world, 5S approach is actually required from every company to survive and deliver its services and products.

According to Christopher D. Chapman (2006) the 5S system is organic and systematic to Lean production; it is a business system for effective management and organization of the manufacturing operation that will eventually lead to less effort, capital, time and fewer employees but at the same time make the same amount of products with fewer defects. The 5S system creates a work environment that is clean, disciplined and well ordered.

2.8. Elements of 5S

Due to the increased competition in the worldwide market, many organizations look forward to developing their operations and to making them more effective and efficient. Thus, 5S methodology is attractive to organizations which have older production sites and face difficulties to improve their efficiency and decrease costs. The most famous statement of 5S methodology is "*a place* for everything and everything in its place." This simply describes what 5S is about.

5S is an approach to organize, order, clean, standardize and continuously improve a work area. 5S is not just about housekeeping. It is also about efficient working tools of lean manufacturing. The 5S initiatives, namely Seiri, Seiton, Seiso, Seiketsu and Shitsuke, have been referred to as the five keys to a total quality environment (Abdul Aziz et al., 2014). These words when translated mean sort, set in order, shine, standardize and sustain, respectively.

The main benefits of implementing 5S can be seen in improved efficiency, less waste, lower costs, improved maintenance, increased customer confidence, less space needed for storage, improved safety, and higher quality of products and/or services (Hirano 1996; Ho, 1999).

5S is the beginning of a healthy, comfortable and productive life for everyone at work. In the workplace, 5S is used “to organize the workplace, to keep it neat and clean, to maintain standardized conditions and discipline necessary to do a good job” (Osada, 1991).

5S concepts are equally relevant to any sector or any business: manufacturing organizations, commerce and service organizations.

The four key factors for successful 5S are support by top management and continued commitment; participation of entire workforce; education and training; and standardization for sustained implementation of 5S on a long -term basis (Tsuchiya, 1999; Sidhu et al., 2013).

Osada (1991) **defines 5S** as the starting point for total quality environment. It is a base for continuous improvement in the organizations and a practice to improve employees’ performance and organize the whole system. It was used for the first time by the Japanese.

Furthermore, 5S is a five-step process in which each step is essential for the next. For example, it is impossible to implement S2, (place all needed items in the best location to support the Worker), if S1 (sort out unneeded items) has not been done first (Visual Workplace Inc., 2000; Tsuchiya, 1999; Thawesaengskulthai, 2010)

2.8.1. Meanings of 5S Elements:

The first S, Seiri (Sort), represents organization. It means ‘to put things in order – to organize them – in accordance with specific rules or principles’ (Osada, 1991).

This begins by making distinction between the unnecessary and necessary items to create a system that works effectively. This activity helps to discard unnecessary items from the workplace, thereby facilitating efficient use of space available with an organization.

Useful practice for sorting is the red tagging. The redundant items are tagged with a red paper note, and then taken out to a central holding area where they are further evaluated. The items which are considered useful are kept in an organized storage, while the rest of the items are discarded. The unnecessary items are either stored offsite/discarded leading to fewer hazards and less clutter.

When Sort is applied in the workplace, the work area will be more apparent, and will lead to a highly efficient workflow. At the same time, the workers will be more satisfied with their environment. Employees' morale would increase as junk items or materials that are potential health hazards are identified and removed. (V. Patel and H. Thakkar, 2014).

Catch Phrase: ‘’When in doubt, throw it out.’’

Important Result: Free up space, remove obsolete or broken items, excess material and scrap.

The second S, Seiton (Set in order), means neatness and putting things in the right place or right layout so that people can find or use whatever they need rapidly. To do this, one must make a list of essential and important goods/equipment to maximize ease of location.

The main questions who, what, where, when, why, and how (Imai, 1986) should be asked of oneself in regard of each item. This activity involves ensuring designated locations for all items in the workplace, thereby helping employees to have efficient control over the operations and accurately plan materials, supplies, or tools requirements (Brady Worldwide

Inc., 2008). The objective of S2 is to decrease the amount of motion required to allow the workers to do their jobs. For example, a tool box can be used by an operator who must use many tools. In the tool box, every tool is placed at a fixed spot which allows the user to quickly pick it up without spending time looking for it. This way of arrangement can also help the user to be directly aware of any missing tools.

Catch Phrase: ''A place for everything, and everything in place.''

Important Result: Achieve visualization of the position of items, allow easy access and save time to collect the essential items.

The third S, Seiso (Shine), means cleaning. This element highlights cleanliness, self-inspection, and creation of a perfect workplace. This step includes three main activities: getting the workplace clean, keeping its appearance and taking preventive measures to keep it clean. Shining at the workplace eliminates dust, dirt, fluids and other garbage. 5S teams may use paint or coat work surfaces, equipment, floors and walls to determine various activity areas (Brady Worldwide Inc., 2008).

Active self-inspection of machines by operators and embedding quality into each work process, increase work life and performance, hence avoiding fatal breakdown or downtime in operations.

In some industries, airborne dust is among the causes of poor product service or color contamination. To be more aware of dust, some companies paint their working places in light colors and use a high level of lighting.

In other words, **cleaning** is a way to observe problems early and to keep work areas and equipment in good and suitable operating condition and even more to extend the duration.

According to K. Marley and P. Ward (2013), the idea in this stage is to have production operators clean their own workplaces at shift end, so that they notice details like frayed cables, spills, or broken lamps instead of just making the items become bright and shine.

Catch Phrase: ‘’The best cleaning is to not need cleaning.’’

Important Result: Satisfaction of working in clean and tidy environment, and creation of ownership of the facilities and equipment

The fourth S, Seiketsu (Standardize), means standardization. That is, maintaining the workplace so that it is productive and comfortable by repeating Seiri-Seiton-Seiso. During this phase of application, the team develops the standard operating procedure for the beginning of the improved workplace practices (Osada, 1991). The standardization initiatives usually place emphasis on consistent deployment of visual controls in the workplace, development and promotion of standard work instructions such as flow charts, color-coding, labelling and checklists to help support a uniformed approach across the whole organization.

Catch Phrase: ‘’See and recognize what needs to be done.’’

Important Result: Facilitation and support of the new practices.

Finally, the fifth S, Shitsuke (Sustain), means sustain. This is the key to the understanding and implementing the 5S. Sustain aims at maintaining the achievements acquired through successful achievement of 5S initiatives. It needs a continuous auditing process for maintaining the performance and enhancement realized through 5S program (Patel and Thakkar, 2014).

This stage is considered the most difficult to implement and maintain. Resistance typically accompanies the changes, and the personnel easily turn back to the status quo. Therefore, promoting and understanding the changing processes is important.

In this stage, it's important to assign a team to be in charge of supervising complaints with the 5S. According to S.S. Naqvi (2013), this step focuses on recognizing the best process in order to sustain the improvements and also continue to bring additional improvements. Keeping standardization in industry workplaces helps in increasing safety and reducing industrial pollution.

Catch Phrase: ''The less self-discipline you need, the better.''

Important Result: Increase of morale, productivity, safety and quality.

As mentioned above, the first three Ss' are more concrete and are about things that we can see around oneself. The last two, however, are about personal behavior. Hence, 5S is not only a measure of order and structure, but also a measure of changing organizational culture.

It's important to implement all 5S. M. Suarez and J. Ramis (2012) explained that if 5S implementation failed in the middle way, it would be due to the company's failure to complete 5S implementation. In contrast, if the organization implemented 5S fully, a 5S program would have longevity (2015). Even though not common in the literature, a sixth S has been acknowledged by some practitioners (DiBarra 2002). It stands for Safety and is positioned between Shining and Standardization. It refers to the safety of the work place and respectively of the employees. It is uncertain whether the 6^{th} S can be considered as supplementary pillar to the 5S tool, or rather as an aspect of each of the 5S pillars, since safety is considered essential to the concept of 5S. Bicheno (2004) For example, safety

procedures and their standardization should be developed, maintained and audited as part of the 5S program.

When fully implemented, the 5S system can increase morale, create positive impressions on customers, increase efficiency. Furthermore, continuous improvement can lead to less waste, better quality and faster lead times. It makes the organization more profitable and competitive in the marketplace. (Scott, 2011).

In other words, we can get better performance of the operation by implementing the 5S. It is important to understand that 5S is not only about housekeeping, which is a reactive approach. It is also a proactive approach to order, structure and maintain wellbeing at work, which can be seen as fundamentals to continuous improvement and a good work environment. (Wig, 2014).

The 5S is used as a platform for developing a management system by the similar use of total productive maintenance (Bamber et al., 2000).

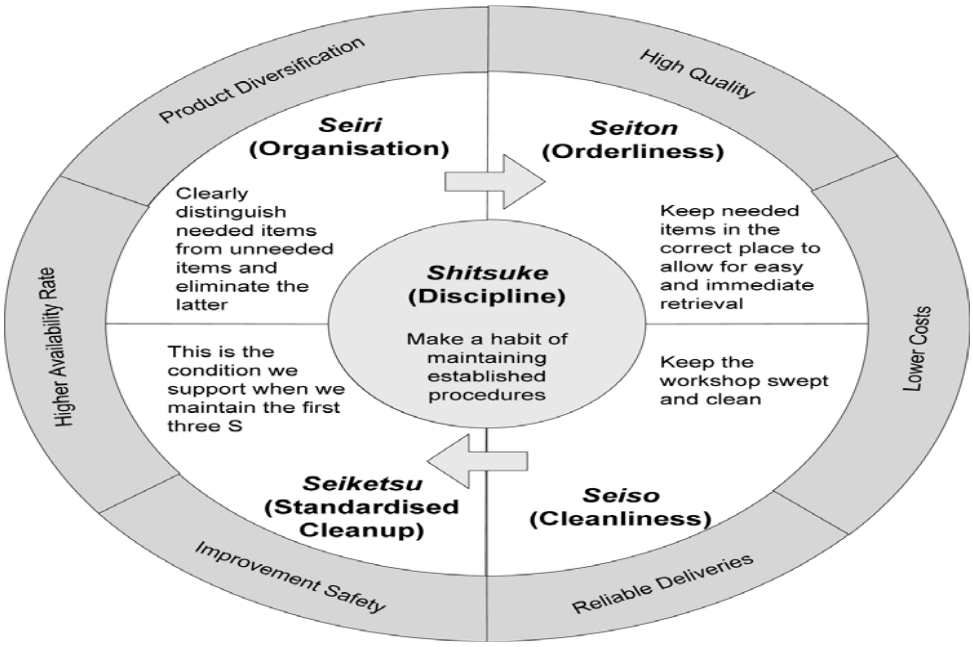

FIGURE 2.4: INTERRELATIONSHIP BETWEEN DIFFERENT 5S INITIATIVES

SOURCE:(TSUCHIYA,1999; THAWESAENGSKULTHAI, 2010).

2.9. Significance of 5S

The companies interested in experimenting with lean firstly prefer 5S as an entry point to get the good results (Anderson and Mitchell, 2005). 5S acts as a significant tool of lean which focuses on improving the workplace of organization by decreasing both waste and costs.

Several researchers have studied the importance of applying 5S tool as the first step of Lean Thinking in any organizations. For example, Lake (2008) found that 5S technique is an essential pre-requisite for implementing lean in any organization. Anderson and Mitchell (2005) found the companies interested in experimenting with lean firstly prefer 5S as an entry point to get the good results. Srinivasan (2010) suggests that 5S tool stands first in front of

other lean tools for the organization development because it is the easiest, effective, and simplest technique to implement in any organization. It is vital to note that an organization needs 5S for successful implementation of other lean tools in the workplace such as visual workplace, standardized work, visual inventory replenishment system, setup reduction, total productive maintenance, just in time manufacturing and poka yoke. However, Chapman (2005) found that the absence of lean 5S system makes the other lean tools ineffective. Hence, Rich et al. (2006) describe 5S and visual management as the foundation of lean implementation.

The first step of lean is to reduce waste by identification of the value from the customer's perception and arranging the creation of value by holistic 5S implementation by an organization

(Vannessa, 2007). Lean, supported by 5S, is an effective strategy for understanding sustainable

Organizational performance improvements since it efficiently reduces waste, human error, poor quality, scrap and customer complaints. It generally brings improvement in productivity and financial performance of the company (Steven, 2011). The concepts of 5S in lean design can be applied in a number of ways to help the organization in making overall process of design more efficient (Ho, 1999a; Deshpande et al., 2012).

Chaneski (2004) claimed that there are many perceived benefits of 5S implementation: improved cleanliness, less searching, decreased walking and motion, easier recognition of defects, fewer safety hazards and accidents, reduced downtime, improved flow, fewer

mistakes, better utilization of space and improved workplace visual management. These benefits add up to overall improvements in quality, productivity, delivery, cost, safety and morale.

To successfully implement other lean tools, such as visual inventory replenishment systems, standardized work, setup reduction and mistake proofing, TPM, just in time manufacturing, organizations need to address workplace issues that preserve waste in everything they do (Rojasra and Qureshi,2013). However, the practice of 5S increases transparency in an organization ensuring a good first impression of the workplace by visitors, particularly possible new customers.

Becker (2001) suggested that management commitment to 5S practice be best demonstrated by continuously evaluating the progress of 5S practice and showing visible support by leading. The most significant barriers, identified by Becker, for successful 5S implementation, included the gains the employees would receive and the need to shorten communication lines. According to Becker (2001), many organizations have been able to implement 5S effectively by starting an improved communication and participation system. While 5S progress may be slow in some organizations, many have found gradual change of manners and takeover of peer pressure.

Takhar (2004) has found several **benefits associated with 5S**. These include, inter alia, improved employee morale, fewer accidents, improved employee discipline, better inventory management, and a more impressive environment to show potential customers. However Takhar has warned that if the logic of 5S was not obviously understood by the supervisors

and managers responsible for its implementation, then the end message received by employees' could be seen as 5S being a weekly or monthly clean-up and, finally a waste of time. Warwood and Knowles (2004) have found that the 5S benefits included improvement not only of the physical environment, but also improvement of the thinking processes as well.

2.10. Success Factors for Implementation of 5S Methodology

- Top management contribution can create an environment that supports the implementation of 5S. Without the support of management, uncertainty and resistance would kill the initiative. Proper understanding, commitment and active involvement of the top management are necessary for implementation of 5S.
- Improved teamwork and communication are critical for elimination of barriers between the employees' and the top management (Khamis et al., 2009).
- There should be proper training (internal and external) for the whole workforce from top to bottom of the organization. This provides motivation to the employees' for continuous improvement.
- There should be a culture for team work, functional team and independent improvement of the team. Independent culture develops a practice of doing one's work.

However, Islam and Mustapha (2008) and Kaluarachchi (2009) have found that the critical factors for successful implementation of 5S, to guarantee good results for most government and private organizations, were influenced by employees' involvement, management

leadership, education, training and continuous improvement. This finding has been supported by Fotopoulus and Psomas (2010) and Parrie (2007) who also found that the top management support, as well as the employees' involvement in the 5S practice really contributed to the leveraging and sustaining of 5S practices and principle, which later influenced the organizational performance as a whole.

2.11. Obstacles in Implementing 5S Methodology

There is risk of 5S implementation since clumsy implementation can bring serious problems to company hurt credibility of management in front of employees' and make it difficult for later implementation.

Boyer and Sovilla (2003) have identified five obstacles that may hinder successful lean manufacturing. They are executive issues, implementation issues, management issues, cultural issues and technical issues. The common obstacles faced by many organizations in successfully implementing 5S program at workplace include the following:

- Lack of availability of resources.
- Lack of interest from the top management.
- Inability of top management to promote/imbibe team working initiatives.
- Lack of efficient communication mechanisms in the organization.
- Lack of in-service training for employees'.
- Lack of incentives for employees'.
- Absence of kaizen and team working attitude amongst employees'.
- some employees' belief that it is their job to focus on productivity, and not on organization or cleaning things.

Anderson (2013) also mentioned several difficulties. It may not be a good starting point in case of some serious performance limitations. And since 5S is tool without a suitable understanding of tool, it loses its effectiveness. Additionally, Dahlia (2008) cited two

disadvantages of 5S methodology: decrease in work productivity and lengthy implementation periods. Implementation of 5S methodology is prerequisite for implementation of TQM (Ahmed et al, 2005*)*, as part of TPS (Schonberger, 2007), as part of lean manufacturing (Herron and Braiden, 2006), and as part of six sigma implementations (Van Iwaarden et al, 2008).

Kulak et al. (2005) **argued that one** of the major reasons for failure in the lean journey is the "lack of institutionalization of 5S activities."

Furthermore, operators find it difficult to repeat standardized work to meet customer demand, and equipment setup times can often be severely increased in the absence of 5S implementation. The precious time is lost simply in searching and gathering the tools and supplies needed to perform the setup. It is not uncommon to realize as much as 30% reduction in setup time after applying 5S to a particular setup.

2.12. Areas for 5S application

Although the beginnings of the 5S methodology were in manufacturing, 5S concepts can also be applied to any sector or any business: manufacturing organizations, commerce, and service organizations, but few research studies on the 5S implementation in service sectors have been done.

