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The Impact of Lean Manufacturing Practices in Enhancing Sustainable Performance through Lean Culture: Field Study at the General Company for Food Products – Baghdad

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Abstract

The study aimed to determine the effect of lean manufacturing practices in enhancing sustainable performance by mediating the lean culture in the General Company for Food Products in Baghdad, the field of study represented by the factories (Al-Maamoun, Al-Rasheed, and Al-Amin), where the study included the independent variable of lean manufacturing practices in their dimensions (comprehensive productive maintenance, map). Value flow, production on time, speed of preparation and preparation) in achieving sustainable performance in its dimensions (economic performance, social performance, environmental performance) by mediating the lean culture in its dimensions (continuous improvement, organizing the work site, reducing waste, and lean thinking). The study attempted to answer the questions that express the problem of the study, including: Is there an effect of lean manufacturing practices and the lean culture in achieving sustainable performance? The questionnaire was distributed to a sample of technicians in the company's factories in the field of study. The study relied on the questionnaire as the main tool for collecting data through a random sample that included (218) technicians working in the factories under study. Some statistical methods were used for the two ready-made programs (SPSS, v.28, AOMS, V.26(. The study results that the primacy of the variables based on their relative importance, as they were respectively (lean culture, lean manufacturing, and sustainable performance). The results of the study showed that there is an effect of lean manufacturing practices in sustainable performance through the lean culture, The Food Industries Company was able to reduce unnecessary activities by using a lean culture to reduce waste, and this led to improving and sustaining performance in the company's field of study.

Keywords: *Lean Manufacturing Practices, Lean Culture, Sustainable Performance, Food Industry Company in Baghdad.*

INTRODUCTION

With the escalation of economic turmoil and environmental and social risks at the global level, organizations began working to provide high-quality products and services that have a positive effect on the environment. Organizations have become obligated to take into account the environmental and social dimension, in addition to the financial dimension, to express sustainable performance. Sustainable performance aims to achieve the well-being of society. Without harming natural resources, which are the common property of current and future generations, sustainable performance is measured through multiple indicators that include economic, social and environmental aspects. This trend called on industrial organizations in general and food industries in particular to develop their manufacturing processes by adopting lean manufacturing practices that aim to optimize the use of resources within the organization, whether human or material resources, in addition to the time resource, which includes time for unnecessary movements of workers and materials, excess inventory, and waiting in production lines. The lean culture also contributes to instilling lean manufacturing practices among the organization's employees, which plays a major role in Achieving sustainable performance as it is concerned with continuous improvement of operations and organizing the work site in an organized and effective manner, focusing on reducing waste and adopting lean thinking through rationalization of operations.

STUDY METHODOLOGY

Statement of Problem

In light of the current situation that industrial companies are experiencing, of high competition in dealing with the dilemma of sustainable performance, as well as the waste of resources and loss of time in production processes, which requires them to search for alternatives and new solutions, especially in an environment that

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suffers from a weak culture related to lean manufacturing practices represented by (comprehensive productive maintenance). , value flow map, production on time, speed of preparation and preparation), and in order for industrial companies to eliminate forms of waste and loss in manufacturing processes, it is necessary to know and understand the lean culture represented by (continuous improvement, organizing the work site, reducing waste, and lean thinking), and in order to reach For sustainable performance, attention must be paid to (economic performance, social performance, environmental performance)ز

Through field visits to the industrial company, the field of the current study (the General Company for Food Products), the researcher noticed the decline in the company's performance and the occurrence of some technical malfunctions during production operations, as well as frequent power outages and the lack of availability of raw materials as quickly as possible, as well as a weakness in understanding lean manufacturing practices free of... Wastage and loss as a result of not adopting a lean culture among technicians in the company's factories. Therefore, the problem of the study lies in the following questions:

The first question: What is level of interest in the study variables (lean manufacturing practices, lean culture, and sustainable performance) in the industrial company's field of application?

The second question: What is effect of lean manufacturing practices on sustainable performance in the industrial company in the field of application?

The third question: What is the level of influence of lean manufacturing on the lean culture in the study environment?

Fourth question: What is effect of the lean culture on the sustainable performance of the company in the field of study?

The fifth question: What is effect of lean manufacturing on sustainable performance by mediating the lean culture?

Search Objectives

The study aims to demonstrate the extent to which lean manufacturing practices contribute to supporting sustainable performance by using the lean culture, which has an intermediary role. The following is a summary of those goals in the following points:

Define the level of availability of the study variables (lean manufacturing, lean culture, sustainable performance) in the General Company for Food Products, the field of study.

