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The Excellent Performance of Operations According to Modern Manufacturing aStudy of the Analytical Survey of the Refinery in Baghdad

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Abstract:*The research aims to highlight the role of modern manufacturing systems (Lean production and Agile production) in achieving the outstanding performance of the operations performed by Al-Doura Refinery Company in Baghdad. The research sample was selected from (77) persons, In the refinery of the course also as one of four refineries belonging to the Middle Refineries Company in all its divisions and its divisions related to the production of light derivatives for the application of the practical side of the research, the researchers followed the descriptive approach as the data and information were collected by the questionnaire distributed to a sample of managers in the refinery. Allen The results reached by the researchers that there is a strong relationship between modern manufacturing systems with outstanding performance of operations, as well as contribute to modern manufacturing systems in the outstanding performance of operations.*

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I. Introduction

The first subject :Scientific Methodology of Research

The achievement of the excellent performance of industrial companies needs intensive efforts by senior management in general and production management in particular. Therefore, industrial companies are trying to adopt modern manufacturing systems to become the leading companies in their field of work. The production of lean and agile production of modern topics with their role in achieving the excellent performance of the processes, so the study will address the subject of modern manufacturing systems to come out with the most important conclusion and recommendation ..

First: the scientific problem of research

The manufacturing process is of lean and agile. It is a modern manufacturing process. It involves a programmed conversion process, which is rooted in the transfer of manufacturing systems and activities from traditional to modern methods, in order to eliminate the inventory in the factories and free it from losses to control production resources in a studied and quick methodology. Working with acceptable quality contributes to the addition of tangible and intangible value to the customer. During the field visit to the refinery of the session identified several important things:

A - Lack of culture on the subject of modern manufacturing systems that contribute to increased protection for the internal and external environment of the refinery and to achieve excellence in performance from the rest of the refineries.

B- Increasing inventory under operation, due to reasons such as poor attention to time factor in the process of processing products.

c- Lack of interest in manufacturing operations, low sales of refinery and poor attention to the causes of this weakness.

The problem of the research**lies in answering the following questions:**

A - What is the concept of modern manufacturing and what are the times that contribute to increase the efficiency and efficiency of the refinery and then achieve excellent performance.

b- What is the concept of of lean and agile production in modern manufacturing and what tools can we apply in the sample research?

II. The Importance Of Research

The importance of research is illustrated by the following:

A - The research tackles a vital and important issue: adopting the modern manufacturing philosophy so that the refinery can improve its operations and help it respond rapidly in the Iraqi market.

B- The importance of the research is that the application Lean production and Agile production will enable the refinery to improve its production operations and reduce the losses and detection and identify the sources and locations of these losses.

C- directing the attention of the refinery management to the importance of the research variables because they have a role in achieving the excellent performance of their production processes,

III. Research Objectives

The research aims to achieve the following objectives:

A - Directing the interests of the administrative leaders in the refinery of the cycle to use the concept of production and agility movement and lean production to achieve the competitive advantages of the refinery Doura.

(B) To identify the reality and the possibility of using the agile and lean production by the refinery in the Iraqi industrial sector (refinery sample).

c - Highlight the knowledge of how to achieve the operational excellence of the refinery of the course through modern manufacturing.