Ghodrati et al. (2013) studied the impact of 5S implementation on industrial organization performance the purpose of his study was to identify the performance factors and characteristics in industrial organizations and find out the effectiveness of 5S implementation on organizational performance.

It was found that 5S implementation had a positive impact on performance of organization. The researcher concluded that 5S is a useful quality management tool which can improve performance in any organization.

Ghodrati et al. (2012) conducted review of 5S implementation in industrial and business organizations. The researcher reviewed previous studies on the benefits of 5S implementation and its efficiency in the organization. He found that 5S could support the objectives of organization to achieve continuous improvement in performance and productivity.

Based on the study findings, the researcher concluded that the most important barrier for implementation of 5S effectively was poor communication. Techniques of communication were rarely addressed in industrial workplaces. He described the importance of using an applicable way for 5S as an improvement tool for communication system. He also described another significant barrier: the space between managerial level and shop floor employees', and their poor training and awareness of 5S. He also concluded that 5S key of success is training. 5S implementation is not possible without proper training. Employees' are not capable of actively standardizing the 5S. It is crystal clear that the target of 5S application is vast and diverse and when effectively implemented, the business improvement can be surprising. However, the benefits of 5S can't be imagined or realized in industries and businesses until the barriers associated have been fully understood, addressed and removed.

Thakkar et al. (2014) also reviewed the implementation of 5S in different organizations. They elaborated on the methods and techniques of 5S use to increase the efficiency of all processes in organizations. It was found that training of workers about the 5S rules was very essential,They concluded that implementation of 5S system of rules leads to different effects regarding the improvement of quality such as tangible results within a short period of time

(2-3 weeks), Workers get used to order and discipline, Labeling draws attention to change that is about to occur, reduction of physical efforts, fewer accidents during the production process, increase of the worker's professional training and better organization of activities.

2.13. Authors' Opinions on 5S Technique

5S is practice which develops enjoyment, regard for others, and team working between the employees' by resolving the organization growth problems with cooperative effort. It also develops awareness of utilization and systematic organization for the efficient results from the workplace and act as solution for the survival of the company in the competitive world (Mendes-de-Toledo and Andde-Farias-Filho, 2001).

A lean material supply chain can be controlled in a position with the help of 5S (Bullington, 2003). A systematic methodology and specific lean thinking tools, like 5S, are suggested to identify value and to eliminate non-value adding processes (Folinas and Ngosa, 2013).

5S not only simplifies the work environment and decrease the wastage but also offers a safety improvement in the workplace (Krajewski et al., 2007; Korkut et al., 2009). It helps in providing order and control at the organization with the supervision of even smallest details of company (Erdal, 2007). Ho et al. (1995) have stated that 5S needs full employee involvement (TEI) at each level of the organization to make significant enhancement in organizational performance. Further, 5S calls upon strong commitment from top management to create continuous improvement and quality in an organization (Liker, 2004).

Problems such as wastage of time, disorder and cost, because of non-value added activities, lead to low productivity, long lead times, higher defects, frequent breakdowns of machines and hidden safety hazards. These can easily be decreased by holistic 5S implementation in the workplace. (Chapman, 2005; Chuanjie, 2013).

The implementation of 5S methodology not only plays an important role in the expansion of manufacturing sector, but it also makes amazing evolution in banking, hospitals, agriculture, mining and construction sectors (Gratiela, 2012; Aziz et al., 2014; Flynn and Vlok, 2015). It was also found that the practice of 5S has become the supporting activity or in some cases as a base foundation for the implementation of other lean tools such as TQM ,TPM, TPS, JIT, and ISO standards (Teeravaraprug et al., 2011; Chen and Tan,2013; Kushwaha, 2015).

Abramovitch (1994) concluded that when every employee from bottom to top works with sincere effort, this means 5S is implemented effectively.

Ho (1997) examined the purposes of having 5S technique in Japanese industries. He concluded that 5S practice was important because it facilitated work and made **the life of everyone good in the organization**. It was implemented successfully with help of top management, commitment, training of 5S, promotional campaign, evaluation of results and keeping of records.

Ho (1999b) studied the Japanese 5S philosophy, and believed it was the **starting point** for industrial managements since the name was unfamiliar for the Western countries.

These meanings were translated into their language to overcome the difficulty so that they could be effectively implemented in the Western firms.

Dosokai (2001) stated that the Indian industries have achieved a lot of **benefits** such as improved resources utilization, reduction of customer complaints and worker absenteeism, and worker morale through 5S initiatives in the workplace.

Becker (2001) identified the most **significant barriers** in the implementation 5S practice: lack of employees' involvement and lack of improved communication lines.

He concluded that the organizations were able to apply 5S successfully with the elimination of barriers, but the attitudes slowly changed because of the slow progress of 5S in some organizations. He suggested continuous evaluation of the progress of 5S program by the management to show strong evidence of their commitment to the program.

Brayer and Walsh (2002) implemented 5S **technique in the office** of the Mast International Group (Australia) in order to relive the value of TQM with the practice of 5S. The outcomes of the study revealed that the organization realized significant improvements, which helped in development of learning for the support of 5S practice in other universal groups.

Patra et al. (2005) examined the implementation of office TPM initiative in conjunction with 5S methodology to achieve performance improvement benefits in the Indian Institute of Production Management (IIPM) library in Orissa, India.

Maddox (2006) stressed the need of leadership and **commitment of management** for the 5S program. In his opinion, they are the most important requirements for 5S application in an organization.

Maggie (2006) found that 5S practice had widespread applications in the various **sectors of organizations**. He shared his experiences of 5S implementation with the library of university, where 5S practice developed a strong relationship due to the full involvement of all staff members, it developed a framework environment for visitors and employees'.

Moreira et al. (2008) applied the 5S practice to maintain the dynamic and complex system of digital libraries. The authors developed 5S Qual tool which makes automatic assessment **to avoid problems before they occur**. It is appropriate to digital libraries and sceneries due to its generic architecture.

Khamis et al. (2009) examined the 5S implementation process and progressed 5S activity checklist for manufacturing organizations. The authors concluded that 5S could develop a whole organization in an integrated holistic way. They found that most significant obstacles of 5S implementation were inadequacies of training programs and poor communication between top management and shop floor employees'.

Goetsch and Davis (2010) believed that top **managements** have to play a vital role in order to realize the importance of 5S technique in the organization between their subordinates. The dedication and commitment of the employees towards implementation of 5S program can

only be built on the promotion and proactive behavior of the top management toward 5S technique.

Ho (2010) studied an integrated TQM model to overcome the damages caused by oil crises and realize global sustainability. The development **of lean 5S checklist** by the author aimed to reduce down the financial problems and minimize wastages of all sorts. He concluded that integrated Lean TQM model could help in global oil energy consumption.

Gnanaguru et al. (2011) explored the **implementation of 6-S process** improvement in aeronautical industry. The authors stated that 6-S (5-S and sixth 'S') are counted as the foundation of all the improvement activities like TPM, TQM, Lean, etc.

Hunglin (2011) implemented the principles of 5S in Wang Chen manufacturing company in order to organize the tools, improve the work environment and efficient productive process. The study showed that the 5S implementation led to reduction in time waste by 49% and provided more productive time to meet the customer's demands along with good profits.

Sorooshian et al. (2012) found that the 5S **concept strengthened and facilitated team** work, productive environment, discipline, and ongoing commitment. It also maintained excellent services with involvement from top to bottom level management.

Putro (2013) reported that with the application of 5S in Bengkel ABC, there was about 30,200 cm2 more space available for the organizing spare and waste in the organization. The author

concluded that **5S technique helped in the efficient utilization of workspac**e and provided immediate return within 48 days on its investment after applying the 5S program.

Pasale and Bagi (2013) found that the practice of 5S technique in small scale manufacturing industries resulted in **enhancement o**f efficiency of production system from 67% to 88% within a few weeks.

Rojasra and Qureshi (2013) argued that the application of 5S program in Indian economy could play a significant role in industrial production with 33.33% of export revenue and employment. It is vital **to apply the basic lean tool** (5S) in small scale industries for their progress. They concluded that application of 5S in (SMES) could bring a very important improvement (88.8%) in production system within sequential weeks.

Singh et al. (2013) tested the application of TPM in a machine shop. The success of TPM implementation was measured by the overall equipment effectiveness. The authors concluded that the success of total productive maintenance depended upon various pillar like quality maintenance, 5S, kaizen and office TPM.

Kennedy et al. (2013) argued that the popularity of lean tools were not limited to automotive manufacturing sector; they **effectively** adopted in the processing industries. Lean tools such as 5S, visual management, and single minute exchange of dies (SMED)...,etc. generated overall improvement in production and quality.

Jain et al. (2014) maintained that 5S tool could bring important improvement in the medium size organization in terms of productivity, quality and work culture.

Khanna and Gupta (2014) told the story of a company, located in Jaipur, India, which changed its poor condition after practice of 5S. The company changed its image and made enormous benefits and thereby helped itself in receiving the Forbes Asia top 200 under billion awards in November 2012.

Patel and Thakkar (2014) described the uses of 5S in different organizations. They showed how 5S technique extremely changed the image of a company in terms efficiency, quality, cost reduction, security, effectiveness and safety, the authors concluded that it is very important to provide in-service training for employees' on the use of the 5S technique.

Gupta and Jain (2015) believed that the 5S is an influential tool which can be applied in different industries: micro, small, medium or large. The authors found that the implementation of 5S **reduced the searching** time from 30 minutes to 5 minutes and made the workplace **efficiently productive**.

Sánchez et al. (2015) examined that the implementation of 5S at SMEs in Bogota, Colombia. They found that its implementation considerably improved the quality (44%), productivity (44%), organizational climate (52%) and reduction of risk (90%).

Also there were studies which examined the importance of implementing 5S tool. Patel Thakkar (2014) found that 5S implementation could improve employees' performance and organization's productivity. This is because implementing 5S reduces mistakes and accidents in the workplace, thus developing good working condition. Shaikh et al. (2015) maintained that 5S is a system which reduces work and optimizes productivity and quality through maintaining an orderly work-place. Al-Musadieq (2018) believed that work design and organizational culture can influence work motivation which in turns influences employees' work and condition and environment thus making him/her perform his/her responsibilities comfortably.

2.14. Review of Research on Implementation of 5S in Service Sector

Yadav et al (2011) examined implementation of 5S in banks. The aim of their study was to have a deep understanding of how to develop an environment that only includes the required items, effective working environment and how to eliminate hidden waste to improve the levels of safety and quality in the work place. A clean, systematic and organized workplace decreases waste directly and accordingly impacts productivity, costs, quality and other factors. All these factors get affected after implementation.

A.M. Văduva (2011) addressed change and implementation of lean in different parts of businesses with special emphasis on 5S implementation in the banking sector.

S. Erdem and K. Aksoy (2009) studied Turkey's banking sector to avoid or reduce waste by means of lean methods. The authors found that the basic operational expenses could be reduced while maintaining a high level of satisfaction among customers.

F.Y.F. Young (2014) reviewed the use of 5S in healthcare services. He concludes that the application of 5S in the health sector could be rewarding financially.

S.P. Kaluarachchi (2009) detailed how the TQM application at Sri Lankan public hospital was adopted to replace its culture. The study revealed that the change in the cultural values of the hospital was made as a result of implementing of the Japanese 5S based TQM activities. Successful TQM application in the hospital contributed to the rise of its service performance.

W. Ulhassan (2014) studied the characteristics of lean implementation at a Swedish hospital. The author noticed how employees' involvement in the lean implementation decreased the negative effects of psychosocial work factors. He was concluded that lean improved and developed the work environment conditions of health care professionals.

Furthermore, D.A. Gürel (2013) analyzed the application of 5S in the hotel industry. He found that the existence of hotels largely depended on increase of quality, service and value which in turn depended on improving service production. The author concluded that 5S is a precious business model.

S. Maidhili et al. (2014) described in detail the different aspects of 5S. The study of 5S involved people through the use of discipline and standards. The study found that 5S created space for better utilization of library resources and services

D.S. Uma and A. Kannan (2010) examined the implementation of 5S concept in human resource departments. They found that 5S program was the main component of establishing a visual workplace.

Y. Johana et al. (2014) studied the differences in attitudes between administration staff after the implementation of Quality Environment (QE) /5S. They also tried to understand if the process could provide better services to the client. They looked at the improvement necessary to be done to ensure the sustainability of QE/5S in the workplace. They concluded that the application of 5S in the workplace could allow improvement of safety, productivity, work efficiency, and a sense of belonging among the administrative staff.

Furthermore, Z. Radnor and G. Bucci (2011) reviewed the main findings of an independent analysis of the implementation of the Lean improvement methodology in business schools and universities in the United Kingdom. They found that lean expanded outside manufacturing and became an improvement methodology firstly in the service sector and more recently in public sector organizations/ institutions this was in addition to improvement of efficiency and customer value.

Also, P. Rai (2016) researched into the effectiveness of 5S application in varied industries He focused on employees' performance and their attitude towards 5S. One of his findings is that 5S is an effective tool for the progression of organizational performance, regardless of organization size, type (production or service). 5S technique has strongly supported the objectives of organization to achieve higher performance and make continuous improvement. It was found that 5S is a useful quality management tool that has the potential to improve employees' performance in any organization.

Finally, MG. Kanakana (2013) investigated whether application of lean manufacturing principles in the service sector was possible and whether the service organizations that have

implemented these principles have expanded after utilizing the methodology or not. The researcher found that although the methodology was designed for manufacturing industries, the service industries could benefit from the application of the 5S principles. It was found that the implementation of the lean principles could achieve increased customer satisfaction and organizational competitiveness.

2.15. 5S Tool in Arabic Countries

In the Arab context, there are some studies that have addressed 5S and lean thinking.

In this regard, Kelendar, H et al. (2020) examined the potential for implementation of lean management in Kuwait's HCS. The authors found that lean had the potential of implementation in health care setting.

Patient flow; narrow technical application with limited organizational reach; superficial input from patients. The authors also found that lean was not explored in primary healthcare environments and there was a deficiency in projects within developing countries, thus driving them and organizations to start further research on the use of lean in healthcare. Based on their findings, the authors recommended adoption of lean in Kuwait healthcare settings to improve the flow of patients with diabetes in primary healthcare.

Shurrab, J., & Hussain, M. (2018) suggested a conceptual framework for the exploration of suitable lean techniques applicable to medium and large construction companies. They measured their impact on the economic performance and competitiveness of construction companies in the United Arab Emirates. The researchers found 21 lean techniques used in

the construction industry. These techniques were categorized into six types of lean core values. Process focus was found to be the most practical type of construction core value in the surveyed companies. It is essential to focus on applying other core values as this would leave a positive impact the company's economic performance.

Al-Hyari, K et al. (2016) investigated the impact of Lean bundles on hospital performance. The researchers found that JIT reduced wastes, generated in the process, and the required time from patients and processed materials, thus ensuring greater productivity, it also forced hospitals to deal with suppliers, service providers, and customers all over the world.

The researchers recommended that the tools of lean bundles be used efficiently to reduce time, effort, and resources required for improvement in the health care sector. They also suggested public policymakers in Jordan increase their awareness of lean bundles, concepts, and benefits to improve service quality and optimization of hospital performance in the country.

The researchers also recommended that the hospitals have effective leadership at the top and at the middle management levels to overcome all obstacles facing the accomplishment of lean bundles objectives. Moreover, the top management in the healthcare sector should empower and educate staff to engage all the employees' in the process.

Ezzeddine, R., & Aoun, M. (2020) studied the effect of the 5S-quality approach on employees' performance in some Lebanese hospitals. Based on a quantitative approach, the researcher found that 5S significantly and positively affected employees' performance except for Sort. They recommended that the employees be formally informed through guidelines on

how to sort the items and receive necessary training on how to take action and make operations easier and more accessible. They also recommended to managers make employees' more involved in establishing the quality standards since they are more in touch with workplace operations.

2.16. 5S Tool in Palestine

In the Palestinian context, there are several studies which have examined 5S and Lean Thinking, but most of them have focused on manufacturing more than services. One Attallah, (2018) explored the impact of Lean Thinking implementation on healthcare performance in order to adopt Lean thinking in medical design and construction industry in Gaza strip. The author found an important correlation between healthcare organizations' performance and other factors such as readiness factors, lean benefits, lean rank, and critical success factors, lean challenges and difficulties. He also found no significant relationship between the readiness level for lean implementation and lean challenges and difficulties.

Abu Obaid, (2016) examined the factors behind the successful implementation of lean-management and planning systems as well as human, organizational and contractual factors. The author identified lean key performance indicators that measured this successful implementation. He revealed the management commitment and excellent leadership, human, organizational and contractual issues played vital role in successful lean implementation.