Define the level of effect of lean manufacturing on sustainable performance in the General Company for Food Products, field of study

Define the level of effect of lean manufacturing on the lean culture in the General Company for Food Products, the field of study.

Define the level of effect of the lean culture on sustainable performance in the General Company for Food Products, the field of study.

Define the level of effect of lean manufacturing on sustainable performance by centering the lean culture in the General Company for Food Products, the field of study.

Hypotheses and Study Model

The model was designed to reflect the study variables and their connections, as shown in Figure (1).

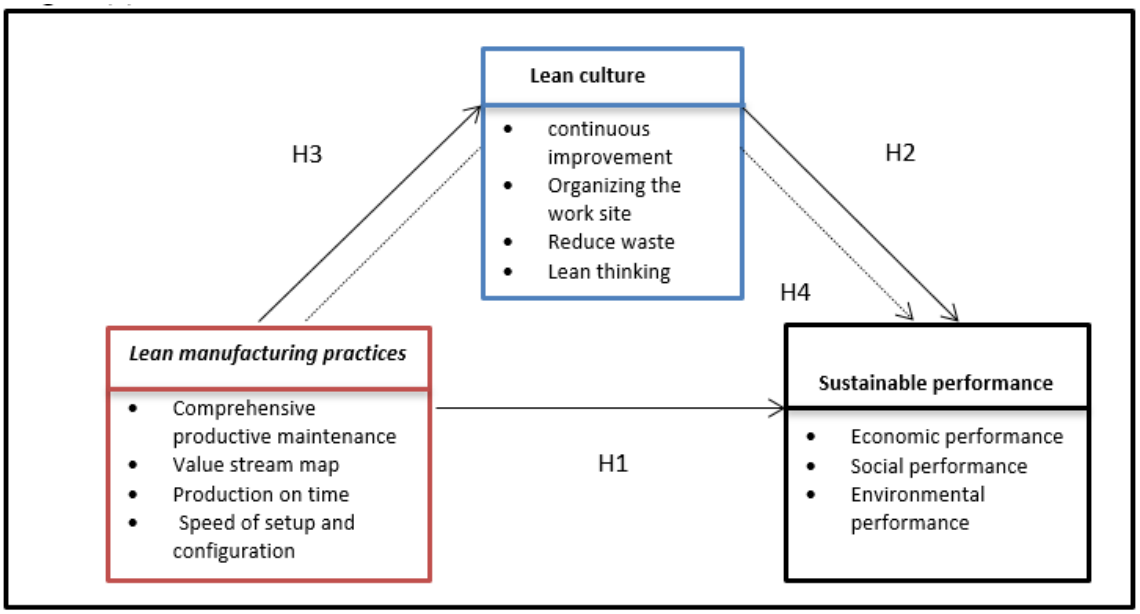

Figure 1. Study model.

Hypotheses will be formulated:

The First hypothesis (H_1): There is a moral and statistical effect of lean manufacturing practices in sustainable performance

The Second hypothesis (H_2): There is a moral and statistical effect of Lean Culture in sustainable performance

The Third hypothesis (H_3): There is a moral and statistical effect of lean manufacturing practices in the Lean Culture

The fourth hypothesis (H_4): There is a moral and statistical of lean manufacturing practices on sustainable performance through lean culture in its mediating role.

Study Community and Sample

The place of application of the study is one of the important matters on which the current study is being conducted, as the General Company for Food Products, which includes a group of factories in Baghdad, was chosen to conduct the study (Al-Ma'moun Factory, Al-Rasheed Factory, and Al-Amin Factory), as these factories offer different and varied products, and these products are considered to have high quality. It is important because customers need it, as it includes soap, detergents, detergents, toothpaste, and various other products. The study population consists of all technicians working in the company's factories, who number (495) technicians.

Study sample: The study used a purposive random sample of technicians working in the company in the field of study. Its size was (218) technicians according to the equation (Stephen Thompson), which is:

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

Tools Used in Collecting Study Data

To enrich the theoretical aspect, the studyers used various scientific sources, including Arab and foreign books and study, Internet study, master's theses, and relevant doctoral dissertations that covered the theoretical aspect of the study. And The practical part: The questionnaire represents the main tool for the practical part of the study. The questionnaire consisted of variables (lean manufacturing practices, lean culture, sustainable

performance), with a total of (55) dimensional indicators of the study variables. A five-point Likert scale was used as in Table 1.

Table 1. Likert scale.

The Level of Practice	Very High	High	Average	Weak	Very Weak
Grade	5	4	3	2	1

The questionnaire was also designed with reference to the field of study and the opinions of the researchers, as in Table (2).