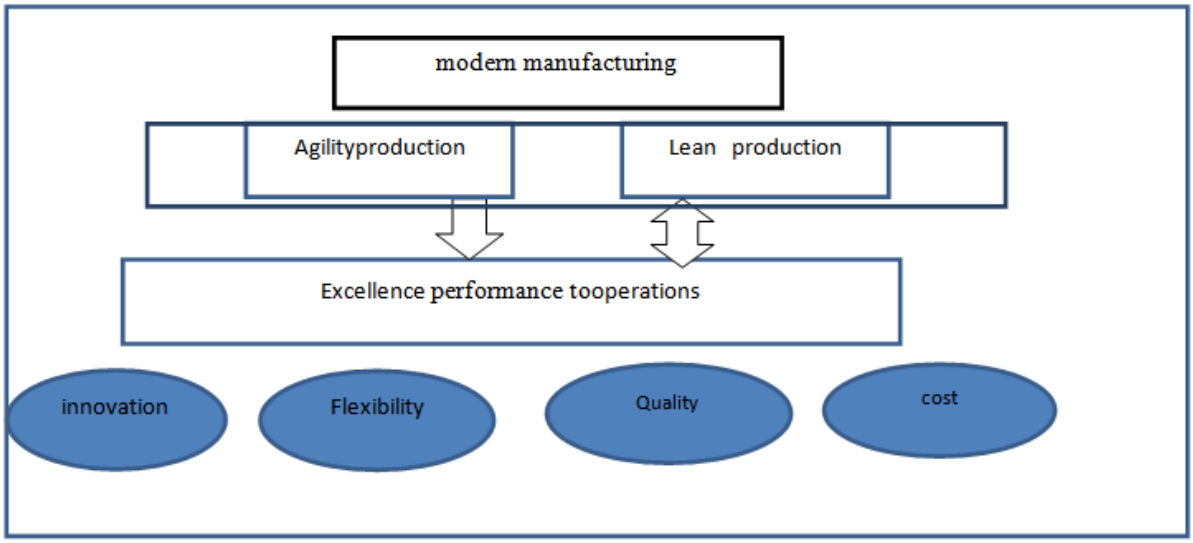
D- Knowing the role of modern manufacturing systems in achieving excellence performance of production processes.

C - Highlighting the impact of manufacturing systems on the excellence performance of refinery operations.

IV. The hypothesis of research:

The research stems from a main hypothesis: Is there an impact and relationship to modern manufacturing in the **excellent** performance of operations?

V. Hypothetical Research Diagram :



Figure(1) - hypothetical research diagram

VI. Procedural Definitions Of Search Terms:

A. Modern Manufacturing: It is a modern term that is based on modern manufacturing systems. The most important production systems are the production system which is agile -moving and the lean production is gentle and contributes to the competitive advantage of the organization.

B. lean production: The business philosophy emphasizes reducing surplus and waste in the structure of the organization as a whole, but it is particularly related to a series of events required to transfer the product to the customer in order to reduce cost and complexity and provide the best results.

c. Agility production : is the ability to adapt and mastery by moving fast, intelligent and active

D. Excellence performance: systematic study of the activities and flows of each process, to improve them and its purpose is to understand the process, and to look at the details and when the understanding of the process can be improved.

VII. Research proceduresinclude:

A. Society and the a samplefor the selection of research: The main and logical reason for the selection of refinery Dora lies in the work of the liquidator under the circumstances experienced by the country of (unstable security and political conditions, the war against terrorism and Daesh) was selected sample of the study (77) Divisions and divisions) from the administrative, technical and engineering level in the Doura refinery also as one of four refineries affiliated to the Middle Refineries Company in all its divisions and divisions related to the production of light derivatives to apply the practical aspect of the study, being the most important and most efficient refinery among those refineries in terms of energy production capacity and expertise Available in it The reputation enjoyed by the company compared to other refineries.

B. Research tool: Through the study of scientific studies and literature in the field of environmental management and production, the research scale was constructed through the design of a specific questionnaire for this purpose. 77 questionnaires were distributed and 55 questionnaires were received and a questionnaire was deleted for incomplete information. The number of paragraphs of each variable and the sub-dimension.The table below shows the main and sub-variables, the number of scales and the sources of the scale.