Abu Shaaban (2012) investigated and analyzed the production wastes in the Gaza Strip factories. The aim of his study was to promote lean thinking through studying the seven

wastes targeted by the lean manufacturing philosophy. He found that lean manufacturing (waste elimination) affected the factories positively It decreased the production cost for the manufacturing industries The author recommended the training of all employees' in all managerial levels to promote the practice of lean thinking (waste elimination).

In the light of reviewing the previous studies, the researcher has found, within the limits of her knowledge, no literature in Palestine and the West Bank in particular on assessment of the effect of the 5S tool on employees' performance especially in the public sector. She also has not found any study on the performance of employees' in Ministry of Finance, this study is expected to fill in the gap and contribute to increase of the knowledge on implementation of the 5S tool in the service sector. It will also. Contribute to the knowledge of the importance of implementation of 5S and steps that need to be taken in order to implement its principles to make a better workplace environment in the future

Chapter Three: Research Methodology

3.1. Overview

This chapter covers the research design, population, sample size, data collection, questionnaire design and content, instrument validity, pilot study, and methods of data processing and analysis.

3.2. Research Strategy

The research strategy presented a general plan for what and how data must be collected and how the results would be analyzed. The selected research plan affects the type and the quality of collected data (Ghauri and Grønhaug, 2010). To answer the research questions and test hypotheses about adoption of Lean Thinking starting with the implementation of the 5S practices by the Ministry of Finance's employees to these two ends, a quantitative survey approach has been used.

3.3. Research Timeframe

The study commenced in Jan 2021.The literature review was completed at the end of Jan 2021. Testing of validity, pilot study questionnaire administration and data collection were completed at the beginning of March 2021.

Data analysis, discussion, conclusions, and recommendations were completed at the end of May 2021.

3.4. Framework of the Research Methodology

Research can be conducted very professionally when it is well organized and planned (Olivier, 2004). It is important how to get the necessary information and to be reliable at the same time. As Johnson and Clark (2006) maintained: “As business and management researchers, we need to be aware of the philosophical commitments we make through our choice of research strategy since this has a significant impact not only on what we do but we understand what it is so we are investigating”. Therefore, it is worth to know and plan for the research strategy. To have a complete and reliable answers to the research questions, it is necessary to collect information from different primary and secondary sources and use effective observation techniques.

Saunders et al (2008) classified research into six layers and labeled the model which presented them as the ´Research Onion Model. This model includes the philosophies, approaches, strategies, choices, time horizons, techniques and procedures.

The main idea of this ‘Research Onion Model’ is to present a clear outline for the most suitable methods and strategies when starting research. It provokes knowledge and gives ideas to find an answer to a research question. For every research question, the principles of the ´Research Onion Model´ will be used in a general way.

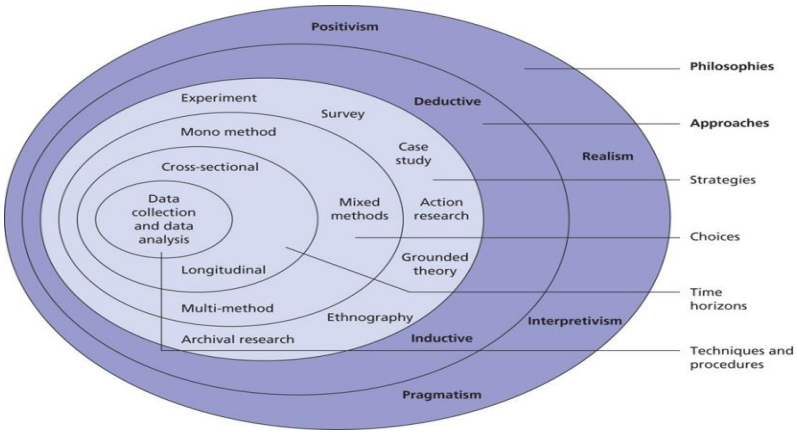

FIGURE 3.1: RESEARCH ONION MODEL

SOURCE: SAUDERS ET AL (2008).

A comprehensive methodology, with development of questionnaires, validation of survey instruments, and collection of data, has been designed for this study.

3.5. Design of the Study

This research was carried out by using a mixed-method approach, (qualitative and quantitative). Data collection techniques and analysis procedures were used in this research design. According to Creed, Freeman, Robinson, and Woodley (2004), in the mixed-method approach, quantitative and qualitative data collection techniques and analysis procedures are used either at the same time or one after another but does not combine them. This implies that, by using this approach, quantitative data of the study are analyzed quantitatively while qualitative data are analyzed qualitatively (Sauders, Lewis & Thornhill, 2009, p.153).

The mixed-method research approach was chosen for this study because it allows the researcher to have better opportunities to answer the research questions and to better evaluate

the extent. The research findings can be trusted and inferences made from them (Johnson, Onwuebuzie & Turner, 2007; Saunders, Lewis & Thornhill, 2009, p.154). This means that the findings from a primarily quantitative study can be better understood when complemented by a qualitative narrative account (Rusli & Hasbee, 2011, p. 134).

As this study is carried out, using the mixed-method approach, both qualitative and quantitative methods are explained in this chapter. For the quantitative method, the researcher administered the questionnaire to randomly selected participants. The quantitative method is where inferential statistics are used to analyze and determine the relationship between the independent variable and dependent variable. Through qualitative methodology, it can help the researcher to have a deeper and a better understanding of how things happen and of those variables in the study (Rusli & Hasbee, 2011, p.127)

3.6. Research Location

The research was carried out in the headquarters of the Ministry of Finance, Ramallah, Palestine. The ministry has nine departments: IT, Customs and Taxes, General Accountant, Cash, Audit, Accounts, Payroll and Administration and Finance.

A group of employees of both gender, working in the nine departments, was randomly chosen to participate in this study

3.7. Research Population, Sample and Sampling Procedure

Population and sample were very important in this study as they provided critical information or inputs which the researcher used to make inferences. A population can be described as a

complete set of group of people that the researchers use in conducting their research (Yount, 2006).

In this study, the population consisted of all employees' working in the headquarters of Ministry of Finance.

For the quantitative method, the samples were drawn from the population, using a simple random sampling technique. The simple random sampling is a probability sampling that enables the researcher to select the sample randomly from the sampling frame.

According to Rusli and Hasbee (2011, p.161), simple random sampling is best used when the researcher has an accurate and easily accessible sampling frame that lists the entire population. By using simple random sampling, each respondent from a group of employees' will have the same probability of being chosen at any stage during the sampling process in this study. The main advantage of using simple random sampling is that it enables the researcher to select the sample without bias. The sample selected can be representative of the whole population. Furthermore, this type of sampling procedure is also easy to understand and apply in research activities.

In getting an accurate number of samples under the simple random technique, there is a suitable formula proposed by Herbert Arkin (1974). It is used to calculate and obtain the minimum sample size. In this case, and since the population of this study is represented by the total number of Ministry of Finance's employees who works in the headquarter (594 employees), the researcher believes that the size of population of the study should be between 550-600, so according to Herbert the best sample size should be between 226-234. Therefore, the sample size has been limited to 234 employees' However, in order to obtain a desired and

correct sample size, the researcher administered the questionnaire to 300 employees' to obtain good and reliable results.

Thus, the formula to find the sample size is,

$n = P(1-P)/(E/Z) + [P(1-P)/N]$

n = required sample size.

Z = Confidence coefficient, used to determine the precision interval, represents the number of standard errors along the horizontal axis about the mean under the normal distribution (1.96)

N = the population size.

P = the population proportion (assumed to be .50 since this would provide the maximum sample size).

E = the degree of accuracy expressed as a proportion (.05).

Furthermore, the researcher also used the qualitative approach, as she conducted several unplanned interviews while administering the questionnaire since this topic was unfamiliar to the ministry employees'. The researcher had to explain some issues to familiarize the employees with this topic (5S and lean tools). This sampling technique later helped the researcher to answer all the research questions as well as to meet the objectives of this study.

3.8. Instruments of the Study

The instruments used in this study were based on both the quantitative and qualitative research approaches.

1. A questionnaire based on the objectives of the study

2. Unstructured Interviews: a less formal set of questions

3.8.1. Questionnaire Design

The initial questionnaire draft was designed to be revised depending on the pilot results. The questionnaire framework was modified and refined by the supervisor and six referees. The questionnaire included a cover letter explaining the aim of the research, the confidentiality of the information to encourage a high response rate and the way of responding.

The variety of the questions aimed at meeting the research objectives, covered the main domains of the study, and allowed the researcher to collect all the necessary data to support the study findings, discussion as well as its conclusions and recommendations.

The questionnaire was divided into three sections: Section A, Section B and Section C.

Section A: Demographic Information

Section A mainly contained the demographic characteristics: background information about the participants. This section has six items: gender, age, position, educational level, experience in the Ministry of Finance and departments

Section B: Effect of Implementing 5S Tool in Promoting Employees' Performance According to Employees' Perspective

This section consists of five subsections. In this section, the researcher used the five- point Likert Scale to obtain the participant's preferences or degree of agreement with a set of statements constructed in the questionnaire. In addition, this allowed the participants to have

wider choices of answers. The neutral option can be seen as an easy option to take when a participant is unsure of the statement that is constructed in the questionnaire set.

- The first subsection consisted of ten statements that measured the ministry employees' readiness for implementation of the 5S tool.
- The second subsection consisted of ten statements which measured the ministry employees' desire of contribution to implementation of the 5S tool.
- The third subsection consisted of ten statements which measured the ministry employees' awareness of implementing the 5S tool.
- The fourth subsection consisted of ten statements which measured the ministry employees' performance.
- The fifth subsection consisted of nine statements which measured the workplace environment in the ministry.

Section C – Open-ended Question (optional)

The use of open questions was designed to encourage the participants to provide an extensive and developmental answer. Two samples of open questions in this study were what are the most important obstacles that you face in your workplace? And what are the possible solutions to get rid of these obstacles?

Table 3.1: Sample of Likert Scale used in the questionnaire

TABLE 3.1: LIKERT SCALE

Score	Responses
1	Strongly Disagree
2	Disagree
3	Neutral
4	Agree
5	Strongly Agree

This type of questionnaire has the following advantages:

1. It is easy to compare the results or outcomes of the research between employees' in different departments as the questions have been structured.
2. Respondents will not be influenced by the researcher.
3. It is easy to analyze the collected data, using the Statistical Package for Social Sciences (SPSS).
4. The respondents are given more time to answer the questionnaire.

3.8.2. Pilot Study

A pilot study can be defined as a small experiment designed to gather information prior to a larger study and to test logistics in order to develop the latter's quality and efficiency (Altman et al., 2006; Woken, 2002).

For the quantitative data, the purpose of conducting a pilot study is to ensure that the expectations of the researcher, in terms of the information that will be obtained from the questionnaire, are met (Aaker & Day, 1995, as cited in Rusli & Hasbee, 2011, p.141). In addition, piloting on the questionnaire will also help the researcher to identify the reliability

of the measurement scale used in the study before doing the actual study and to measure the validity of the data or scores. According to Foster and Cone (2006), the validity of scores is the extent to which scores on a measure are related to scores on other measures.

In this research, a pilot study was conducted after the survey questionnaire had been approved by the supervisor and referees. The questionnaire in this study was verified in terms of the language or statements used, their appropriateness and suitability. In other words, the statements should be formulated in a polite and soft language (Ghauri et al., 1995, as cited in Rusli & Hasbee, 2011, p 137). In addition, the questionnaire had two versions: Arabic and English. It is believed that translation can iron out errors and distortions (Rusli & Hasbee, 2011, p.141).

In order to conduct the pilot study, the researcher administered questionnaire to 40 participants. This means that 40 employees' have been involved in determining the reliability of the study questionnaire.

The reliability and validity of the questionnaire were analyzed, using the Cronbach Alpha technique and Statistical Package for Social Science (SPSS) Version 21. According to Yu (1979) and Santos (1999), Cronbach Alpha is a measure of the squared correlation between observed scores and true scores. Cronbach's Alpha is also a measure of internal consistency, and it is well known that a reliability alpha coefficient of 0.70 or higher is considered acceptable in most social science research situations (Santos, 1999). The purpose was to ensure the items in the questionnaires were consistent and were measuring the variables of the study (Sekaran, 2000).

Based on the Cronbach's Alpha values, as Table 3.2 below shows, it can be said that all subsections in the questionnaire had exceeded the value of 0.7. This indicates that these subsections had met the standard of reliability and all the statements constructed within these subsections were reliable.

Thereby, it can be said that the researcher has proved that the questionnaire was reliable, valid, and ready for administration to the population sample

TABLE 3.2:CRONBACH'S ALPHA VALUE

Sections	Cronbach's Alpha Coefficient Values
Employees' readiness for Implementation of 5S tool	0.935
Employees' Desire of contribution to implementation of 5S tool	0.932
Employees' awareness of implementation of 5S tool	0.913
Employees' performance	0.929
Clean workplace environment	0.854
All items	0.966

3.8.3. Data Collection Method and Procedures

Two types of data collection methods were used in this study. The first type was primary data and the second type was secondary data. The primary data was used by the researcher to collect data, using a questionnaire and interviews. The secondary data were depended basically on books, journal articles.

For the quantitative part, the researcher administered a questionnaire directly to the ministry participants after getting the approval from general director of each department.

After its administration, questionnaire was collected over a three- week period. Then, the researcher had to recheck the number of the completed questionnaire forms.

3.8.4. Data Analysis Technique

The data analysis technique for the mixed-method approach involved several processes and techniques.

For the quantitative method, the research data were screened and analyzed through descriptive and inferential statistics, using the Statistical Package for Social Science (SPSS) version 21.

Before the quantitative data were analyzed to test their significance to the research hypotheses, the data were screened to ensure that they were entered correctly. The data screening technique is known as part of the data cleaning process in the quantitative method. The probability of errors in data entry is common, and therefore, data files were carefully screened. To check if data had been entered correctly, the data were screened, using the frequencies or descriptive commands within the descriptive statistics method. The data screening results indicated that there were no missing values in each variable. Thus, this implies that there were no data losses or biases

On the other hand, the demographic profile (as shown in Section A of questionnaire) was analyzed, using descriptive statistics. Descriptive statistics were used in this study to summarize and make some general observations about the collected data (Coakes & Steed, 2007, p.51). The overall demographic profile of the participants was explained in the form of percentages and frequencies.

In order to test the research hypotheses, the researcher used inferential statistics. The researcher also used the Pearson Correlation test to find out whether there was a significant relationship between two variables (Coakes & Steed, 2007, p.58). In identifying whether the

research hypotheses tested, using this technique, were significant or not, the researcher was primarily concerned with the significance level represented in the "correlation" column output. If the significant "Sig." value was equal to $p = 0.00$ or less than 0.05 ($p < 0.05$), then the researcher could conclude that the alternative research hypotheses were accepted or failed to be rejected.

So, to identify the strength of the relationship between the variables, the Pearson Correlation coefficient was used. When using Pearson Correlation in analyzing the data, the strength of the relationship was identified by looking at the value of "r" as shown in the Pearson Correlation table. Normally, the sign of the correlation coefficient indicates the strength of the relationship or the degree of association between two variables. However, if there is no relationship, the correlation coefficient will show a value of zero.

Table 3.3: Adapted from Muchinsky (1993), this table shows the strength of the relationship between the independent and dependent variables.

TABLE 3.3: PEARSON CORRELATION VALUE

Value of "r"	Strength of relationship between variables
0.00-0.20	Very low or no relationship
0.21-0.40	Low relationship
0.41-0.60	Moderate relationship
0.61-0.80	High relationship
0.81-1.00	Very high relationship

(Source: Muchinsky, 1993)

On the other hand, Table 3.4 presents a summary of data technique analysis used to analyze each of the research objectives of study.

TABLE 3.4: SUMMARY OF DATA ANALYSIS TECHNIQUE

Research Hypothesis	Data Technique Analysis
1. Demographic Variable	Descriptive Statistics (Frequency and Percentage)
2. There is a significant relationship between employees' readiness for implementation of the 5S practices and promotion of employees' performance.	Pearson Correlation
3. There is a significant relationship between employees' desire of contributions to implementation of the 5S practices and promotion of employees' performance.	Pearson Correlation
4. There is a significant relationship between employees' awareness of 5S practices and promotion of employees' performance.	Pearson Correlation
5. There is a significant relationship between clean workplace environment and promotion of employees' performance.	Pearson Correlation

Chapter Four: Data Analysis and Discussion

4.1 Overview

This chapter is devoted to data analysis, hypotheses testing and discussion of the study findings. Data have been analyzed, using SPSS V.21 including descriptive and inferential statistical tools.

This chapter also covers quantitative analysis of questionnaire, and testing of the research questions and research hypotheses.

4.2. Demographic Characteristics of Participants

The questionnaire of the study was administered to 300 Ministry of Finance's employees' working in its Ramallah headquarters. The researcher was able to collect 260 copies questionnaire, 235 were fully completed.

TABLE 4.1: OVERALL FREQUENCIES FOR DEMOGRAPHIC VARIABLES OF PARTICIPANTS

Items	Valid	Missing
Gender	235	0
Age	235	0
Position	235	0
Educational Level	235	0
Experience in Ministry of Finance	235	0
Departments	235	0

All the demographic variables were valid with no missing values.