Table 2. Questionnaire structure and approved source.

Study variables	Dimensions	Number of indicators	Resources
Lean Manufacturing Practices	Comprehensive productive maintenance	5	(Ali,2016)
	Value stream map	5	
	Production on time	5	(Arif & Alwan, 2023)
	Speed of setup and configuration	5	
Lean Culture	continuous improvement	5	(Chahal&Narwal,2017)
	Organizing the work site	5	
	Reduce waste	5	)Mensah,et.al,2020(
	Lean thinking	5	
Sustainable Performance	Economic performance	5	
	Social performance	5	)Yusliza,et.al,2020(
	Environmental performance	5	

THEORETICAL REVIEW OF STUDY

Lean Manufacturing Practices

Lean Manufacturing Practices concept: It is defined as a system for reducing losses in the production chain, reducing costs, improving quality and timely delivery, making the production process more efficient, and maximizing the overall use of activities to achieve customer satisfaction (Queiroz et al, 2015:1).

Lean Manufacturing Practices Importance: The importance of lean manufacturing practices stems from reducing inventory to a minimum, lowering the cost of production, and eliminating waste and any unnecessary activities that do not add value to the production process (133: Chikhalikar & Sharma, 2015). Improving quality, rapid market response, and maintaining competitive advantage in the market (Al-Moussawi and Abu Ragheef, 2023: 144).

Lean Manufacturing Practices objective: There are many goals that the organization seeks to achieve, including improving quality, which expresses the organization's ability to meet the expectations of its customers, as the quality of goods and services is the organization's main weapon in confronting competition (Arnheiter & Kumar, 2014: 232). Reducing inventory levels to a minimum at all stages of production, especially work-in-half (WIP) inventory between production stages (Daoud et al., 2020: 337).

dimensions of lean manufacturing practices There are different dimensions of lean manufacturing practices according to the nature and activity of the company, and the most influential dimensions were identified, which are (comprehensive productive maintenance, value flow map, on-time production, speed of preparation and configuration) and were chosen through the relationship between the study variables and the ease of appropriate application with the current study objectives and can be dealt with. with them as follows:

Comprehensive productive maintenance: Comprehensive productive maintenance is described as a set of methods by which to ensure that the required tasks operate continuously without stopping. This function goes back to the basic functions of preventive maintenance and standardization, the responsibility of which is entrusted to machine operators from production workers in order to identify, monitor and correct the problems that cause machine stops. unnecessary (Ibrahim, 2019: 365).

Value stream map: The value stream map serves as a guide to standardizing operations by depicting the flow of materials and information. It provides a strategic plan for organizations to move towards lean manufacturing (Seth et al., 2017:400).

Production on time: a systematic approach to improving production processes, reducing waste, and delivering in the specified quantity and time, taking into account the quality required in the production process at the right time and the right place. And using the minimum amount of resources based on the balance between the flexibility of the supplier and the flexibility of the human resources used (Al-Jumaili, 2020: 402).

Speed of preparation and configuration: Speed of preparation and configuration means the process of reducing the time required to adjust production lines. There is a relationship between product costs and preparation time. The long time in adjusting production lines means the necessity of producing large quantities of the same product, and this is not consistent with reducing the size of orders and thus reducing inventory (2018Singh, & Solke).

Lean Culture

Lean Culture concept : An intellectual and value-based approach based on a set of values, principles, administrative methods and measures that, when practiced correctly, eliminate waste of all kinds and this contributes to enhancing sustainable performance (Sanders, et.al, 2017:2).

The importance of Lean Culture: The ability to make timely decisions by rationalizing alternatives that do not add value (Al-Janabi, 2021: 85), while lean culture enhances employees' awareness of their responsibilities, their nature, and the role they perform and also supports agility practices in the organization (Liungblom, 2012: 56-59).

Lean Culture objectives: In addition to helping to define organizational distinctions, culture also gives members of an organization a feeling of identity, encourages dedication to goals beyond personal gain, and strengthens the social order. By establishing guidelines for behavior, it strengthens the bonds within the organization and plays a significant role in influencing people's attitudes and actions within its surroundings. (Robbins & Judge 2017:568).

Dimensions of Lean **Culture:** There are different dimensions of the lean culture in terms of its nature and activities, and its most influential dimensions can be identified (continuous improvement, organizing the work site, reducing waste, and lean thinking). They were chosen through the relationship between the study variables and the ease of appropriate application with the current study objectives, and they can be dealt with. As follows:

Continuous improvement (Kaizen): is an organized improvement project that relies on a multi-functional and specialized team to improve a targeted work environment within a rapid time horizon (Glover, 2010:24). In order for an organization, whether large or small, to achieve the success it aims to achieve, it must put a method of improvement permanently within its drawn-up plans. Stopping the organization at a specific point of progress and development makes it possible for competitors to accelerate their steps, overcome them, and even outperform them as well. Continuous improvement has many positive repercussions as it is based on making successive adjustments to achieve important contributions in the long term (Obaidat, 2010: 255).