Table (1) Building the scale of research

Source / Year	Number of paragraphs	sub-variable	main variable	ت
(Khan &Dalu:2015)	**15**	the lean production	. Modern Manufacturing	**1**
(2017:mahssn)	**10**	the Agilityproduction		
Peng et al.,2011 Donglin Wu :2009	**5**	cost	. Excellence performance operation	**2**
Peng et al.,2011	**5**	Quality		
Peng et al.,2011 Donglin Wu :2009	**5**	Felixplity		
Donglin Wu:2009	**4**	Innovation		

c. Sincerity and consistency of performance:

Internal Coherence Test (Cronbach Alfa) This test is used to verify the degree of independence of a scale in a particular variable measure.

Table (3) shows the stability coefficient of the questionnaire questionnaire variables

Al Doura Refinery Company in Baghdad			
sincerity	Stability	he number of paragraphs	Main Variables
.879	.771	39	Modern Manufacturing
.979	.959	19	Excellence Performance of Operations
.974	.949		Total

D.The approach to research:

It is based on the analytical descriptive approach for its advantages. It combines more than one scientific method with one observation, questionnaire and personal interviews. There are several reasons for using the analytical descriptive method in the surveyed refinery:

1 - This approach is the closest approach to the nature of this research as it requires the processing of agile and lean production is to collect information accurately and from sources and directly.

2 - This method helps to assess the situation of the refinery Dora lies in terms of performance and operations.

The second Subject

Modern manufacturing

The modern industrialization focuses on the material aspect of the components of the manufacturing systems, specifically the equipment and mechanization, with a precise focus on information technology and engineering, and the goal of the systems is to respond quickly and efficiently to the requirements of the market any requirements High quality and low-cost systems, but overlooked the important component of these systems, namely, the human element and its interactive role with technology, It is possible to say that modern manufacturing systems are a set of different interacting components that are combined to process raw materials and react the components of the system with events by performing activities based on roles and functions. In accordance with the definition of (AL Malik: 2016) "human resources, material, technological, informational and cognitive, to develop and improve existing or new products based on the changing demands and desires of customers, with high standards of quality, low cost and punctual delivery, leading to the Excellence merit and sustainability of the competitive advantage of the organization. The modern manufacturing consists of two dimensions lean (manufacturing and agile manufacturing).

First: the concept of lean Manufacturing

In the wake of the Second World War, the world saw an increase in the demand for more sophisticated industrial and consumer products required to produce Numerical Control Machines to effectively limit the critical need for skilled labor to operate manufacturing systems. Since the 1950s, , And Toyota was a leader in this direction through Toyota's production system (TOYOTA PRODUCTION SYSTEM), It was born from the womb of this system (Just-In-Time), which is based on the elimination of all forms of waste and loss, and what is intended here is any activity that does not add value to the company or the customer(Chikhalikar & Sharma, 2015: 2) (Nagesh & Naidu, 2015: 2). After the war, the Japanese focused on how to reduce costs while producing the largest quantity of products using less resources, Toyota's Vice President Taiiji Ohno and his assistant, Shig Shingo (), took the lead in the emergence of the lean manufacturing system through AFA From Ford, the operations of Henry Ford, the company's executive director, who focused on the flow of process production. The process, which is a clear indication of the KANPAN system, is one of the basic components of the lean manufacturing system. The functions of the lean manufacturing system were found inspired by the US company Ford founded at the beginning of the last century. In fact, the Japanese industry has reported and developed several concepts of Western production systems in general and the US in particular. The views of researchers and writers have varied in defining a definition of agile manufacturing, as shown in the table (2).

Table (2) Some definitions from the point of view of researchers

the definition	Researcher / Year	ت
Achieve a smooth and balanced production path that supports dimensions and works to remove obstacles, making the system more flexible by eliminating the surplus and eliminating all waste sources while emphasizing the high quality, because the existence of quality problems can hamper the work. JIT is a lean production system that is used mainly in Recurrent operations.	**(Stevenson,2010:722)**	
It begins by focusing on the customer and understanding his needs. It is the agile processes that distinguish the value of the customer through the continuous improvement of the production processes, which requires the company to adopt a culture based organizational based on learning and staff empowerment and continuous improvement as well as focus on the JIT system and the appropriate quality in most Times.	**(Heizer& Render,2011:668)**	
It is a system that does not include constraints and can achieve flexibility (product diversity and size) in the required manner to achieve smooth and rapid flow of materials and / or work during the system	**(Stevenson,2012:6)**	
A systematic approach to identifying and reducing waste through continuous improvement of operations and achieving a higher level of efficiency, reducing costs and meeting the needs of customers to obtain the highest value at the lowest price.	**(Khan & Dalu,2015,52)**	