Table 4.2 shows the demographic characteristics of participants.

TABLE 4.2: FREQUENCIES, PERCENTAGES OF DEMOGRAPHIC VARIABLES OF PARTICIPANTS

Demographic Data	Frequency	Percent
Gender		
Male	115	48.9%
Female	120	51.1%
Total	235	100.0%
Age		
Less 30yrs	71	30.2%
30yr –less than 40yrs	93	39.6%
40yr –less than 50yrs	57	24.3%
50yr –less than60yrs	14	6.0%
Total	235	100.0%
Position		
Employees	101	43.0%
Division Head	15	6.4%
Heads of Department	60	25.5%
Managers	50	21.3%
General Directors	9	3.8%
Total	235	100.0%
Educational level		
Diploma or less	17	7.2%
Bachelor	175	74.5%
Master's degree	43	18.3%
Total	235	100.0%

Demographic Data	Frequency	Percent
Experience in Ministry of Finance		
Less than 10yrs	98	41.7%
10-less than 20yrs	101	43.0%
20-less than 30yrs	34	14.5%
30yr-less than 40yrs	2	0.9%
Total	235	100.0%
Department		
IT	23	9.8%
Customs and Taxes	34	14.5%
General Accountant	22	9.4%
Cash	29	12.3%
Audit	21	8.9%
Accounts	28	11.9%
Budget	32	13.6%
Payroll	24	10.2%
Administration and Finance	22	9.4%
Total	235	100.0%

Table 4.2 is a summary of the demographic characteristics of the participants. It contains six variables. The first variable is gender. Female employees' represented 51.1% of the participants. Around 39.6% of them were between 30 to less than 40 years old. This table also shows that 43.0% of the participants had diplomas Holders of a Bachelor degree represented 74.5% The majority of the participants (84.7%) had less than 20 years of experience. All ministry departments had approximately the same rate of participation.

4.3. Non-parametric Test

Non-parametric methods are commonly used for studying populations that take on a ranked order. The use of non-parametric methods may be essential when data on ordinal scale or data have a ranking but no clear numeric clarification. Non-parametric methods make fewer assumptions; their applicability is much wider than the corresponding parametric methods. In particular, they may be practical in situations where little is known about the application in question. Also, due to the dependence on fewer assumptions, non-parametric methods are more successful. Another reason for the use of non-parametric methods is simplicity.

4.3.1. Sign Test

This test was used to determine if the mean of a statement was significantly different from a hypothesized value 3 (Middle value of Likert scale). If the P-value (Sig.) were smaller than or equal to the level of significance, $\alpha = 0.05$ then the mean of the statement would be significantly different from a hypothesized value 3. The sign of the Test value indicates whether the mean is significantly greater or smaller than a hypothesized value 3. However, if the P-value (Sig.) were greater than the level of significance, $\alpha = 0.05$, then the mean of the statement would be insignificantly different from a hypothesized value 3. However, in this study, the level of significance was less than 0.05 this means all statements were significantly different from a hypothesized value 3.

4.3.2. Mann-Whitney Test

This test was used to examine if there was a statistically significant difference between two means among the participants, pertaining to their readiness for, contribution to, awareness of

and clean workplace environment implementation of the 5S practices among Ministry of Finance employees, which could be attributed to gender variable

4.3.3. Kruskal-Wallis Test

This test was used to find out if there was a statistically significant difference between several means among the participants, pertaining to their readiness for, contribution to, awareness of and clean workplace environment implementation of the 5S practices among Ministry of Finance employees', which could be attributed to age, position, educational level, experience , and nature of department variables.

TABLE 4.3: READINESS FOR IMPLEMENTATION OF THE 5S PRACTICES ACCORDING TO DEMOGRAPHIC DATA

Readiness for implementation of the 5S practices	***M***	***S.D***	**Readiness for implementation of the 5S Practices**	***M***	***S.D***
Gender			**Experience in Ministry of Finance**		
Male	4.02	.79	Less than 10yrs	4.25	.91
Female	4.21	.75	10-less than 20yrs	3.98	.68
Age			20-less than 30yrs	4.15	.52
Less than 30yrs	4.22	.95	30-less than 40yrs	4.25	.35
30 –less than40yrs	4.02	.72	**Departments**		
40-–less than 50yrs	4.10	.63	IT	3.75	.61
50- less than60yrs	4.27	.56	Customs and Taxes	4.10	.85
Position			General Accountant	4.14	.70
Employee	4.23	.88	Cash	4.20	.52
Division Head	4.12	.93	Audit	3.90	.89
Head of Department	3.98	.73	Accounts	3.92	.98
Manager	4.04	.54	Budget	4.36	.66
General Director	4.20	.55	Payroll	4.44	.42
Educational level			Administration & Finance	4.16	.99
Diploma or less	4.36	.96			
Bachelor	4.07	.79	**Overall mean**	**4.13**	**0.72**
Master's degree	4.19	.62			

Table 4.3 shows the employees' readiness for implementation of the 5S tool based on gender, age, position, educational level, experience, and ministrys' departments. The 'mean value' column was used to determine which category was really serious and ready for practice of the 5S tool.

The researcher noticed the female employees' had a high mean (*M=4.21*) which indicates they had a higher readiness for implementation of the 5S practices than their male counterparts. However, we can see that all the employees' regardless of age had a high readiness for implementation of the 5S practices. The general directors and employees' in particular had a high readiness for implementation of the 5S practices.

Pertaining to the educational level, the researcher found that all employees', despite their educational level, had a high level of readiness for the implementation of the 5S practices in their workplace. She also found that all the ministry employees', regardless of their experience, had the same level of readiness to implement the 5S practices. The Payroll and Budget departments were found to be the most serious departments in terms of their readiness to implement the 5S practices as opposed to others departments.

TABLE 4.4: AWARENESS OF IMPLEMENTING THE 5S PRACTICES ACCORDING TO DEMOGRAPHIC DATA

Awareness of implementing the 5S practices	*M*	*S.D*	Awareness of implementing the 5S practices	*M*	*S.D*
Gender			**Experience in Ministry of Finance**		
Male	3.91	.74	Less than 10yrs	3.97	.80
Female	4.04	.67	10-less than 20yrs	3.90	.65
Age			20-less than 30yrs	4.15	.52
Less than30yrs	3.93	.87	30-less than 40yrs	4.25	.49
30 –less than40yrs	3.98	.65	**Departments**		
40-less than 50yrs	3.96	.62	IT	3.96	.52
50-less than 60yrs	4.22	.50	Customs and Taxes	3.87	.73
Position			General Accountant	4.14	.70
Employee	3.94	.79	Cash	4.03	.57
Division Head	3.81	.89	Audit	3.60	.76
Head of Department	4.01	.63	Accounts	3.83	.97
Manager	4.01	.59	Budget	4.11	.65
General Director	4.34	.24	Payroll	4.11	.51
Educational level			Administration & Finance	4.16	.99
Diploma or less	3.84	.87	**Overall mean**	**4.00**	**0.66**
Bachelor degree	3.98	.71			
Master's degree	4.03	.65			

Table 4.4 shows the awareness of implementing the 5S tool according to on gender, age, position, educational level, experience, and ministry department. The 'mean value' column was used to find out which category was really serious and had a high level of awareness of practicing the 5S tool.

The researcher noticed that the female employees' had a high mean (*M=4.04*). This indicates the female employees' awareness of implementing the 5S practices was higher than male counterparts' awareness. Maybe because females by nature pay more attention to cleaning

and organizing. Moreover, the old employees' had a high level of awareness to implement the 5S practices. Therefore, their resistance to change will decreased. It was also found that the general directors and managers also had a high degree of awareness to implement the 5S practices. This increases the commitment to implement the 5S practices. The top managers' awareness is likely to influence other employees' and encourage them to be more aware of these practices.

Regarding the educational level, the researcher found that all employees', despite their educational level, had a high level of awareness to implement the 5S practices, the researcher found that the employees' who had longer experience had a high awareness of implementing the 5S practices. The Payroll and General Accountant departments had highest level of awareness to implement the 5S practices which could be due to their dealing with a large number of documents as mentioned in the interviews.

TABLE 4.5: EMPLOYEES' DESIRE OF CONTRIBUTION TO IMPLEMENTATION OF THE 5S PRACTICES ACCORDING TO DEMOGRAPHIC DATA

Employees' contribution to implementation of the 5S practices	***M***	***S.D***	**Employees 'contribution to implementation of the 5S practices**	***M***	***S.D***
Gender			**Experience in Ministry of Finance**		
Male	3.78	.72	Less than 10yrs	3.94	.74
Female	3.99	.61	10-less than 20yrs	3.77	.66
Age			20-less than 30yrs	4.15	.52
Less than 30yrs	3.93	.79	30-less than 40yrs	3.80	.85
30 –less than 40yrs	3.79	.69	**Departments**		
40 –less than 50yrs	3.93	.56	IT	3.85	.69
50 –less than60yrs	4.14	.24	Customs and Taxes	3.76	.63
Position			General Accountant	4.26	.52
Employee	3.87	.71	Cash	3.92	.61

Division Head	3.69	.96	Audit	3.61	.53
Head of Department	3.90	.66	Accounts	3.75	.84
Manager	3.92	.59	Budget	4.12	.64
General Director	4.11	.21	Payroll	3.96	.60
Educational level			Administration & Finance	3.71	.81
Diploma or less	3.81	.83			
Bachelor degree	3.89	.68	**Overall mean**	**3.90**	**0.65**
Master's degree	3.89	.61			

Table 4.5 indicates the employees' desire of contribution (involvement in) to implementation of the 5S tool according to variables of gender, age, position, educational level, experience, and ministry department. The 'mean value' column was used to determine which category was really serious and ready to contribute to the implementation of the 5S practices.

The researcher has found that the female employees were ready to be involved in the implementation the 5S practices. She also found that old employees' had a high level of desire of contribution to implementation of the 5S practices (*M=4.14*). The general directors had a high level of interest in application of 5S programs. The employees' who had between 20-30 years of experience had a high level of interest in contributing to the implementation of the 5S practices The Payroll, Budget, and General Accountant departments were found to have the highest level of interest of involvement implementation of the 5S practices.

TABLE 4.6: CLEAN WORKPLACE ENVIRONMENT AND THE 5S PRACTICES ACCORDING TO DEMOGRAPHIC DATA

Clean Workplace Environment of implementing the 5S Practices	*M*	*S.D*	Clean Workplace Environment of implementing the 5S Practices	*M*	*S.D*
Gender			**Experience in Ministry of Finance**		
Male	3.47	.80	Less than 10yrs	3.59	.82
Female	3.40	.77	10-less than 20yrs	3.19	.79
Age			20-less than 30yrs	4.15	.52
Less than30yrs	3.54	.88	30-less than 40yrs	3.83	.86
30 –less than40yrs	3.36	.80	**Departments**		
40-less than50yrs	3.25	.64	IT	3.05	.78
50 –less than60yrs	3.31	.68	Customs and Taxes	3.17	.57
Position			General Accountant	2.89	.88
Employee	3.52	.84	Cash	3.57	.61
Division Head	3.48	.67	Audit	3.29	.95
Head of Department	3.24	.85	Accounts	3.29	.59
Manager	3.30	.65	Budget	3.80	.74
General Director	3.11	.46	Payroll	3.53	.62
Educational level			Administration & Finance	3.79	.96
Diploma or less	3.97	.94			
Bachelor degree	3.35	.75	**Overall mean**	**3.41**	**0.75**
Master's degree	3.29	.79			

Table 4.6 showed the effect of a clean workplace environment on employees' performance according to gender, age, position, educational level, experience, and ministry department. The researcher has found that the female employees' had a neutral opinion concerning the workplace environment. It was (*M=3.40)* In contrast, the employees' holding a diploma or less were satisfied with their workplace environments. The old employees' also seemed to be satisfied with their workplace environments which could be attributed to their familiarity with this environment.

The Administration and Finance department showed the highest level of support for clean workplace environments (*M=3.79*). This result could be attributed to some maintenance and change of office layout in the department three years ago as stated in the interview.

TABLE 4.7: EMPLOYEES PERFORMANCE ACCORDING TO DEMOGRAPHIC DATA

Employees' Performance	*M*	*S.D*	Employees' Performance	*M*	*S.D*
Gender			**Experience in Ministry of Finance**		
Male	3.88	.71	Less than 10 yrs.	3.95	.80
Female	3.93	.68	10-less than 20yrs	3.79	.63
Age			20--less than 30yrs	4.13	.48
Less than30 yrs.	3.89	.87	30-less than 40yrs	3.70	.28
30-less than40 yrs.	3.88	.65	**Departments**		
40-less than 50 yrs.	3.93	.57	IT	3.79	.40
50-less than60 yrs.	4.01	.50	Customs and Taxes	3.64	.67
Position			General Accountant	4.22	.70
Employee	3.89	.80	Cash	3.99	.52
Division Head	3.98	.91	Audit	3.62	.61
Head of Department	3.81	.63	Accounts	3.63	.85
Manager	3.92	.48	Budget	4.12	.64
General Director	4.42	.20	Payroll	4.21	.55
Educational level			Administration & Finance	3.95	.91
Diploma or less	3.50	.99			
Bachelor degree	3.89	.69	**Overall mean**	**4.13**	**0.72**
Master's degree	3.91	.56			

Table 4.7 shows the employees' performance according to gender, age, position, educational level, and experience and ministry department.

As the table above shows, the female employees' showed a high level of performance and so did the old employees' (*M=4.01*). The general director and managers got the highest value of the mean. The employees' holding a master's degree also had a high level of performance. The General Accountant, Payroll and Budget departments had the highest level of performance.

4.4. Validity of the Study Questionnaire

Statistical validity of the questionnaire indicates the degree to which an instrument measures what it is assumed to be measuring (Poilt, 1985). Validity has a number of different aspects and assessment approaches.

To check the validity of the questionnaire, two statistical tests were used.

The first test was the Criterion-related Validity Test. This test measured the correlation coefficient between each statement in one field and the whole field. The second test was the Structure Validity Test (Spearman test). This was used to test the validity of the questionnaire structure by testing the validity of each field and the validity of the whole questionnaire. It measured the correlation coefficient between one field and all the fields of the questionnaire that had the same level.

4.4.1. Criterion- Related Validity

Internal consistency of the questionnaire was measured by a scouting sample, which consisted of 40 copies of the questionnaires It measured the correlation coefficients between each statement in one domain and the whole domains. The tables in **Appendix D** illustrate the correlation coefficient for each statement in each domain and the total domains. The p-values (Sig.) were found to be less than 0.05, so the correlation coefficients of this domain were significant at $\alpha = 0.05$, Therefore, the statement or item of each domain was consistent and valid to measure what it was set for.

4.4.2. Structure Validity of the Study Questionnaire

Structure validity was the second statistical test used to test the validity of the questionnaire's structure besting It the validity of each domain and the validity of the whole questionnaire

were tested. It measured the correlation coefficient between one domain and all the domains of the questionnaire that had the same level of Likert scale. Table (4.8) shows the correlation coefficient for each domain and the whole questionnaire. The p-values (Sig.) were found to be less than 0.05. Therefore, the correlation coefficients of all the domains were significant at $\alpha = 0.05$. Accordingly, the domains were valid to measure what they were set measure.

TABLE 4.8: CORRELATION COEFFICIENT OF EACH DOMAIN AND THE WHOLE QUESTIONNAIRE

Item	Correlation Coefficient(Pearson)	P-Value
Readiness for implementation of the 5S practices by ministry employees'	1	.000
Contribution of employees' to implementation the 5S practices in their work	.603**	.000
Awareness of implementing the 5S practices by ministry employees'	.622**	.000
Employees' performance	.708**	.000
Clean workplace environment	.491**	.000

4.5. Reliability Analysis

Reliability aims at examining the quality of measurement. It is s the "consistency" or "repeatability" of the analysis. The primary goal is the accuracy of the measures of the dependent variable. In a correlation study both the dependent and independent variables should be examined. Reducing sources of measurement error is the key to enhance the reliability of the data.

The reliability of an instrument is the degree of consistency that measures the attribute it was supposed to measure (Poilt, 1985). The less variation an instrument generates in repeated measurements of an attribute, the higher its reliability.

Reliability can be equated with the consistency, stability, or dependability of a measuring tool. The test is administered twice to the same sample of people on two occasions and then the scores obtained are compared by computing a reliability coefficient (Poilt, 1985).

This method was used to measure the reliability of the questionnaire between each domain and the mean of the whole domains of the questionnaire. The normal range of Cronbach's coefficient alpha value is between 0.0 and + 1.0 (Richard and Anita, 2008), and the higher values reflect a higher degree of internal consistency. The Cronbach's coefficient alpha was calculated for each domain of the questionnaire.