Organizing the work site: that is, making the workplace organized and coordinated. This is the 5S method, which is the first stage of implementing lean management in the organization. Organizing the workplace is considered a major tool whose mission is to arrange and improve the work site and the atmosphere surrounding the workers. This tool does not stop at storage and cleanliness of the site. Not only that, but it goes beyond removing chaos and raising the level of safety and security for workers. The five stages are known as (Five-step-plan), which is consistent with the first five Japanese words that define the appropriate intellectual situation for this tool to be used successfully (Walter, 2017:24).

Reducing waste: Waste is described as everything that does not give additional value to the customer or the organization. There are many forms of waste, such as surplus production, transportation, waiting, processing, production of defective materials, in addition to a type of waste in actions and operations that do not give any benefit to production and may reach the stage of eliminating the organization. (Mossman, 2009:14).

Agile thinking: It is an important pillar of the agile culture, which focuses on supporting and enhancing suggestions for improving agile work and processes. Lean thinking focuses on improving the products to the highest level of quality provided to the customer, in addition to taking care of customers and obtaining their loyalty. The lean culture must include all aspects of the organization and its human resources in order to avoid waste and reduce it as much as possible. This means that all employees are concerned with adopting the lean culture, not just administrators, as everyone who follows lean thinking is concerned with identifying and giving value and maintaining the work's performance and continuation in the best ideal way (Alston,2017:37).

Sustainable Performance

Sustainable Performance Concept :It is the way through which the organization adds value to shareholders in particular, and to society in general, and the positives are enhanced, and the negatives of economic, environmental and social issues are eliminated (Miller et al, 2011:950).

The importance of Sustainable Performance Given that corporate organizations account for the majority of the global economy, they bear a considerable deal of responsibility, which underpins the significance of sustainable performance, as sustainable performance is considered a vital element in all aspects related to business and economic, social and environmental development. Among the researchers' opinions on the importance of sustainable performance are the following: It helps the organization to predict outcomes. potential for activity (Al-Mawajda, 2019: 21) and sustainable performance contributes to improving the organization's reputation as an environmental preserver and increasing customer satisfaction and loyalty (Danarahmanto, et al, 2020: 117).

Sustainable Performance Objectives as an organization-wide goal that includes all aspects of the business and its relationships. This requires system thinking that everything is connected in some way and that every part and every person in the business can contribute to achieving more sustainable performance. Sustainable performance aims to not Harming the environment and achieving a societal role in addition to achieving and maximizing profit for the organization (Al-Quraishi, 2017: 39).

Dimensions of Sustainable Performance: There are different dimensions of sustainable performance according to the nature and activity of the company, and the most influential dimensions were identified and were chosen through the relationship between the study variables and the ease of appropriate application with the current study objectives, and they can be dealt with as follows:

Economic performance: Economic performance represents meeting the various needs of customers by creating values for them, and according to the conditions of time, cost, and quality. One of the cornerstones of sustainable performance is econ. One of the cornerstones of sustainable performance is economic performance, which is the same as business performance as determined by cash flows, growth, productivity, profitability, and cost reduction. Company, This dimension is focused on increasing the well-being of individuals through providing them with products and services related to health, housing, education, and transportation, under a sustainable economic system that can provide goods and services on an ongoing basis and that can be controlled. Financial goals are seen as the main element for measuring this dimension, and these financial indicators contribute to the comparison. Between competitive measures and the general rate of a particular industry and contributing to determining the rate of profits and areas of growth achieved and helping the organization to fulfill its debts (Hassan and Al-Dabbagh, 2022: 100)

Social performance: One of the cornerstones of sustainable performance is econ. symbolizes the practical application of the organization's objective in accordance with societal norms. Making the organization's social goal a reality is the subject of social performance, and "safety and occupational health management systems and the organization's safe program" are key components of social performance. What social performance entails It seeks to maintain a balance between economic efficiency and labor productivity for individuals and society, exhibiting various rules, regulations, and penalties, by utilizing both renewable and non-renewable natural resources to encourage societal growth resulting from organizational performance. (Al-Ajili, 2022: 48).