Source: Prepared by researchers based on these sources.

Through the above, a definition of lean production can be defined. It is a system that invests a good amount of resources, less than the amount of resources available to produce goods and services with high quality.

suggest that lean industrialization Depends on five principles:(Salem and Zimmer, 2005: 52), (Hallgren & Olhager, 2009: 3), (Kumar et al., 2014: 220) (www.glovia.com, 2013: 4) :

1.Know what the value added of the products according to the customer's point of view.
2. Remove all operations that do not add value to the products.
3. Make products flow continuously as planned.
4. Production depends on the draw system by the customer.
5. Optimize for access to the best by removing all forms of waste.

Second: Characteristics of lean manufacturing:

The significance of the manufacturingis reflected by the removal of all kinds of waste and loss of production processes, while increasing the ability to respond to the variables by using a set of tools through which to provide the best service to the customer, to reduce costs and enable the workers effectively and to organize the total exploitation of activities that add value from The customer's point of view can be summarized as follows:

1. Use as little assets as possible at each stage of the production process.
2. Quick changes of machines and equipment to produce various types of products with one piece flow in small payments.

3 - Total quality control through the active participation of workers in problem solving to improve quality and remove waste.
4. Prevent defects rather than checking and re-work by establishing quality in the process and applying real-time procedures.
5. Work organizations based on the team with multi-skilled workers who were able to make decisions and improve operations with the help of some indirect workers.
6. Integration of the value chain from raw materials to final product through the company's relations with suppliers and distributors.
7-short peak times and the ability to produce a small batch synchronized with the charging scales.
8. Production-based applications Instead of predictions, production planning is driven through customers' production by drawing.
9-Production on time - Move part of the production process to instantaneously manufacture, and immediately move to the next operation.
10. Remove all activities that do not add value to the finished product that are wasted should be removed.
11- Stresses in the employees the convictions of not producing defective parts and there is no need for stock or any procedures and characteristics do not add value to the final product.
12. Quality at source, total preventive maintenance, flexible resources, configuration and rapid setup.

Third: the emergence and concept of manufacturing agile movement

The historical roots of the light industrialization show that Lehigh University launched a program in 1991 to investigate the future of manufacturing in the United States and other countries (Kovach et al., 2005: 3) to respond to the new dynamic economy As a basis for the return to global competition (Khan & Due, 2015: 53), the term Agile Manufacturing was used to refer to the modern manufacturing model (Groover, 2001: 835) and Iacocca Institute In the 21st century, 13 companies in the United States of America were included To examine the characteristics that must be characterized by the successful manufacturing company, and during that period started (100) other companies, as well as (13) original companies to implement the proposals of this study (Qunasefaran & Yusuf, 2001: 1 (Bhekihemba & Lemohany, 2015: 1) In order to understand the philosophy on which light industrialization is based, we refer to the main pillars of the Iacocca study (1991) (Kidd, 1994: 9):

1 The impetus for companies to apply accelerated manufacturing is the emergence of a new competitive environment that has become a guiding force under change in manufacturing activity.
2 - These institutions can achieve competitive advantage because they are developing their capabilities to achieve the response quickly (Demand for high quality) and highly Customized products.
3. For the purpose of achieving Agility which requires response to this driving force and the development of the required capabilities, it will be necessary to provide flexible technologies and integrate them with the workforce that must be characterized by:
a-High skills.
B – Knowledge ability.
T- motivation .
W-Empowerment.
The researchers differed and differed in defining the definitions of agile -movement manufacturing as shown in the following table:

Table (3) agile Manufacturing Movement Definitions

the definition	Researcher / Year	N
Integration processes to develop manufacturing capabilities to achieve sustainable competitive advantage in an unpredictable environment.	**Kisperska&swi erczek, 2009:218**	**1**
The term applies to organizations that create processes, tools and training to enable them to respond to customer needs and market variables while continuing to control costs and quality.	**Grant,2010.5**	**2**
Is the ability to adapt and ambidexterity by moving fast, intelligent and active	**William, et al,2013:2**	**3**
Mixing process of flexibility, speed, cost, quality, delivery, and use of new product chains under uncertain conditions with emphasis on speed and flexibility	**Slack et al,2013:54**	**4**

The procedural definition of agile production is the ability to achieve Excellence performance in order to stay in a competitive environment and good knowledge of technologies and methods of manufacturing that work in mutual and cooperative harmony with the production of agile and integrated computerization.

The third subject : Excellence performance of operations

First: the concept of excellence performance

The concept of performance in general and excellence performance in particular is one of the managerial concepts that have received a great deal of attention from the organizations because it is closely related to the success of the organization in the changing competitive environment. Despite the multiplicity and breadth of the dimensions and the research bases in the subject of performance, Performance remains a fertile area for research and study for its close relationship with the various variables, including environmental factors, whether internal or external, has been defined in various forms. The following is a presentation of these definitions in the table(4):

Table (4) definitions of excellence performance according to the perspective of some researchers

the definition	Researcher / Year	ت
An organization that can satisfy its customers and has the ability to create value for them	**Kotler,2004:66**	
Ability to maximize the benefits of the organization's resources in order to deliver sustainable results.	**Nicole,2005:11**	
Performance that has several characteristics is flexibility, creativity, regulatory compliance, customer focus and quick response to changes in business and market needs.	**Evans,2008:229**	
The processes performed by the productive companies for the goods and services that reflect the level and the result of the company's ability to achieve the dimensions that it seeks to achieve at the lowest possible cost, quality required, flexibility, timeliness and creativity to gain competitive advantage and sustainability.	Waterfall and Hasnawi **2014:**44	

(De Waal, 2006: 14-28) (Ameri, 271: 2016) (Mashhadani, 2011: 82) identified the characteristics of performance organizations distinguished by:

1 - Culture: the creation of values and the main purpose, and develop the performance of leaders and try to retain it, and work on the principle of transparency and openness and confidence, and create a sense of identity participation.

2 - Strategy: clarify the vision for all, and that the budget in the development of long-term or short-term strategy, and targets are achievable and measurable, and targets are flexible and suit the demands of the external environment.

3. Technology: systems should be flexible and in all parts of the organization, user-friendly tools, and techniques of competitive advantage.

4. External environment: continuously create customer value and long-term external relations with stakeholders, as well as environmental monitoring and control, and have strong relationships with other organizations.

(Canabal 2009: 7), citing (Kamouna, 57: 2013) comparing the characteristics of the excellence performance organizations and traditional performance organizations, as in the following table:

Table (5) Comparison of the characteristics of the excellence performance organizations and the traditional performance organizations:

Traditional performance organizations	excellence Performance Organizations	ت
Internal focus	Based on customers	**1**
With a self-organized bureaucratic structure	With decentralized central structure and complete units	**2**
Planning and coordination are conducted by the Department	Planning and coordination are carried out by teams	**3**
With specific disciplines and functions	Extensive jobs and multi-skilled staff	**4**
Benchmarking Performance There is only one way to do business	There may be many ways to achieve the same level of performance	**5**
Have regular policies and have functions according to regulations	The dominance of the minimum rules and values and rationality are controlling behavior	**6**
The terms of reference of the departments are determined by similarities of functions	The terms of reference of the departments shall be determined through the internal relationship between the functions	**7**
Training focuses on technical skills only	Training focuses on the overall development of the employee	**8**
Rewards are based on the individual performance of the employee	Rewards are based on contributions to the effectiveness of the team	**9**

Consider staff as tools in management's hands	Consider employees as partners	**10**
Unsuccessful employees are accepted as part of and complementary to industrial life	Lifestyle or living staff is a binding and important	**11**

Source: Conabal , " Professional Development service", Highperformance ,Business strategy white paper , 2009,p.7.