Table (4.9) shows the values of Cronbach's Alpha for each domain of the questionnaire and the entire questionnaire. For the domains, values of Cronbach's Alpha were in the range of 0.866 and 0.937. This range is considered high; the result ensured the reliability of each domain of the questionnaire. Cronbach's Alpha equaled 0.963 for the entire questionnaire. This indicates excellent reliability of the entire questionnaire.

TABLE 4.9:CRONBACH'S ALPHA VALUE

Sections	Cronbach's Alpha Coefficient Values
Employees' readiness for Implementation of 5S tool in the workplace.	0.937
Employees' desire of contribution to implementation of 5S tool in the workplace.	0.931
Employees' awareness of implementation of 5S tool in the workplace	0.926
Clean workplace environment	0.866
Employees 'performance	0.922
All Items	0.963

4.6. Analysis of the Research Questions:

The research questions have been set to study the relations between variables to support implementation of the 5S practices as a first step to implement and support Lean Thinking in Ministry of Finance.

The descriptive statistics, i.e. Means (*M*), Standard Deviations (*SD*) and finally Degree of Agreement (*DOA*) were established and presented in the research questions.

As the table below shows, the researcher has used the range of likert scale to describe the agreement on each item in the questionnaire.

TABLE 4.10: SCORING RANGE OF LIKERT SCALE

Range	Descrpition of Range
1.00-1.80	Strongly Disagree
1.81-2.60	Disagree
2.61-3.40	Niether/Nor Agree
3.41-4.20	Agree
4.21-5.00	Strongly Agree

Q1: Is there significant relationship between employees' readiness for implementation of the 5S practices and enhancement of employees' performance?

To answer this question, the researcher developed ten statements to assess the readiness level of implementing the 5S practices by ministry's employees.

These statements were subjected to the views of the participants. Results of the analysis are shown in **Table 4.11**.

The researcher found that the overall mean of readiness for implementation of the 5S practices was (*M=4.12, S.D=0.93*).This means the ministry employees' had **a very good readiness** for implementation of the 5S practices. She also found that most of participants strongly agreed with statement #8**.** This means most employees' feel happy if their offices are clean and well organized. Furthermore, they strongly agreed with statements #9 and#10. This means that most employees' had a high level of commitment to all rules and regulations of their workplace. The researcher concluded that implementing the 5S practices may face a little resistance because the ministry's employees appeared to have commitment to rules and regulations.

TABLE 4.11: DESCRIPTIVE STATISTICS OF EMPLOYEES' READINESS FOR IMPLEMENTATION OF 5S PRACTICES

NO	Statement	M	SD	DOA
1	I classify necessary and unnecessary tools in my workplace	4.12	0.97	Agree
2	I remove unnecessary tools in my workplace	4.01	0.97	Agree
3	I arrange tools for quick use	4.11	0.97	Agree
4	I arrange tools for proper use	4.15	0.93	Agree
5	I always clean my office	3.91	0.92	Agree
6	I always arrange my office	4.01	0.95	Agree
7	I put anything that I use in its proper place	3.98	0.96	Agree
8	I find myself happy to show my office properly	4.33	0.89	Strongly Agree
9	I am committed to all rules and regulations of the ministry	4.27	0.84	Strongly Agree
10	I keep procedures in accordance with decisions.	4.29	0.88	Strongly Agree
	Overall Average	4.12	0.93	Agree

Q2: Is there any significant relationship between employees' desire of contributions to implementation of the 5S practices and promotion of their performance?

To answer this question, the researcher penned ten statements which reflected the views of the participants the findings of the analysis are shown in **Table 4.12**

The researcher found that the overall mean of the 5S contribution was (*M=3.89, S.D=0.86)*. This means the Ministry of Finance's employees were desire to contribute to and get involved in implementation of the 5S practices because they believed the 5S practices would improve their creativity (statement #1) (*M=4.02, S.D=0.79*) and quality of their work life (statement #2) (*M=4.00, S.D=0.77*). They also expressed the same interest in the interview.

TABLE 4.12: DESCRIPTIVE STATISTICS OF EMPLOYEES'DESIRE OF CONTRIBUTION TO IMPLEMENTATION OF 5S PRACTICES

NO.	Statement	*M*	*SD*	*DOA*
1	Practicing 5S would increase my creativity.	4.02	0.79	Agree
2	Practicing 5S would improve quality of my work life.	4.00	0.77	Agree
3	Practicing 5S would empower me.	3.98	0.88	Agree
4	Practicing 5S would improve my job skills	3.90	0.91	Agree
5	Practicing 5S would improve my self-discipline	3.84	0.85	Agree
6	Practicing 5S would improve my communication with my colleagues.	3.74	0.89	Agree
7	Practicing 5S would increase teamwork spirit.	3.80	0.92	Agree
8	Practicing 5S would make my job easier in general.	3.97	0.83	Agree
9	Practicing 5S would increase my participation in solving work problems	3.79	0.90	Agree
10	Practicing 5S would make me proactive in providing suggestions for improving work mechanisms	3.81	0.89	Agree
	Overall Average	3.89	0.86	Agree

Q3: Is there any significant relationship between employees' awareness of implementation of the 5S practices and enhancement of their performance?

To answer this question, the researcher authored ten statements to find out the views of the participants the outcomes of the analysis are shown in **Table 4.13.**

The researcher has found that the overall mean of awareness of implementation of the 5S practices was (*M=3.98, S.D=0.91)*. This means the ministry employees' had a strong awareness of implementation of the 5S practices since it would increase employees' performance as mentioned in the interviews. Also the researcher has found that the most of participants had belief that practicing the 5S would help them in saving the effort of searching for documents and tools (Statement #7), and giving the clients a good service in short time (Statement #9), as stated in the interviews. Many ministry employees' suffered from many types of waste such as waiting, defects, motion and excess processing. Therefore, they are in need for such a practice in order to get rid of this these types of waste. For this reason, they have shown a high level of awareness to implement the 5S practices.

TABLE 4.13: DESCRIPTIVE STATISTICS OF EMPLOYEES' AWARENESS OF IMPLEMENTATION OF THE 5S PRACTICES

NO	Statement	*M*	*SD*	*DOA*
1	Practicing 5S would make fewer accidents in my workplace.	3.75	0.94	Agree
2	Practicing 5S would make my workplace more attractive and cleaner.	4.17	0.91	Agree
3	Practicing 5S would make my workplace more comfortable.	4.11	0.87	Agree
4	Practicing 5S would enhance my participation in decision making	3.56	0.90	Agree

5	Practicing 5S would facilitate my fulfillment of my job responsibilities on a regular basis.	3.93	0.81	Agree
6	Practicing 5S would enable me to cope well with unexpected situations at work.	3.71	0.88	Agree
7	Practicing 5S would help me spend less effort searching for documents and tools.	4.22	0.91	Strongly Agree
8	Practicing 5S would help me provide better service to clients,	4.08	0.96	Agree
9	Practicing 5S would help me provide service to clients in a short time.	4.14	0.94	Agree
10	Practicing 5S would increase my utilization of resources correctly	4.10	0.98	Agree
	Overall Average	3.98	0.91	Agree

Q4: Is there any significant relationship between clean workplace environments and enhancement of employees' performance?

To answer this question, the researcher authored nine statements. To find out the views of the participants. The outcomes of the analysis are shown in **Table 4.14**

After analysis of responses, the overall mean of workplace environment at Ministry of Finance was found to be (*M=3.38, S.D=1.03).*This means the ministry employees' had a neutral opinion concerning their workplace environment. It was also found that the most of the participants think the lack of guiding let clients take a lot of time and effort to reach to right person. This means most ministry employees' and visitors would suffer while searching for a specific employee's, due to absence of guiding boards and would waste time and effort. Pertaining to safety equipment such as the availability of fire extinguishers, most participants neither agreed nor disagreed with the idea. Guiding boards. The participants were neutral on

whether clients would reach the right person easily owing to the lack of guiding boards, this means both clients and employees would waste a lot of time and efforts

TABLE 4.14: DESCRIPTIVE STATISTICS OF CLEAN WORKPLACE ENVIRONMENT IN IMPLEMENTATION OF 5S PRACTICES

NO	Statement	*M*	*SD*	*DOA*
1	All files and documents I need in my office for work are accessible easily.	3.81	1.15	Agree
2	Safety equipment, such as fire extinguishers, don't expire in my workplace.	3.34	0.99	Neutral
3	Electrical wires are elaborate and are not exposed in my workplace.	3.49	0.98	Agree
4	Visitors and customers reach the right person easily	3.14	1.03	Neutral
5	There are guiding boards that help visitors to reach the right person with minimum effort.	2.46	0.99	Disagree
6	Stationery is always available in my workplace.	3.48	0.98	Agree
7	My office space is being used for useful things.	3.44	1.05	Agree
8	File and documents are always arranged in my workplace.	3.66	1.03	Agree
9	My office is always clean.	3.65	1.05	Agree
	Overall	3.38	1.03	Neutral

4.7. Testing of Research Hypotheses

Hypotheses have been formulated to study relationships between variables to support implementation of the 5S practices as a first step towards implementation and practice of Lean Thinking in ministry.

Six hypotheses have been tested, using the Pearson correlation coefficient. The Pearson's Correlation coefficient was used to measure the strength and direction of the relationship (linear correlation) between two quantitative variables, where the value (r = 1) means a

perfect positive correlation and the value (r = -1) means a perfect negative correlation. Each hypothesis was tested separately.

Ha1: There is a significant relationship between employees' readiness for implementation of the 5S practices and employees' performance.

TABLE 4.15: RELATIONSHIP BETWEEN THE EMPLOYEES' READINESS FOR IMPLEMENTATION OF 5S TOOL AND EMPLOYEES' PERFORMANCE

Variables	
Employees' readiness for implementation of the 5S practices and employees' performance	**r = .708**** **p = .000**

The result of Pearson Correlation between the readiness of ministry's employees' for implementation of the 5S and employees' performance showed that the test was **significant**, where the correlation value, r = 0.708 and significant value, p = 0.000 or p < 0.05. Thus, the first hypothesis (Ha1) was accepted assuming that there was a significant relationship between the employees' readiness for implementation of the 5S practices and promotion of employees' performance.

Objective 1: To investigate the readiness for implementation of the 5S practices, in terms of organization and staff at Ministry of Finance, so the organization would be able to adopt implementing the 5S practices as a first step towards application of Lean Thinking in government organizations.

The closer (r) is to +1, the stronger the positive correlation, while the closer (r) is to -1, the stronger the negative correlation. Based on that, the researcher found that the relationship

between the **employees' readiness for implementation of the 5S practice** and **employees' performance** was a strongly (high) positive because r= 0.708. This result means when one variable increases in value, the second variable also increases in value. In other words, increasing the employees' readiness for implementation of the 5S practices would mean an increase in the employees' performance for its practice in their work in the ministry.

Table 4.15 shows that the first hypothesis (Ha1) in this study was accepted. This means that the findings were consistent with previous studies. Attallah (2018) found that increasing the readiness level for lean implementation increased healthcare organization's performance in the MDC industry in the Gaza Strip, in a similar context, Massey and Williams (2006) found that the lean methodology would initiate change in organizations and performance change. However, based on the results of a previous study, of the healthcare sector, Al-Balushi, et al. (2014) showed how sustainability of lean thinking could be at stake if these readiness factors were not addressed correctly.

Ha2: There is a significant relationship between employees' desire of contributions (involvement in) to implementation of the 5S practices and employees' performance.

TABLE 4.16: RELATIONSHIP BETWEEN THE EMPLOYEES' DEIRE OF CONTRIBUTIONS (INVOLVEMENT IN) TO IMPLEMENTATION OF 5S PRACTICES AND EMPLOYEES' PERFORMANCE.

Variables	
Employees' deire of contributions (involvement) to implementation of 5S practices and employees' performance	**r = .610**** **p = .000**

The result of Pearson Correlation of the relationship between the employees' desire of contribution to implementation of 5S practices and employees' performance showed that the test was **significant**, where the correlation value, r = 0.610 and significant value, p = 0.000 or p < 0.05. Thus, the second hypothesis (Ha2), which predicted that there was a significant relationship between the employees' desire of contribution to implementation of the 5S practices and employees' performance, was **accepted**.

Based on this findings, the researcher noticed that the relationship between the **employees' desire of contributions (involvement) to implementation of the 5S practices** and **employees' performance** was a strongly (high) positive because r= 0.610. This result means increasing the employees' desire of contribution to implementation of the 5S practices would lead to the increase of employees' performance in their work at the ministry.

Objective 2: To examine the desire of employees to contribute to implementing the 5S tool and identification of their role in implementing the 5S tool.

Table 4.16 shows that the second hypothesis (Ha2) was accepted. This finding were consistent with previous studies. Rafikul and Mohamad Reeduan (2008) and Kaluarachchi (2009) found that the critical factors for 5S implementation in most government and private organizations influenced employees' contribution/involvement. Fotopoulus and Psomas (2010), Bain (2010) and Parrie (2007), also found that the employees' involvement in the 5S program really contributed to the sustaining and leveraging of 5S practices and principles, which later influenced the organizational performance and employees' performance.

However, Govindarajulu and Daily (2004) identified the important elements which would drive the employees' involvement in any quality program by motivating the employees'

greater participation in the quality improvement efforts. Also Ho et al. (1995) argued that 5S needed total employee involvement (TEI) at each level of the organization to gain significant enhancement in organizational performance.

Ha3: There is a significant relationship between employees' awareness of implementing the 5S practices and their performance.

TABLE 4.17: EMPLOYEES' AWARENESS OF IMPLEMENTATION OF 5S PRACTICES AND EMPLOYEES' PERFORMANCE

Variables	
Employees' awareness of implementing 5S practices And employees' performance	**r = .680** p = .000**

The result of Pearson Correlation of the relationship between the employees' awareness of implementing the 5S practices and promoting the employees' performance showed that the test was **significant**, where the correlation value, r = 0.680 and significant value, p = 0.000 or $p < 0.05$. Therefore, the third hypothesis (Ha3), which predicted that there was a significant relationship between the employees' awareness of implementing the 5S practices and employees' performance, was **accepted.**

Objective 3: To increase employee's awareness of 5S practices, as the possibility of implementing the 5S practices becomes easier and more acceptable and it enhances employees' performance.

Based on this finding, the researcher has found that the relationship between the **employees' awareness of implementing the 5S practices** and **employees' performance** was a strongly

(high) positive because r= 0.680. This result means that when employees' awareness of implementing the 5S practices is high the employees' performance in their work improves.

Table 4.17 shows that the third hypothesis (Ha3) in this study was accepted. This means that the findings were consistent with previous studies. Ghodrati et al. (2012) have found that the most important barrier/challenges for implementation of 5S were poor awareness and training of the 5S. They showed the total benefits of 5S couldn't be realized in industries and business until the barriers associated have been fully understood, addressed and removed. Therefore, to apply the 5S practices, we must increase the awareness of the 5S among the ministry employees'.

Mendes-de-Toledo and Andde-Farias-Filho. (2001) also agreed that the awareness of the employees of the 5S practice would produce efficient results in the workplace and act as solution for the survival of the company in the competitive world.

However, some of the participants felt that once they have practically been involved in the 5S activity, they would fully become aware of the importance of 5S. Other participants felt that once they take a course and training on lean tools they would be able to increase the awareness of implementing lean tools and 5S practice.

Ha4: There is a significant relationship between clean workplace environments and employees' performance.

TABLE 4.18: CLEAN WORKPLACE ENVIRONMENT AND EMPLOYEES' PERFORMANCE

Variables	
Clean workplace environment And employees' performance	**r = .438**** **p = .000**

The result of Pearson Correlation of the relationship between the clean workplace environment and employees' performance showed that the test was **significant**, where the correlation value, r = 0.438 and significant value, p = 0.000 or p < 0.05. Thus, the fourth hypothesis (Ha4), which predicted that there was a significant relationship between the clean workplace environment and employees' performance, was **accepted.**

Objective 4: To examine the significance of clean workplace environment in promoting the employees' performance.

Based on this finding, the researcher noticed that the relationship between the **clean workplace environments** and **employees' performance** was moderately positive because r= 0.438. This result means that when the workplace environment is clean and neat, the employees' performance in their workplace would improve

As **Table 4.18** shows that the fourth hypothesis (Ha4) was accepted. This means that the findings were consistent with previous studies. Patten (2006) found that a well-organized workplace provided a safe and efficient production environment, thus increasing the employees' morale, performance, promoting the feeling of belonging, pride in their work and sense of responsibility.

Yadav et al (2011) also found that a clean, systematic and organized workplace which decreases waste directly would have a positive impact on employees' productivity, costs, quality and other factors. Y. Johana et al. (2014) found that the application of 5S at the workplace allowed the improvement of safety, productivity, work efficiency, and a sense of belonging among the administrative staff.