Environmental performance: It is the organization's commitment to preserving and protecting the natural environment and providing goods and services that are safe for the environment. Environmental performance works to protect natural resources, provide environmentally friendly services and products, and work to reduce the use of resources harmful to the environment by increasing environmental awareness, as this dimension focuses on protection and safety. One of the cornerstones of sustainable performance is econ. The environment is created by making the best use of available natural resources and using them to benefit people. This requires attention to biological diversity, which includes humans, animals and plants, as well as attention to discovered and latent wealth and resources in their diverse forms and renewable sources, as well as the environmental effects to which the environment is exposed with all its components, water, air and land (Atta and Radi). , 2022: 73).

ANALYZE AND DISCUSS THE RESULTS OF THE DESCRIPTIVE STATISTIC OF SEARCH VARIABLES

Independed variable (Lean Manufacturing Practices): Results analyses using (SPSS,V.28) show that a variable (Lean Manufacturing Practices) achieved Arithmetic mean (3.545) and at average level, the Standard deviation (S.dv) variable of (0.778), with a coefficient of deviation (21.94), as in table (3).

Table 3. Summary of dimensions of the lean manufacturing variable.

No.	Dimensions of the lean manufacturing variable	M	S.dv	CV	Ranking of variables
1	Comprehensive productive maintenance	3.449	0.837	24.27	2
2	Value stream map	3.540	0.830	23.43	1
3	Production on time	3.655	0.889	24.32	3
4	Speed of setup and configuration	3.537	0.888	25.09	4
lean manufacturing variable		3.545	0.778	21.94	

Source: output of program (SPSS,V.28).

Mediating variable (Lean Culture) : Results analyzed using (SPSS,V.28) show the variable (Lean Culture) achieved Arithmetic mean (3.571) and at average level, the (S.dv) (0.812), with a coefficient of deviation (2221.74) as in table (4).

Table 4. Summary of the dimensions of the Lean Culture variable.

No.	Dimensions of the Lean Culture variable	M	S.dv	CV	Ranking of variables
1	continuous improvement	3.472	0.965	27.80	4
2	Organization of the work site	3.607	0.852	23.63	2
3	Reduce waste	3.534	0.856	24.21	3
4	Lean thinking	3.673	0.823	22.40	1
Lean Culture variable		3.571	0.812	22.74	

Source: output of program (SPSS,V.28).

Depended variable (sustainable performance): Results analyzed using (SPSS,V.28) show the variable (the sustainable performance) achieved Arithmetic mean (3.354) and at average level, the (S.dv) variable of (0.934) , with a coefficient of deviation (27.86) as in table (5).

Table 5. Summary of dimensions of the sustainable performance variable.

No.	Dimensions of sustainable performance variable	M	S.dv	CV	Ranking of variables
1	Economic performance	3.364	0.970	28.83	1
2	Social performance	3.344	0.998	29.85	2
3	Environmental performance	3.353	1.013	30.20	3
sustainable performance variable		3.354	0.934	27.86	

Source: output of program (SPSS,V.28).

Relative Importance of Study Variables

Table (6) shows the summary of relative importance of search variables is clear from the results of Table (6) that the level of availability of the study variables was as follows: Lean Culture variable achieved the highest percentage level in terms of the arithmetic mean, as it came in first ranking, reaching (3.571), with a (S.dv)

(0.812), and the highest coefficient of variation was (22.74). Lean manufacturing Practices variable came in second ranking, with a (S.dv) (0.778) and a coefficient of variation of (21.94). In last ranking was Sustainable performance variable.

Table 6. Summary of the importance of the Study Variables.

No.	variables	M	S	CV	Ranking of variables
1	Lean manufacturing Practices	3.545	0.778	21.94	1
2	Lean Culture	3.571	0.812	22.74	2
3	Sustainable performance	3.354	0.934	27.86	3

Source: output of program (SPSS,V.28).

TEST STUDY HYPOTHESES

The First Hypothesis (H1): There is a moral and statistical effect of lean manufacturing practices in sustainable performance

Table (7) and Figure (2) show the results of analyzing the effect of lean manufacturing practices on sustainable performance, as the extracted (F) value was (644.948). The result indicates that there is an effect of lean manufacturing on sustainable performance. Therefore, this hypothesis is accepted: There is a statistically significant and significant effect of lean manufacturing practices on sustainable performance.

Table 7. Analysis of the effect of the dimensions of lean manufacturing practices on sustainable performance.