Second: the foundations of excellence performance

The excellence performance depends on a number of bases which can be explained by the following:(Al Mashhadani,2012, 96)(Al-Zaidi,:2012,16)(Al-Rubaie 111: 2015):

1. The constant sense of abundance of alternatives to the solution.
2. Taking responsibility and taking risks.
3. Driving and Stability Objective: Creates a good driving and vision firmly coupled with the objective.
4. Customer focus: Creates future and continuous value for the customer.
5. Integrated and effective information system.
6. To transform all the work of the Organization into well thought out and coherent processes.
7. Flexible organizational structures to suit the surrounding changes.
8 - The systemic outlook based on integration and interaction is the basis of excellence performance.

Third: Performance of operations

"Operational performance is important" for any organization because operations management either keeps business organizations running or makes them work, and is the largest. It makes up the bulk of assets in most organizations and is also important because it gives the organization the ability to compete by providing the ability to compete. Responding to customers and developing the capabilities that will keep them at the forefront of future competition. Operational performance can maintain the company's reputation. If the operations function does not produce its products and services effectively, it can end up with obstacles that may hinder its performance, regardless of how Take m The majority of business organizations seek to produce products that are suitable for the performance of their operations because they possess a strong ability to control the local and international market by focusing on the key factors influencing the way operations are defined for performance objectives: (Slack et al. 2013: 66)

1- Customer needs and preferences.
2- Performance of competitors and their activities.

Fourth: the excellence performance of operations

It is the systematic study of the activities and flows of each process, to improve them, to understand the process, to look at the details, and when the process is understood, it can be improved as it represents the continuous quest to learn all the mechanics of cause and effect in the process, Or differentiation or complexity and improve customer satisfaction, and excellence occurs through procedures that depend on the optimal perception of the negative system that affects the process, and from another point of view, achieving the excellence performance of the process represents new ideas and methods in a way that meets the expectations of the customer, The result is a higher quality of services. One of the most important advantages of improving the performance of operations is the permanent solution of problems. The use of all ideas to prevent the recurrence of errors, not only to address them after the fact, improve the quality of work life by addressing the problems that occur within the work environment on an ongoing basis. For the continuous improvement of operations does not stop when solving problems, but rather towards the goal of training each individual on how to think and then work for the organization to be more effective and efficient, so organizations seek to achieve a number of goals as a result of the application mechanism to improve processes and thus achieve excellence performance in them (Al-Bahadli, 66: 2014) citing (Al-Tamimi, 71: 2017):

1- Understand the characteristics of the process that affect its ability.
2 - Planning and implementation of the process leading to meet the best needs of customers and the field of business.
3. Estimating the interest obtained and comparing it with the cost of a change in the process.

Achieving excellence performance of operations is one of the important responsibilities of the higher departments to achieve the basic tasks of evaluation that guarantee the success and progress of the production and technological path in different organizations (Lami and Al Bayati, 2008: 38). There are several ways to improve performance in organizations, Benchmarking, which is an ongoing process that does not stop at a certain point, but aims to improve performance and seeks to achieve partnership between competitors in order to

exchange information to improve performance. It is an evaluation process that takes place within the framework of the best vision. : (Najjar and Jawad, (371: 2012)