TABLE 4.19: SUMMARY OF HYPOTHESES TESTING

Research Hypothesis	Measures	Significance
1. There is a significant relationship between employees' readiness for implementation of 5S practices and employees' performance.	Pearson Correlation (r = 0.708)	p<0.05 (Accepted, where p = 0.000)
2. There is a significant relationship between employees' desire of contributions (involvement in) to implementing the 5S practices and employees' performance.	Pearson Correlation (r = 0. 610)	p<0.05 (Accepted, where p = 0.000)
3. There is a significant relationship between employees' awareness of implementing the 5S practices and employees' performance.	Pearson Correlation (r = 0.680)	p<0.05 (Accepted, where p = 0.000)
4. There is a significant relationship between a clean workplace environment and employees' performance	Pearson Correlation (r = 0.438)	p<0.05 (Accepted, where p = 0.000)

4.8. Hypothesis Related to Participants' Profiles (Analysis of responses)

Ha5: There are statistically significant differences at $\alpha \leq 0.05$ in the responses of the research sample according to the demographic profile (Gender, Age, Poistion, Educational level Experience and Departements).

This hypothesis predicted differences in the opinions of the participants toward implementation of the 5S practices in the Ministry of Finance according to the demographic variable.

The Mann-Whitney test and the Kruskal-Wallis test are nonparametric methods used to detect whether two or more samples come from the same distribution or to test whether

medians between comparison groups are different, under the assumption that the shapes of the underlying distributions are the same.

Ha5.1: There are statistically significant differences at α ≤ 0.05 in the responses of the research sample due to gender.

TABLE 4.20: KRUSKAL WALLIS TEST GROUPING BY GENDER

Constructs	Sig
Employees' readiness for implementation of the 5S practices	.038
Employees' desire of contributions (involvement in) to implementing the 5S practices	.088
Employees' awareness of implementing the 5S practices	.251
Clean workplace environment	.118
Employees' performance	.636

Table 4.20 shows that the p-value (Sig.) was smaller than the level of significance α = 0.05 for the domain: **Employees' readiness for implementation of the 5S practice**s. There was also significant difference among the participants in domain due to gender. The researcher concluded that the gender had an effect on this domain.

Pertaining to the other domains, the p-value (Sig.) was greater than the level of significance α =0.05. No significant difference was found among the participants in this domain due to gender. The researcher conclude that the gender had no effect on the other domains.

Ha5.2: There are statistically significant differences at α ≤ 0.05 in the responses of the research sample due to age variable.

TABLE 4.21: KRUSKAL WALLIS TEST GROUPING ACCORDING TO AGE

Constructs	Sig
Employees' readiness for implementation of the 5S practices	.022
Employees' desire of contributions (involvement in) to implementation of the 5S practices	.145
Employees' awareness of implementing the 5S practices	.524
Clean workplace environment	.079
Employees' performance	.711

Table 4.21 shows that the p-value (Sig.) was smaller than the level of significance $\alpha = 0.05$ for the domain: **Employees' readiness for implementation of the 5S practice**s. A significant difference among the participants was found in this domain due to age. The researcher concluded that the age had an effect on this domain. For the other domains, the p-value (Sig.) was greater than the level of significance $\alpha = 0.05$. No significant differences among the participants were found in this domain due to age. The researcher concluded that the age had no effect on the other domains.

Ha5.3: There are statistically significant differences at $\alpha \leq 0.05$ in the responses of the research sample due to position.

TABLE 4.22: KRUSKAL WALLIS TEST GROUPING BY POSITION

Constructs	Sig
Employees' readiness for implementation of the 5S practices	.010
Employees' desire of contribution (involvement in) to implementation of the 5S practices	.717
Employees' awareness of implementing the 5S practices	.455
Clean workplace environment	.116
Employees' performance	.025

Table 4.22 shows that the p-value (Sig.) was smaller than the level of significance $\alpha = 0.05$ for the domain: **Employees' readiness for implementation of the 5S practice**s and **employees 'performance**. It was found there was a significant difference among the participants in this domain due to position. The researcher concluded that the position had an effect on this domain. For the other domains, the p-value (Sig.) was greater than the level of significance $\alpha = 0.05$, Therefore, no significant difference was found among the participants in this domain due to position. The researcher concluded that the position had no effect on the other domains s.

Ha5.4: There are statistically significant differences at $\alpha \leq 0.05$ in the responses of the research sample due to educational level.

TABLE 4.23: KRUSKAL WALLIS TEST GROUPING ACCORDING TO EDUCATIONAL LEVEL

Constructs	Sig
Employees' readiness for implementation of the 5S practices	.085
Employees' desire of contribution (involvement in) to implementation the 5S practices.	.984
Employees' awareness of the implementation of the 5S practices	.756
Clean workplace environment	.009
Employees 'performance	.154

Table 4.23 shows that the p-value (Sig.) was smaller than the level of significance $\alpha = 0.05$ for the domain: **clean workplace environment**. A significant difference among the participants was found in this domain due to educational level. The researcher concluded that the educational level had an effect on this domain. For the other domains, the p-value (Sig.) was greater than the level of significance $\alpha = 0.05$. Therefore, here was an insignificant

difference among the participants in this domain due to the educational level. The researcher concluded that the educational level had no effect on the other domains.

Ha5.5: There are statistically significant differences at $\alpha \leq 0.05$ in the responses of the research sample due to experience in Ministry of Finance.

TABLE 4.24: KRUSKAL WALLIS TEST GROUPING ACCORDING TO EXPERIENCE IN MINISTRY OF FINANCE

Constructs	Sig
Employees' readiness for implementation of the 5S practices	.001
Employees' desire of contribution (involvement in) implementation of the 5S practices	.076
Employees' awareness of implementing the 5S practices	.143
Clean workplace environment	.003
Employees performance	.021

Table 4.24 shows that the p-value (Sig.) was smaller than the level of significance $\alpha = 0.05$ for the domains: **Employees' readiness for implementation of the 5S practices employees' performance** and **clean workplace environment**. Then a significant difference among the participants was find these domains due to experience. The researcher concluded that the employees' experience had an effect on these domains. For the other domains, the p-value (Sig.) was greater than the level of significance $\alpha = 0.05$. This means there was an insignificant difference among the participants in this domain due to years of experience. The researcher concluded that the experience had no effect on the other domains.

Ha5.6: There are statistically significant differences at $\alpha \leq 0.05$ in the responses of the research sample due to department variable.

TABLE 4.25: KRUSKAL WALLIS TEST GROUPING ACCORDING DEPARTMENT

Constructs	Sig
Employees' readiness for implementation of the 5S practices	.009
Employees' desire of contribution (involvement in) to implementation of the 5S practices	.006
Employees awareness of implementing the 5S practices	.010
Clean workplace environment	.000
Employees'performance	.001

Table 4.25 shows that the p-value (Sig.) was smaller than the level of significance $\alpha = 0.05$ in this domains: **employees' readiness for implementation of the 5S practices**, **employees' performanc**e, **employees' desire of** contribution **(involvement in) to implementation of the 5S practices**, **employees' awareness of implementing the 5S practices**, **clean workplace environment**. This means there was a significant difference among the participants in these domains due to department variable. The researcher concluded that department had an effect on these domains.

H6: The employees' readiness, employees' awareness, employees' desire of contribution and workplace environments will positively explain the variation in employees' performance.

TABLE 4.26: MULTIPLE REGRESSIONS ANALYSIS

Constructs	Beta	T	Sig	R^2
Employees' readiness for implementation of the 5S practices	.363	6.051	.000	
Employees' desire of contribution (involvement in) to implementation of the 5S practices	.068	1.024	.307	0.615
Employees 'awareness of implementing the 5S practices	.365	5.351	.000	
Clean workplace environment	.157	3.320	.001	

Predictors :(Constant), Employees' Readiness, Employees' desire of Contribution, Employees' Awareness, Workplace Environment

Multiple Regressions have been conducted in order to test the variance in dependent variable on whether employees' performance could be explained by four independent variables. The result shows that 61.5 % of the variance (R-Square) in employees' performance could be significantly explained by four independent variables. By looking at Beta value, the highest number in the beta was 0.365 for employees' awareness of implementing the 5S, which is significant at the 0.000 level. This means that employees' awareness of the 5S practices influenced most the variance in employee performance. In contrast, the employees' desire of contribution (involvement in) had no influence in employees' performance because its Beta value was 0.068 and significant value as 0.307 which means that it was greater than the significant level. This result implies that only three independent variables (employees' awareness of 5S, employees' readiness for 5S and clean workplace environment) positively explained the variance in the dependent variable: (employees' performance). This supports hypothesis 6. In contrast, employees' desire of contribution (involvement in) did not positively explain the variance in employees' motivation. It also did not support hypothesis 6.

Chapter Five: Conclusion and Recommendations

5.1. Overview

This chapter is devoted to the conclusions and recommendations based on the study findings. The researcher recommends the gradual adoption of Lean Thinking starting with the 5S practices in order to optimize the performance of Ministry of Finance employees'. Then the chapter concludes with an overview, discussion and assessment of the extent to which the research objectives have been met, the chapter also touched on the need for future research in this field.

5.2. Summary of The Study

This study has researched the potential effectiveness of Lean Thinking, starting with the 5S practices. To that end, it assessed the ministry of Finance employees' readiness, desire of contribution, awareness of the 5S practices, and nature of their workplace environment.

In addition, the study has conducted an extensive review of related literature to achieve its aims and objectives. The purpose was also to develop a clear understanding of the 5S practices by identifying the key factors which play a major role in adopting the 5S practices in the Ministry of Finance.

The results of the administered questionnaire were analyzed quantitatively and then were presented, using an interpretive and descriptive method for qualitative data analysis.

5.3. Conclusions of The Research

To achieve the purposes of the research, four main objectives have been identified through analysis of data. These objectives have been linked to the study questions raised to increase one's knowledge and familiarity with this field.

5.3.1 Conclusions Related to First Objective

The objective was to investigate the Ministry of Finance employees' readiness for implementation of the 5S tool in terms of organization and staff this would allow organizations to adopt implementation of the 5S tool as a first step towards introducing Lean Thinking to government organizations.

The researcher concloude that ministry employees' had a high level of readiness to implement the 5S practices, especially because these items got top ranking by the vast majority of the study participants: commitment to all rules and regulations of ministry, procedures done according to ministry policy and decisions. Employees' felt happy to show their office clean and well organized.

The researcher concloudethat the ministry's senior administration had a high level of readiness for the implementation of the 5S tool.

Furthermore, the study found that the ministry's employees somehow were applying some of the 5S tool without being aware of their practice. When researcher asked the participants about their practices in their workplace, she found many of them were practicing classification of necessary and unnecessary tools, removing of unnecessary tools, arranging

tools for use properly, cleaning their offices regularly, regular arrangement of their office, putting things that used in their proper places.

On the otherhand the resercher concloude that the readiness of ministry's employees' for implementation of the 5S tool was the most important factor that affected the employees' performance.

5.3.2 Conclusions Related to Second Objective

The objective was to identify employees' desire to being involvement in implementing the 5S practices and its effect on promoting the employees' performance in the ministry.

The researcher concloude that the employees would have a high level of intrest to being involvement to implementation of the 5S tool because they believe it would improve their performance.

As the respondents reported in the interviews, it was found that there was a gap between directors and their employees' as well as poor communication between the employees' working in the same department. The employees' supported being involved in the implementation of the 5S tool because they believed it would improve their creativity, quality of their work life, empowerment, job skills, and the most importantly it would increase teamwork spirit, and participation in solving work problems. It would also make the employees' more proactive in providing suggestions for improvement of work mechanisms. All these benefits would be realized if the employees became an effective part of their organization with the disappearance of all barriers.

The study also found that ministry's senior administration had a high level of readiness to become involved in implementation of the 5S tool, the researcher concluded the commitment of senior administration would make the process of implementing the 5S tool easier because it is the mechanism that drive all the activities related to the 5S tool however, the administration needs the cooperation from other members and facilitators.

The study found, there is a big significance of practical involvement in the 5S practices.

The General Accountant, Budget, and Payroll departments had a high level of interest of becoming involved in implementation of the 5S tool. The participants said in the interview that they needed 5S tool because they process daily a large numbers of documents. The offices and the floors were always crowded with files and documents. These departments also deal with clients daily.

5.3.3 Conclusions Related to Third Objective

The objective was to examine employees' awareness of the 5S practices, as the possibility of implementing the 5S practices would become easier and more acceptable and would promote employees' performance.

The resercher concloude that ministry's employees had a high level of awareness of implementing the 5S tool. When everyone is aware of the significance of the 5S, a better safer and well- organized working area could be built, thus assisting the employees' in improving the quality of their work, providing a better service for clients, saving their effort and time. The workplace would also become more attractive and cleaner all these factors combined would help to improve employees' performance.

The study found that the ministry's senior administration had a high level of interest in awareness of implementing the 5S tool, thus making their implementation easier.

The study found out the significance of employees' training to become more aware of the 5S practices and the benefits gain from them.

The General Accountant, Budget, and Payroll departments were found to have a high level of awareness of implementing the 5S practices. The employees' working in these departments were found to be suffering from large numbers of clients, work pressure and a large backlog of documents.

5.3.4 Conclusions Related to Fourth Objective

The objective was to examine the significance of a clean workplace environment in enhancing the employees' performance.

The researcher concloude that ministry's employees neither agreed nor disagreed with their current workplace environment.

On the other hand, the study found that the ministry's employees and the clients face some critical problems such as lack of safety equipment, fire extinguishers, poor layout, and lack of guiding boards.

5.3.5 Conclusions Related to Employees' Performance

The researcher found that Ministry of Finance's employees had a high level of performance.

The researcher concloude that the employees' awareness of implementing the 5S practices, their readiness for implementing the 5S practices, and clean workplace environment positively explained the variance in the dependent variable (employees' performance). In

contrast, the employees' desire of contribution (involvement in) did not positively explain the variance in employees' performance.

The researcher found most of the respondents were planning their work very well, setting priorities in a good way, managing time and carrying out their work efficiently.

The researcher also found the General Accountant, Budget, and Payroll departments had a high level of performance, in spite of having a lot of pressure. Their employees' claimed doing their work efficiently, managing their time very well and planning for their tasks well.

5.3.6 Conclusions Related to Challenges

The researcher objective was to identify the challenges that ministry's employees' were facing.

The researcher concloude that employees' had some challenges related to **layout**:

- Offices are small when compared with the number of employees'.
- Space in some offices is too small when compared to the number of files and documents.
- Office space is crowded with files and documents.
- There is no special area to store documents and files, thus making offices full of documents.
- Many departments need to employ archive employees' because employees' don't have time to do their duties and archive documents in the right way.
- The buildings lack guiding boards to help visitors reach the right person with minimum effort.

- The layout between departments is poor, thus making the employees' waste their time.

The researcher found that ministry employees' faced some challenges related to **tools and public utilities:**

- Many departments have poor lighting, ventilation.
- The number of water closets are not appropriate with the number of employees' in each department.
- Central air conditioning doesn't work effectively and needs maintenance.

The researcher found that the ministry employees' faced some challenges related to the **role of senior administration:**

- Some employees' have poor communication with each other.
- Rewards and recognition are rare.
- There is an absence of training and periodic meetings in the same department to improve the workplace environment and increase employees' performance.

The researcher found that ministry employees' had some challenges related to **productivity**

- Lacked of distributed tasks and responsibilities among employees'.
- Lack of documentation made the employees' to be less empowered in their duties.

- There was a lack of in-service training for all employees with clear procedures and mechanism of work.

5.4. Recommendations

5S Implementation has a major impact on departments and employees'. The 5S practices not only impact the office environment but also other aspects of quality such as quality of work and personal qualities of employees'. This quality is achievable by an organization when all the employees empathize interests and work together to achieve one goal.

The Employees' should also be aware of the efforts devoted to enhancement of the quality from the beginning to the end. Quality requires a process of constant change while an organization operates.

5.4.1. Implementation of 5S

To ensure successful implementation of 5S, all of the employees' must work together in a team to make sure that this method can be relevant. Everyone should take part and take responsibility for the implementation of 5S.

When everyone is aware of the significance of 5S, a better safer and well-organized workplace environment can be built, this could assist the employees to improve the quality of their work and improve their performance.

5.4.2. Productivity of Employees'

It can be concluded that the productivity of the employees' can be improved when the 5S is implemented. To ensure that the productivity of employees' can have a continuous

improvement, the organization must engage with a good standard of 5S. The organization also must be able to observe not just the surrounding of the company but also the employees' who work in it.

Another recommendation is that the organization can exchanges ideas and receive comments from employees' and people who are directly or indirectly involved in their 5S. This is important as the employees' is the main key to increase the productivity of the organization. Establishing recognition system that offers rewards to every successful employee should also be introduced.

5.4.3. Role of Senior Administration

The senior administration in the organization also should provide support and encourage commitment to implementation of the 5S to leave a more a lasting impact. Besides, the results of this study can be used to improve the promotion of the 5S to diversify methods of communication and come up with creative ideas through innovative competition.

The senior administration should assist the employees at all time. All the employees' involved in 5S should be given clear instruction on how to practice and use the 5S tool so that they can work comfortably, improve their productivity and maintain a high quality of performance. By doing so, the organization can reduce cost and make distribution more efficient. The senior administration should always make the right decision for the institution and for the employees' as this always influences its performance. A wrong decision might give a negative impact on the organization.