Dependent variable	Variable dimensions of lean manufacturing practices			(R2)	Adj R^2(	(F)	(t)	Sig
Sustainable performance	Comprehensive productive maintenance	)α(	0.746	0.459	0.456	183.071	13.530	0.000
		(β)	0.756					
	Value stream map	)α(	0.235	0.612	0.610	340.054	18.441	0.000
		(β)	0.881					
	Production on time	)α(	0.238	0.657	0.656	414.355	20.356	0.000
		(β)	0.852					
	Speed of setup and configuration	)α(	0.180	0.727	0.725	574.171	23.962	0.000
		(β)	0.897					
	Lean manufacturing practices	)α(	0.332-	0.749	0.748	644.948	25.396	0.000
		(β)	1.040					

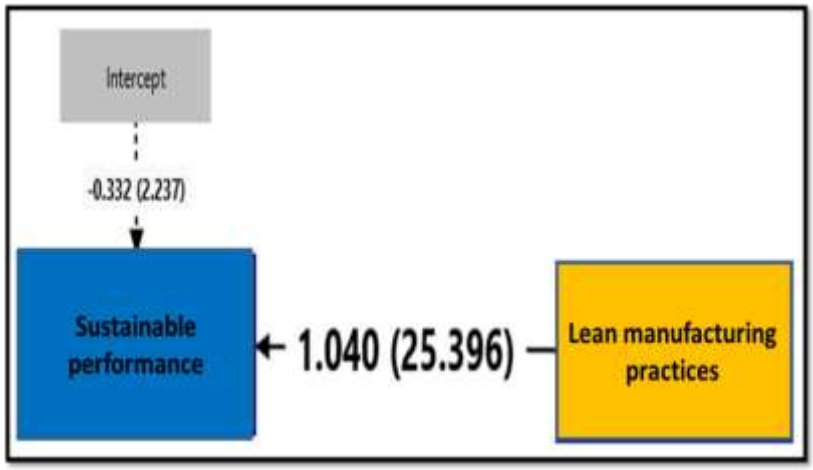

Figure 2. Analysis of the effect of lean manufacturing practices on sustainable performance.
Source: smart pls 4 program output.

The Second Hypothesis (H_2): which states there is a moral and statistical effect of Lean Culture in sustainable performance

It is noted from Table (8) and Figure (3) the results of the effect analysis of the lean culture on sustainable performance, as the extracted (F) value reached (983.205). The result indicates that there is an effect of the lean

culture on sustainable performance. In light of this result, the hypothesis is accepted that states: There is an effect. It has statistical and moral significance for the lean culture in sustainable performance.

Table 8. Effect analysis of the dimensions of lean culture on sustainable performance.

Dependent variable	Variable dimensions of lean culture			(R2)	Adj R^2	(F)	(t)	Sig
Sustainable performance	continuous improvement	α	0.364	0.791	0.790	816.793	28.580	0.000
	Organization of the work site	β	0.861					
	Reduce waste	α	0.162	0.652	0.650	404.125	20.103	0.000
	Agile thinking	β	0.885					
	Slimming culture	α	0.084	0.718	0.717	549.464	23.441	0.000
	continuous improvement	β	0.925					
	Organization of the work site	α	0.045-	0.664	0.662	426.308	20.647	0.000
	Reduce waste	β	0.925					
	Agile thinking	α	0.367-	0.820	0.819	983.205	31.356	0.000
		β	1.042					

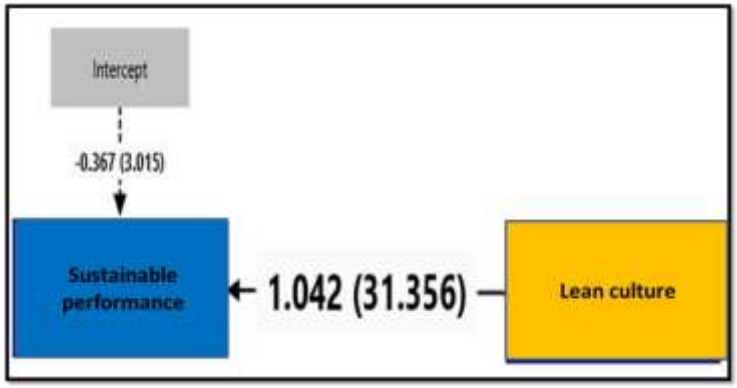

Figure 3. Effect analysis of lean culture on sustainable performance.
Source: Smart pls 4 program output.

The Third Hypothesis(H_3): There is a moral and statistical effect of lean manufacturing practices in the Lean Culture

There is a statistically significant and significant effect of the dimensions of lean manufacturing on the lean culture.

Table (9) and Figure (4) show the results of the effect analysis of lean manufacturing practices on the lean culture, as the extracted (F) value reached (707.289). The result indicates the existence of an effect of lean manufacturing practices on the lean culture. In light of this result, the hypothesis is accepted that states: There is a statistically significant and significant effect of lean manufacturing practices on the lean culture.

Table 9. Effect analysis of the dimensions of lean manufacturing practices on the lean culture.

Mediator variable	Variable dimensions of lean manufacturing practices			(R2)	Adj R^2	(F)	(t)	Sig
Lean culture	Comprehensive productive maintenance	α	1.339	0.445	0.443	173.334	13.166	0.000
		β	0.647					
	Value stream map	α	0.819	0.631	0.629	368.743	19.203	0.000
		β	0.777					
	Production on time	α	0.828	0.675	0.673	447.942	21.165	0.000
		β	0.751					
		α	0.743	0.764	0.763	699.462	26.447	0.000

	Speed of setup and configuration	(β)	0.800					
	Lean manufacturing practices	)α(	0.332	0.766	0.765	707.289	26.595	0.000
		(β)	0.914					

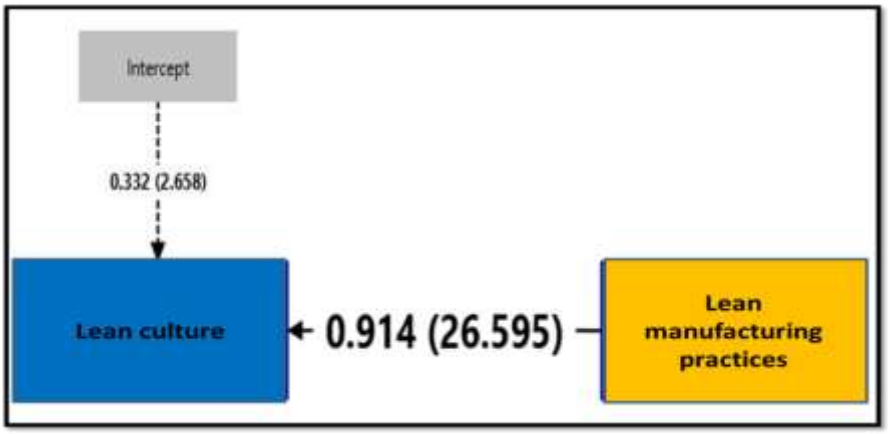

Figure 4. Effect analysis of lean manufacturing practices on lean culture.
Source: smart pls 4 program output.

The Fourth Hypothesis (H_4): There is a moral and statistical of lean manufacturing practices on sustainable performance through lean culture.

Table 10. The direct and indirect effect of lean manufacturing practices on sustainable performance through a lean culture.

Search variables		Indirect effect	Direct effect	S.E.	C.R	P Direct effect	P Indirect effect	Type of mediation
Lean Culture	Lean manufacturing	---	0.914	0.034	26.656	0.000	---	---
Sustainable performance	Lean manufacturing	0.665	0.375	0.067	5.605	0.000	0.001	Partial mediation
Sustainable performance	Lean Culture	---	0.728	0.064	11.359	0.000	---	---

Source: Output of program(smartpls4).

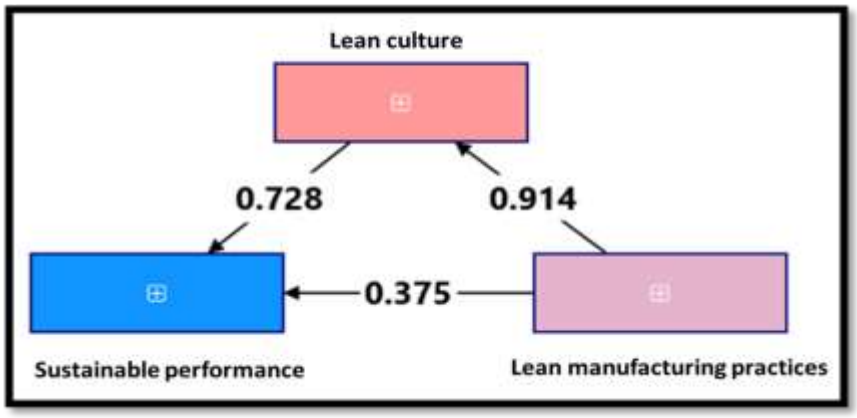

Figure 5. The direct effect of lean manufacturing practices on sustainable performance through a lean culture.
Source: smart pls 4 program output.

Test the Search Model

According to the data of the results of the final tests for the study variables in the General Company for Food Products field of application, it is possible to formulate a hypothetical plan for the study, which is considered a laboratory model that expresses the type of relationship and interaction between the variables in terms of influence in order to clarify the results and benefit from the strengths consisting of those variables in the General Company for Food Products field. Search, as shown in the figure (6).