5.4.4. Training

Organizations can deliver the best in-service training to the employees'. This training can be given in the working area, thus allowing the employees to have a clear view on how to practice 5S in the workplace. The employees' can understand the importance and benefits that they can gain from the implementation of the 5S. Organization should provide a regular training course to the employees' or to group involved as well as to new employees' so that all of the employees' become familiar with the role they have to play to implementation of 5S.

5.4.5. Developing Sense of Necessity

The senior administration of the Ministry of Finance should look hard at the behavior and attitudes of employees' by offering them continuing training and education and increase the sense of necessity for Lean implementation. This might be achieved by sharing the problems in the process as well as emphasizing its benefits by focusing on value-added activities and eliminating wastes at all stages.

5.4.6. Developing Lean Thinking Process

This can be done by holding workshops for the Ministry employees to present the 5S tool as a starting point of becoming familiar with the lean tools, and choose a future Lean strategy for the ministry and other government institutions. This may require involvement of all employees from the beginning of the Lean Thinking process.

5.4.7. Standardization of Space

There is a need to provide more space in the Mininstry of Finance to store all the necessary tools and equipment only and dispose of any other tools that are no longer used.

5.4.8. Increasing Employees' Motivation

Implementing lean thinking and starting with the 5S tool requires motivating the employees since this would lead to improvement of work performance and creativity within the ministry. Generally, all employees' can be motivated by providing them with incentives.

5.4.9. Introducing 5S Tool to Specific Departments

As a starting point, the 5S tool could be gradually introduced to the ministry departments to see the results. This would encourage all employees' to be involved in the 5S program, and then the 5S tool would be introduced to all ministry departments.

5.4.10. Forming Special Team

There is a need to set up special team to be in charge of introducing and implementing Lean Thinking.

5.4.11. Establishing Central Archive Unit

There is a need to establish a central archive unit to save documents manually and electronically.

5.4.12. Holding Periodic Meeting

Periodic/regular meetings between employees should be held to increase rapprochement between them and break psychological barriers.

This is in addition to holding periodic workshops to explain the work procedures and share any updates.

In this regard, employees should be involved in the decision making process in order to encourage them to hold responsibility and promote their sense of belonging and loyalty to the ministry.

5.4.13. Division of Responsibilities

Tasks should be divided among employees' in proportion to the size of the work and the number of employees'.

5.4.14. Improving Interior Design of Ministry of Finance

Guiding boards should be introduced to help both clients and employees to get best quality services without wasting time and effort.

This should include changing the layout of the ministry departments, location the placing close departments next to each other.

5.4.15. For the Palestinian Government

Despite the political and economic obstacles, the government should give more attention/interest to the ministry to develop this important financial sector which contributes highly to the increase of its revenues.

Also the researcher recommends to replicat the same study in other mininstries in the West Bnak.

5.4.16. For the Palestinian Society

This research may promote Lean thinking among all employees' and managers in Palestine in order to enhance their performance.

5.5. Further Research

The researcher recommends conducting further research:

5.5.1. Exploring Views of Public and Private Institutions in The West Bank

This research is very important because a plethora of information and perception can be gathered. At the same time, such research would enable future researchers to make a comparison between the effectiveness of 5S practices in private and public sectors in the West Bank.

5.5.2. Conducting Comparative Studies on Government Institutions/Organization

One of the future research areas could be on conducting comparative studies on government institutions after and before adopting Lean Thinking in the Ministry of Finance in the West Bank and then between government institutions in all Palestine.

5.5.3. Studying Estimated Cost of Adopting Lean Thinking in the Ministry of Finance

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Make the remaining value creating steps flow smoothly towards the customer; this is by working on each design, order, and product continuously from beginning to end, so that there is no waiting, downtime, or any kind of waste between the steps (Alcazar, 2003 and Montgomery, 2006)

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Appendixes

Appendix A: Questionnaire Revision

List of Academic and Professional Referees:

Serial	Referee	Place of Work
1	Dr. Ashraf Almimi	Arab American University
2	Dr. Raid Qustandi Manawel Shomali	Arab American University
3	Dr. Raed Iriqat	Arab American University
4	Dr. Yahya Salhat	Najah university, Arab American University
5	Dr. Ahmad M. Herzallah	Al-Quds University
6	Dr. Mohammed Abu Sharbeha	Arab American University

Appendix B: Questionnaire-Arabic

الجامعة العربية الأمريكية
ARAB AMERICAN UNIVERSITY
FACULTY OF GRADUATE STUDIES

إستبانة حول مدى فاعلية استخدام 5S في تعزيز الأداء الوظيفي في وزارة المالية في فلسطين

هذه الدراسة هي جزء من رسالة ماجستير حول " الفاعلية المحتملة لأداة 5S في تعزيز الأداء الوظيفي في وزارة المالية في الضفة الغربية -فلسطين .

الغرض من هذه الاستبانة هو الحصول على لمحة عامة عن مدى استعداد ووعي ومساهمة موظفي وزارة المالية في تطبيق مفهوم 5S وقياس مدى فاعلية أداة 5S في تعزيز الاداء الوظيفي لموظفي وزارة المالية.

من أجل تحقيق هذا الغرض، أرجو مساعدتكم في توفير إجابات دقيقة، وموضوعية على الأسئلة الواردة في هذه الاستبانة, تحتاجون إلى 15 دقيقة من أجل اكمال هذه الاستبانة.

إن المعلومات التي تجمع من خلال هذه الاستبانة سيتم استخدامها لأغراض البحث العلمي فقط مع الحفاظ على السرية التامة لهذه المعلومات ومصدرها. إذا كان لديكم أي استفسار، يمكنكم مراسلتي على البريد الألكتروني(i.shalash@student.aaup.edu) او الاتصال على الرقم التالي:0592070732

إن مشاركتكم ووجهات نظركم هي موضع تقدير واحترام كبير.

مع وافر الشكر والاحترام

إنعام شلش

قبل البدء بتعبئة الاستبانة الرجاء قراءة المنشور الاتي للتعرف على اداة5S كي تتمكن من تعبئة الاستبانة بالشكل الصحيح:

5Sهي فلسفة الاعتناء بمكان العمل بتنظيمه وتنظيفه. وهي تتكون من خمس خطوات أساسية وكل خطوة تسمى باليابانية بكلمة تبدأ بحرف S ومن هنا جاء مُسمى 5S

الاسم بالعربية	الاسم بالانجليزية	الوصف
التصنيف	Sorting	فرز الأشياء حسب الضروري والغير ضروري
		إزالة الأشياء غير الضرورية
		تحرير مكان العمل من الأشياء المزعجة ، لا تقل "ربما نحتاجه يوما ما".
الترتيب	Set in Order	ترتيب جميع الأشياء للاستخدام السريع بشكل صحيح وبكفاءة.
		وضع الشيء في نفس الموضع كل مرة وبدون جهد يذكر.
		إعادة النظر في المخطط العام لمكان العمل نفسه.
التنظيف /التلميع	Shining	تنظيف كل شيء من أدوات ومعدات ومكاتب ونوافذ ومخازن للحصول على بيئة عمل نظيفة جدا.
التنميط	Standardization	الالتزام بجميع القواعد الإلزامية في مكان العمل من (إجراءات ، تعليمات ، أنظمة ، أوامر)
		تحديد مسؤوليات كل فرد ووضع طرق قياسية للعمل بها بحيث يعرف كل فرد الواجب الذي عليه بصفة دورية وكيفية أدائه.
		ضمان استمرار الوضع بهذه الصورة الحسنة بحيث لن نعود إلى الوراء وإلى العادات القديمة مرة أخرى.
التعزيز/التثبيت	Sustaining	وضع نظم للتأكد من استمرارية العمليات السابقة (التصنيف,الترتيب,التنظيف,التنميط) كلها.
		تطبيق الإجراءات وفقًا للقرارات ودمجها في عمل المؤسسة بحيث تصبح عادات.

ارجو الاجابة عن جميع الاسئلة في هذه الاستبانة وذلك بوضع اشارة ✓ و تعبئة الفراغات باجابات مكتوبة.

القسم الاول : معلومات عامة

1.1 **الجنس:**

☐ ذكر ☐ انثى

1.2 **العمر :**

☐ أقل من 30 سنة ☐ 30- اقل من 40
☐ 40- اقل من 50 ☐ 50 – اقل من 60

1.3 **المسمى الاداري:**

☐ موظف ☐ رئيس شعبة
☐ رئيس قسم ☐ مدير
☐ مدير عام ☐ غير ذلك (حدد من فضلك)

1.4 **المؤهل العلمي :**

☐ دبلوم فما دون ☐ بكالوريوس
☐ ماجستير ☐ غير ذلك (حدد من فضلك)

1.5 **سنوات الخبرة:**

☐ أقل من 10 سنوات ☐ 10- اقل من 20 سنة
☐ 20-اقل من 30 سنة ☐ 30-اقل من 40 سنة

1.6 **الادارة التي تعمل بها:**

☐ تكنولوجيا المعلومات ☐ جمارك وقيمة مضافة
☐ النقدية والدين العام ☐ المدفوعات
☐ الرقابة ☐ الحسابات
☐ الموازنة ☐ الرواتب
☐ الشؤون الادارية والمالية ☐ غير ذلك (حدد من فضلك)

القسم الثاني:

يتكون هذا القسم من خمسة محاور والتي صممت من اجل قياس فاعلية أداة 5S في تعزيز الاداء الوظيفي حسب وجهة نظر موظفي وزارة المالية في رام الله ,لذا ارجو من حضرتكم التفضل بتقييم مستوى موافقتكم على الاسئلة التالية وفق تدرج خماسي, بحيث غير موافق بشدة تأخذ قيمة الرقم 1 في حين موافق بشدة تأخذ قيمة الرقم 5.

أرجوا ان تقيم مستوى موافقتك على الأسئلة التالية مستخدما المعايير التالية:
1) غير موافق بشدة 2) غير موافق 3) محايد 4) موافق 5) موافق بشدة

المحور الاول: الجاهزية للتعاون في تنفيذ مفهوم 5S

يقصد بالجاهزية مدى استعداد الموظف لتنفيذ كافة المهام المطلوبة منه على اكمل وجه لتنفيذ مفهوم 5S.

الرقم	السؤال	التقييم
1	اقوم بفرز الادوات في مكان عملي حسب الضرورة	5 4 3 2 1
2	اقوم بإزالة الادوات غير الضرورية في مكان عملي	5 4 3 2 1
3	اقوم بترتيب الادوات في مكان عملي لاستخدامها بشكل سريع	5 4 3 2 1
4	اقوم بترتيب الادوات في مكان عملي لاستخدامها بشكل صحيح	5 4 3 2 1
5	انظف مكتبي دائما	5 4 3 2 1
6	ارتب مكتبي دائما	5 4 3 2 1
7	اقوم بارجاع كل شيء استخدمه الى مكانه المخصص	5 4 3 2 1
8	اجد نفسي سعيدا باظهار مكتبي بصورة لائقة دائما	5 4 3 2 1
9	التزم بالتعليمات والانظمة الخاصة بالوزارة	5 4 3 2 1
10	احافظ دائما على الالتزام بالاجراءات وفقا لقرارات الوزارة	5 4 3 2 1

المحور الثاني: المشاركة في تعزيز وانجاح مفهوم 5S

يقصد بالمشاركة قيام الموظف بكافة السبل التي من شأنها انجاح تنفيذ مفهوم 5S.

الرقم	السؤال	التقييم
1	ممارسة 5S ستزيد من إبداعي	5 4 3 2 1
2	ممارسة 5S ستحسن جودة حياتي العملية	5 4 3 2 1
3	ممارسة 5S ستزيد من تمكيني في عملي	5 4 3 2 1
4	ممارسة 5S ستساعدني في زيادة مهاراتي الوظيفية	5 4 3 2 1
5	ممارسة 5S ستحسن من انضباطي الذاتي	5 4 3 2 1
6	ممارسة 5S ستحسن من تواصلي مع زملائي	5 4 3 2 1
7	ممارسة 5S ستزيد من روح العمل ضمن فريق	5 4 3 2 1
8	ممارسة 5S ستجعل عملي اكثر سهولة بوجه عام	5 4 3 2 1
9	ممارسة 5S ستزيد من مشاركتي في حل مشكلات العمل	5 4 3 2 1
10	ممارسة 5S ستجعلني ابادر في تقديم اقتراحات لتحسين اليات العمل	5 4 3 2 1

المحور الثالث: الادارك والوعي بممارسات 5S

يقصد بالادارك مدى الخلفية العلمية والمعرفة بأهمية تطبيق ممارسة مفهوم 5S.

الرقم	السؤال	التقييم
1	ممارسة 5S ستقلل من حدوث الحوادث في مكان عملي	5 4 3 2 1
2	ممارسة 5S ستجعل مكان عملي اكثر جاذبية بسبب نظافة المكان	5 4 3 2 1
3	ممارسة 5S ستجعل مكان عملي اكثر راحة	5 4 3 2 1
4	ممارسة 5S ستعزز من مشاركتي في اتخاذ القرار	5 4 3 2 1
5	ممارسة 5S ستحفزني علي القيام بمسؤولياتي الوظيفية على أساس منتظم	5 4 3 2 1
6	ممارسة 5S ستمكنني من التعامل بشكل جيد مع المواقف غير المتوقعة في العمل	5 4 3 2 1
7	ممارسة 5S ستجعلني ابذل جهدا اقل في البحث عن المستندات والادوات	5 4 3 2 1
8	ممارسة 5S ستساعدني في تقديم خدمات افضل للمراجعين	5 4 3 2 1
9	ممارسة 5S ستساعدني في تقديم خدمات بوقت قليل للمراجعين	5 4 3 2 1
10	ممارسة 5S ستزيد من استغلالي للموارد بالشكل الصحيح	5 4 3 2 1

المحور الرابع: الاداء الوظيفي

يقصد بالاداء الوظيفي هو ما يمارسه الموظف من أداء وحركات أو أنشطة معينة لاتمام المهام الوظيفية الموكلة اليه

الرقم	السؤال	التقييم
1	اخطط لعملي بشكل جيد	5 4 3 2 1
2	اقوم بتحديد اولوياتي في العمل	5 4 3 2 1
3	اتمكن من إدارة وقتي بشكل جيد.	5 4 3 2 1
4	اتمكن من تنفيذ عملي بكفاءة.	5 4 3 2 1
5	ابادر في القيام بمهمة جديدة عند الانتهاء من المهمة السابقة	5 4 3 2 1
6	اطور معرفتي المتعلقة بالوظيفة.	5 4 3 2 1
7	استطيع تحمل ضغط العمل.	5 4 3 2 1
8	ابحث باستمرار عن تحديات جديدة في عملي	5 4 3 2 1
9	اتفادى التركيز على الجوانب السلبية في عملي	5 4 3 2 1
10	اسعى لحلول إبداعية للمشاكل الجديدة.	5 4 3 2 1

المحور الخامس: تنظيم مكان العمل

يقصد بتنظيم مكان العمل الشعور بالارتياح والسعادة والقبول من أجل تحقيق انتاجية أفضل للمكان وراحة وبساطة للموظف

الرقم	السؤال	التقييم
1	الملفات الموجودة في غرفة مكتبيى احتاجها للعمل	5 4 3 2 1
2	أجهزة الامان مثل (طفايات الحريق) صالحة في مكان عملي	5 4 3 2 1
3	التمديدات الكهربائية متقنة وغير مكشوفة في مكان عملي	5 4 3 2 1
4	المراجع يجد الشخص الذي يبحث عنه بكل سهولة	5 4 3 2 1
5	هناك لوحات ارشادية في مكان عملي لتساعد المراجع للوصول للشخص المناسب باقل جهد	5 4 3 2 1

6	القرطاسية والادوات المكتبية متوفرة دائما في مكان عملي	5 4 3 2 1
7	مساحة مكتبي مستغلة باشياء مفيدة	5 4 3 2 1
8	المستندات والملفات مرتبة بشكل منظم	5 4 3 2 1
9	المكتب الذي اعمل به نظيف دائما	5 4 3 2 1

القسم الثالث: **هذا الجزء اختياري لك الحرية في الاجابة عنه**

ما هي اهم الميعقات التي تواجهك في مكان عملك؟

من وجهة نظرك ما هي الحلول الممكنة للتخلص من هذه المعيقات؟

من فضلك كتابة أي ملاحظات او مخاوف لديك ؟

وشكرا لكم لاستكمال هذه الاستبانة.

Appendix C: Questionnaire-English

The Potential Effectiveness of Lean 5S Tool in Promoting Employees' Performance in the Ministry of Finance, West Bank, Palestine

The purpose of this questionnaire is to obtain an overview of the readiness for, awareness of and contribution of Ministry of Finance employees to implementation of the 5S tool and to measure the potential effectiveness of the 5S tool in enhancing the job performance according to ministry employees'.