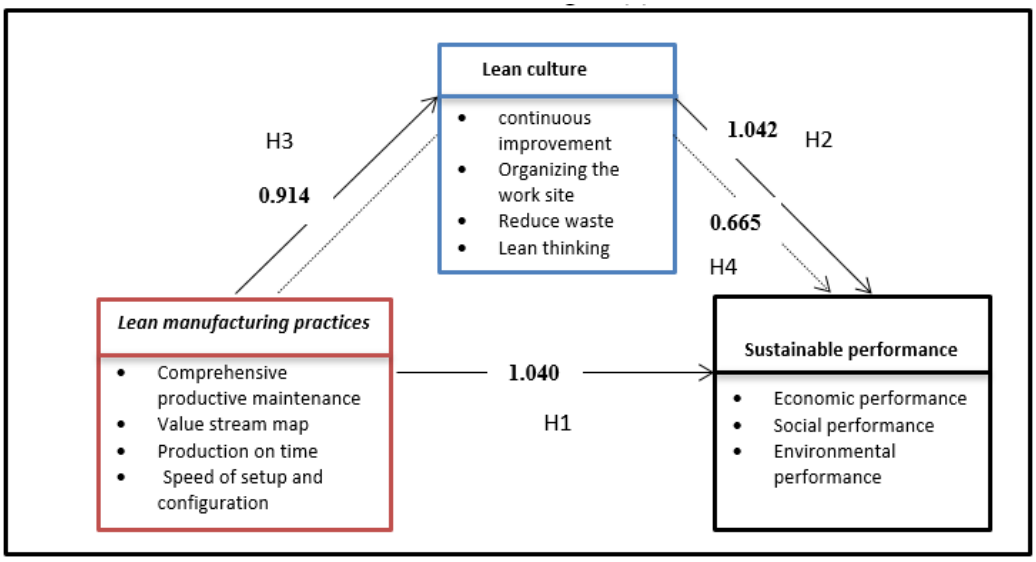

Figure 6. Study model.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The food company relies on speed in providing customers' needs and adopts the principle of lean thinking, which focuses on reducing costs and unnecessary activities.

The results revealed that the surveyed company has an average level of economic performance and that it seeks to reduce waste in the production process and waste management.

The results showed that the company's management is working to evaluate the risks it faces and evaluates the potential effects of the manufacturing process and the social costs that could be incurred by workers on the one hand and society on the other. There is an interest on the part of the company's management in rationalizing the use of resources and in the consumption of electrical energy and emissions to reduce the state of pollution, but it needs to treat the liquid waste to protect the surrounding areas.

The results revealed that lean manufacturing practices make a difference in sustainable performance and that the speed of preparation and configuration was the most influential, while comprehensive productive maintenance was the least influential in sustainable performance.

the lean culture affects sustainable performance and that continuous improvement has the most effect on sustainable performance, while organizing the work site has the least effect among the dimensions of the lean culture.

lean manufacturing practices change the lean culture of the company under investigation, and that the speed of preparation and preparation brings about a major change in the lean culture, while comprehensive productive

maintenance has the least effect among the dimensions of lean manufacturing practices influencing the lean culture.

that there is an effect of lean manufacturing practices on sustainable performance through the lean culture, and this indicates that reducing waste and costs in manufacturing processes leads to improving quality and productivity and thus improving performance in a sustainable manner in the researched company.

Recommendations

The necessity of adopting the factories of the General Company for Food Products on the principle of comprehensive productive maintenance, which relies on preventive maintenance instead of curative maintenance that is performed after machine failure, which causes a delay in the completion of orders

The factories of the General Company for Food Products must pay attention to the ventilation and lighting of the factory, in addition to the presence of dilapidated buildings that need to be restored and painted, so that the work environment is healthier and suitable for technicians and workers.

The necessity of providing special training programs for technicians and qualifying administrative leaders on lean manufacturing practices with the help of universities, institutes and specialized training centers.

Ensuring continuous training to develop thinking that focuses on finding innovative methods to streamline manufacturing processes and honoring the worker who presents ideas that contribute to improving manufacturing processes.

The necessity of arranging work places, production departments, machines, and equipment according to scientific principles and in a manner consistent with human engineering to achieve production efficiency.

The necessity of cooperation between food companies in the public sector and the private sector with the aim of improving the reality of the food industry, improving the quality of its outputs, and reducing future dependence on imported products

It is necessary to adopt a place and machines with multiple uses to facilitate the adoption of lean manufacturing through speed in production, ease of redesign, and the possibility of production on time.

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