The information collected through this questionnaire will be used for scientific research purposes only, and all information will be strictly confidential

Your participation and views would be greatly appreciated and respected.

For more accurate answers the following items need to be clarified .Please read them carefully and answer the questions below:

5S is the philosophy of taking care of the workplace by getting it organized and cleaned. It consists of five basic steps. Each step is called in Japanese with a word that begins with the letter S, hence the name 5S.

Name in japan	**Name in English**	**Description**
Seiri	**Sorting**	Sorting necessary and unnecessary things
		Removing unnecessary items
		Freeing workplaces from noisy things
Seiton	**Set in Order**	Arranging all things for quick use correctly and efficiently.
		Putting things in the same place every time without much effort.
		Reconsidering general layout of the workplace itself.
Seiso	**Shining**	Cleaning everything such as tools, equipment, desks, windows and stores to get a very clean work environment.
Seiketsu	**Standardization**	Obeying all obligatory rules in the company such as procedures, instructions, regulations, orders),
		Spelling out the responsibilities of each employees and developing standard ways for work with them so that every employee knows his/her duty periodically and how to perform it.
		Ensuring that the situation continues in a good way so that we do not go back to old habits. .
Shitsuke	**Sustain**	Establishing systems to ensure continuity of all previous operations: classification, arrangement, cleaning, profiling
		Implementing procedures according to decisions and integrating them into the organization's work so that they become habits.

Please answer all questions in this questionnaire. .Please tick (√) in the front of the number that reflects your point of view

Section one: Respondents' Demographic Data

1.1 Gender

□Male □Female

1.2 Age

□ Less than 25yrs □ 25-less than 35 yrs.
□ 35- 44 yrs. □ 44- less than 55yrs
□ More than 55yrs

1.3 Position

□ Employee □ Head of Division
□ Head of Department □ Manager
□ General Director

1.4 Educational level

□ Diploma or less □Bachelor's degree
□ Master's degree □ Other

1.5 Experience in Ministry of Finance

□ Less than 10yrs □ 10-less than 20yrs
□ 20-less than 30yrs □ 30-less than 40yrs

1.6 Departments

□ IT □ Customs and Taxes
□ General Accountant □ Cash
□ Audit □ Accounts
□ Budget □ Payroll
□ Administration and Finance □ Other

PART TWO:

This part consists of five sections. Its items measure the effectiveness of the S5 tool in enhancing employee performance according the Ministry of Finance employees' in Ramallah. I ask you kindly to evaluate the level of your agreement with the following statements according to a five-point scale: strongly disagrees takes #1 while strongly agree takes #5

Please evaluate your level of agreement with each of the following statement, using the following criteria:
1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5.Strongly Agree

First Construct: Readiness for implementation of 5S practices

NO	Statement	Degree of Agreement				
1	I classify necessary and unnecessary tools in my workplace.	1	2	3	4	5
2	I remove unnecessary tools in my workplace.	1	2	3	4	5
3	I arrange tools for quick use.	1	2	3	4	5
4	I arrange tools for use properly.	1	2	3	4	5
5	I always clean my office.	1	2	3	4	5
6	I always arrange my office.	1	2	3	4	5
7	I put things I use in their proper places	1	2	3	4	5
8	I feel happy to show my office properly.	1	2	3	4	5
9	I have commitment to all rules and regulations of the ministry.	1	2	3	4	5
10	I keep procedures in accordance with decisions.	1	2	3	4	5

Second Construct: Contributions to implementation of 5S practices

NO	Statement	Degree of Agreement				
1	Practicing 5S would increase my creativity.	1	2	3	4	5
2	Practicing 5S would improve quality of my work life.	1	2	3	4	5
3	Practicing 5S would increase m empowerment.	1	2	3	4	5
4	Practicing 5S would improve my job skills.	1	2	3	4	5
5	Practicing 5S would improve my self-discipline.	1	2	3	4	5
6	Practicing 5S would improve my communication with my colleagues.	1	2	3	4	5
7	Practicing 5S would increase teamwork spirit.	1	2	3	4	5
8	Practicing 5S would make my job easier in general.	1	2	3	4	5
9	Practicing 5S would increase my participation in solving work problems.	1	2	3	4	5
10	Practicing 5S would make me proactive in providing suggestions for improvement of work mechanisms.	1	2	3	4	5

Third Construct: Employees' awareness of implementing the 5S practices

NO	Question	Degree of Agreement				
1	Practicing 5S would make fewer accidents in my workplace.	1	2	3	4	5
2	Practicing 5S would make my workplace more attractive and cleaner.	1	2	3	4	5
3	Practicing 5S would make my workplace more comfortable.	1	2	3	4	5
4	Practicing 5S would enhance my participation in decision making.	1	2	3	4	5
5	Practicing 5S would facilitate my fulfilling of job responsibilities on a regular basis.	1	2	3	4	5
6	Practicing 5S would enable me to cope well with unexpected situations at work.	1	2	3	4	5
7	Practicing 5S would help me spend less effort searching for documents and tools.	1	2	3	4	5
8	Practicing 5S would help me provide better service for clients.	1	2	3	4	5
9	Practicing 5S would help me provide service for clients in a short time.	1	2	3	4	5
10	Practicing 5S would increase my utilization of resources correctly.	1	2	3	4	5

Fourth Construct: Employees' performance

NO	Statement	Degree of Agreement				
1	I plan my work well.	1	2	3	4	5
2	I am able to set my job priorities	1	2	3	4	5
3	I manage my time well.	1	2	3	4	5
4	I have the ability to carry out my work efficiently.	1	2	3	4	5
5	I take the initiative to start a new task when my old tasks have been completed.	1	2	3	4	5
6	I work on keeping my job-related knowledge up-to-date.	1	2	3	4	5
7	I have the ability to work under pressure.	1	2	3	4	5
8	I am constantly looking for new challenges in my work.	1	2	3	4	5
9	I avoid focusing on negative aspects of my work.	1	2	3	4	5
10	I explore creative solutions for new problems.	1	2	3	4	5

Fifth Construct: Clean workplace environment

NO	Statement	Degree of Agreement				
1	All files and documents in my office I need are for work	1	2	3	4	5
2	Safety equipment, such as fire extinguishers, don't expire in my workplace.	1	2	3	4	5
3	Electrical wires are elaborate and are not exposed in my workplace.	1	2	3	4	5
4	Visitors and customers can access the right person easily.	1	2	3	4	5
5	There are guiding boards that help visitor to access the right person without minimum effort.	1	2	3	4	5
6	Stationery is always available in my workplace.	1	2	3	4	5
7	My office space is being used for useful things.	1	2	3	4	5
8	File and documents are always arranged in my workplace.	1	2	3	4	5
9	My office is always clean.	1	2	3	4	5

SECTION TWO: (optional)

What are the most important obstacles that you face in your workplace?

In your opinion, what are the possible solutions to get rid of these obstacles?

Please write any observations or concerns.

Thank You for Your Participation!

Appendix D: Correlation Coefficient

Table D.1 shows the correlation coefficient for each item of "Readiness for implementation of 5S practices among Ministry of Finance employees" and the total domain. The p-values (Sig.) were less than 0.05, so the correlation coefficients of this domain were significant at α = 0.05. Therefore, it can be said that the items of this domain were consistent and valid to measure what they were set for.

TABLE D.1: CORRELATION COEFFICIENT OF EACH ITEM OF " READINESS FOR IMPLEMENTATION OF 5S PRACTICES AMONG MINISTRY OF FINANCE EMPLOYEES" AND THE TOTAL DOMAIN.

Item	Correlation Coefficient(Spearman)	Correlation Coefficient	P-Value
I classify necessary and unnecessary tools in my workplace.	1	1	.000
I remove unnecessary tools in my workplace.	.590**	.555**	.000
I arrange tools for quick use.	.575**	.577**	.000
I arrange tools for use properly.	.590**	.615**	.000
I always clean my office.	.522**	.514**	.000
I always arrange my office.	.531**	.500**	.000
I put things I use in their proper places.	.536**	.510**	.000
I feel happy to show my office properly.	.482**	.581**	.000
I have commitment to all rules and regulations of the ministry.	.489**	.581**	.000
I keep procedures in accordance with decisions.	.494**	.593**	.000

**. Correlation is significant at 0.01 level (2-tailed).

TABLE D. 2: CORRELATION COEFFICIENT OF EACH ITEM OF THE DESIRE OF CONTRIBUTION TO IMPLEMENTATION OF 5S PRACTICES IN MINISTRY OF FINANCE" AND THE TOTALDOMAIN.

Statement	Correlation Coefficient(Spearman)	Correlation Coefficient(Pearson)	P-Value
Practicing 5S would increase my creativity.	1	1	.000
Practicing 5S would improve quality of my work life	.687**	.691**	.000
Practicing 5S would increase my empowerment.	.642**	.669**	.000
Practicing 5S would improve my job skills.	.491**	.556**	.000
Practicing 5S would improve my self-discipline.	.429**	.458**	.000
Practicing 5S would improve my communication with my colleagues.	.418**	.438**	.000

Practicing 5S would increase teamwork spirit.	.495**	.536**	.000
Practicing 5S would make my job easier in general.	.525**	.569**	.000
Practicing 5S would increase my participation in solving work problems.	.504**	.523**	.000
Practicing 5S would make me proactive in providing suggestions for improving work mechanisms.	.496**	.520**	.000

**. Correlation is significant at 0.01 level (2-tailed).

Table D.2: shows the correlation coefficient for each item of "Deire of contribution of employees to implementation of the 5S practices in the Ministry of Finance" and the total domain. The p-values (Sig.) are less than 0.05. Therefore, the correlation coefficients of this domain were significant at $\alpha = 0.05$. Accordingly, it can be said that the items of this domain consistent and valid to be measure what they were set for.

TABLE D.3: CORRELATION COEFFICIENT OF EACH ITEM OF " EMPLOYEES' AWARENESS OF IMPLEMENTING THE 5S PRACTICES IN THE MINISTRY OF FINANCE" AND THE TOTAL DOMAIN

Statement	Correlation Coefficient(Spearman)	Correlation Coefficient(Pearson)	P-Value
Practicing 5S would make fewer accidents in my workplace.	1	1	.000
Practicing 5S would make my workplace more attractive and cleaner.	.607**	.633**	.000
Practicing 5S would make my workplace more comfortable.	.544**	.575**	.000
Practicing 5S would enhance my participation in decision making.	.434**	.497**	.000
Practicing 5S would facilitate my fulfilling of job responsibilities on a regular basis	.471**	.492**	.000
Practicing 5S would enable me to cope well with unexpected situations at work.	.463**	.472**	.000
Practicing 5S would help me spend less effort searching for documents and tools.	.457**	.477**	.000
Practicing 5S would help me provide better service to clients.	.560**	.592**	.000
Practicing 5S would help me provide service to clients in a short time	.536**	.551**	.000
Practicing 5S would increase my exploitation of resources properly.	.557**	.540**	.000

**. Correlation is significant at 0.01 level (2-tailed).

Table D.3: shows the correlation coefficient for each item of "Ministry of Finance Employees' Awareness of implementing the 5S Practices" and the total domain. The p-values

(Sig.) were less than 0.05, so the correlation coefficients of this domain were significant at α = 0.05. Therefore, it can be said that the items of this domain were consistent and valid to measure what they were set for.

TABLE D.4: CORRELATION COEFFICIENT OF EACH ITEM OF "EMPLOYEES PERFORMANCE" AND THE TOTAL OF THIS FIELD.

Item	Correlation Coefficient(Spearman)	Correlation Coefficient(Pearson)	P-Value
I plan well for my work.	1	1	.000
I am able to set my job priorities.	.678**	.759**	.000
I manage my time well.	.587**	.617**	.000
I have the ability to carry out my work efficiently.	.594**	.659**	.000
I take the initiative to start a new task after my old tasks have been completed.	.504**	.495**	.000
I work on keeping my job-related knowledge up-to-date.	.570**	.589**	.000
I have ability to work under pressure.	.608**	.626**	.000
I am constantly looking for new challenges in my work.	.485**	.479**	.000
I avoid focusing on negative aspects of my work.	.426**	.395**	.000
I explore creative solutions for new problems.	.467**	.486**	.000

**. Correlation is significant at 0.01 level (2-tailed).

Table D.4 shows the correlation coefficient for each item of "Employees' Performance" and the total domain. The p-values (Sig.) were less than 0.05, so the correlation coefficients of this domain were significant at α = 0.05. Therefore, it can be said that the items of this domain were consistent and valid to measure what they were set for.

TABLE D.5: CORRELATION COEFFICIENT OF EACH ITEM OF "CLEAN WORKPLACE ENVIRONMENT" AND THE TOTAL DOMAIN.

Item	Correlation Coefficient(Spearman)	Correlation Coefficient(Pearson)	P-Value
All files and documents in my office I need are for work.	1	1	.000
Safety equipment, such as fire extinguishers, do not expire in my workplace.	.437**	.445**	.000
Electrical wires are elaborate and are not exposed in my workplace.	.385**	.417**	.000
Visitors and customers can easily access the right person.	.361**	.367**	.000
There are guiding boards to help visitor access the right person with minimum effort.	.236**	.281**	.000

Stationery is always available in my workplace.	.420**	.414**	.000
My office space is being used for useful things.	.378**	.435**	.000
File and documents are always arranged in my workplace.	.462**	.507**	.000
My office is always clean.	.347**	.350**	.000

**. Correlation is significant at 0.01 level (2-tailed).

Table D.5 shows the correlation coefficient for each item of the "Clean workplace environment "and the total domain. The p-values (Sig.) were less than 0.05, so the correlation coefficients of this domain were significant at $\alpha = 0.05$. Therefore, it can be said that the items of this domain were consistent and valid to measure what they were set for.

الملخص

أجريت هذه الدراسة للتعرف على مدى الفاعلية المحتملة لأداة 5S اتجاه أداء الموظفين في وزارة المالية ، رام الله-الضفة الغربية.

وذلك من خلال قياس معدل استعداد الموظفين لتنفيذ أداة 5S ، ودور مشاركة الموظفين في تنفيذ أداة 5S ووعي الموظفين لتنفيذ أداة 5S ومدى تأثير بيئة العمل النظيفة على الاداء الوظيفي.

تم اعتماد المنهج الكمي والنوعي. بالنسبة للبيانات التي تم الحصول عليها من خلال الطريقة الكمية ، تم تحليل فرضيات البحث لهذه الدراسة باستخدام اختبار ارتباط بيرسون من خلال الحزمة الإحصائية للعلوم الاجتماعية.

أظهرت النتائج أن هناك علاقة ارتباط ذات دلالة إحصائية بين أداء الموظفين وكل من استعداد الموظفين لتنفيذ ممارسات 5S، مساهمات الموظفين (المشاركة) في تنفيذ ممارسات 5S ، وعي الموظفين بتنفيذ ممارسات 5S ، وبيئة مكان العمل النظيفة. من ناحية أخرى ، تم الحصول على البيانات النوعية لهذه الدراسة من خلال مقابلات غير منظمة.

أشارت النتائج المستخلصة من هذه الدراسة إلى أن موظفي وزارة المالية يتمتعون بمستوى عالٍ من الاستعداد والوعي والمشاركة لتنفيذ ممارسات 5S ، ويبدو ان للادارة العليا وبيئة العمل المنظمة دورمهم في تنفيذ برنامج 5S وتعزيز أداء الموظفين ، بالإضافة إلى ذلك ، أشارت نتائج هذه الدراسة أيضًا إلى أن الادارات التالية: المحاسب العام والرواتب والموازنة كانت جادة في ممارسة أداة 5S مقارنة بالإدارات الأخرى مثل (الجمارك والضرائب والنقدية والتدقيق وتكنولوجيا المعلومات والحسابات والشؤون الادارية والمالية).

أظهرت معظم النتائج مع الدراسات السابقة والنظريات ذات الصلة ونماذج الجودة أن ممارسات مفهوم 5S لعبت دورًا فعالًا في التأثير على أداء الموظفين. علاوة على ذلك ، اتفق معظم الموظفين على أن ممارسات 5S يُنظر إليها على أنها تقنية فعالة يمكنها تحسين الأداء البيئي الوظيفي ومعايير الصحة والسلامة في مكان عملهم. ومع ذلك، فإن وعي الموظفين واستعدادهم هو العامل الرئيسي الذي يحدد نجاح تنفيذ برنامج 5S.

أخيرًا ، تم تقديم توصيات للمؤسسات الحكومية من أجل تطوير عملياتها من خلال التفكير المرن في قطاعات الخدمات في الضفة الغربية، يهدف هذا إلى تبني التفكير الخالي من الهدر الذي يقوم بدور مهم في التأثير على تحسين أداء الموظفين والمؤسسات.

الكلمات المفتاحية: التفكير الخالي من الهدر ، ممارسات 5S ، أداء الموظفين ، استعداد الموظفين ، وعي الموظفين ، مشاركة الموظفين ، بيئات العمل النظيفة,وزارة المالية.