The concept of reference comparison is that the organization, in agreement with another organization with excellence performance, works in the same field in which the organization or the field works and takes it as a partner through an agreement with it. Through the agreement, the organization can develop its performance by simulating the working methods of (Al-Khatib, 2007: 67), the reference comparison is the process of learning from others. The comparison between the performance and the methods of the organization with the performance and methods of the other organization shared with them in comparison , A broader issue The objectives of performance are to include the investigation of performance practices of other organizations in order to extract ideas that can contribute to the improvement of the performance of their operations. Their logic is based on the idea that common problems in the performance of processes are certain to exist in another organization and this organization has achieved a method (Slack, 2010: 611). The following is a brief explanation of the outstanding performance of the operations.

Fifth: the dimensions of operational performance:

The name of the dimensions of the performance of operations, including some of the dimensions of the dimensions of the competitive and some of them said competitive factors, some of them explained as competitive capabilities, they address the same subject and there is no problem of different labels, and on this basis will rely on the current research naming the dimensions of the performance of operations, which include: (Zaidi, 38: 2009) (Reid & Sanders, 2010, 36) (Slack, 2013: 66) (Jacobs & chase, 2008; 11) (Russell, et al., 2014: 56) (Greasly, 2008: 2009) (Mohsen and Al-Najjar, 2009: 59):

1- **Cost**

It is an indicator used to evaluate the performance of operations and then the performance of the organization and are critical factors in the survival of the organization and its continuation and success and through this dimension the organization can achieve a competitive advantage, and each of the objectives of the operations impact on the cost internally and externally so one of the important ways to improve the cost performance By improving the performance of other objectives and processes:

A-High-quality operations do not waste time or effort and therefore have to do things again and there is no harassment or inconvenience to their internal customers through erroneous or defective services.

B - Fast operations reduce the level of inventory between and within processes, as well as reduce administrative costs.

C-Reliable operations will not show any unwelcome surprises from their internal customers, and can be D-trusted for delivery as planned. This will eliminate the confusion and allow other smaller operations to function efficiently.

E- Flexible processes that adapt to changing conditions quickly and without disrupting the rest of operations. Flexible processes can change tasks quickly without wasting time.

2. Quality

Quality is one of the essential competitive priorities of operations management and is the main objective of each manager. It is the source of quality for the organization's strength through which it can enhance its competitive position. The quality of services and goods comes through the quality of the process and the quality of the design. The quality of the process is important because of its relation to reliability and production without deviations. Or errors or defects, but the quality of design is linked to a set of characteristics contained in the goods and services and directly linked to the design and focuses on the requests of customers.

(Greasly, 2008; 18) that from the point of view of the customer, the quality characteristics include: reliability, performance and aesthetics, and from the point of view of quality processes related to how the product design closely or service meets the specifications required by design and this is called the quality of conformity, Two meanings:

A- Characteristics of the product or service that affect its ability to satisfy the apparent and implicit needs.

B - The product or service is free of defects.

3. Reliability (Delivery)

Dependence means to do things in time for customers to get goods and services when they are needed or at least when they are promised. Organizations with household dependencies are more efficient than organizations with less reliability. They contribute to saving time and money. And the reliability of the process gives stability to the processes. If everything goes smoothly and completely, it leads to building a high level of trust between the different parts of the operations, and everything becomes known previously. E functions in a greater interest in those imbalance, which affects reliability with other parts.

Competition based on time or delivery involves three aspects or priorities:

- The speed of delivery is measured by the amount of time between the date of receipt of the customer's request and the date of satisfaction. Usually, this time is called lead time. The waiting period can be controlled in terms of holding it by keeping the stock and maintaining a surplus card.
- Delivery at the agreed time is measured by the frequency in which the agreed delivery time is met, expressed in percentage of orders delivered to customers at specified times (in industrial organizations) and measured in percentage of customers waiting for service for less than five Minutes (for example, in service organizations).
- The speed of development is measured by the amount of time required to develop and design a new product and produce it. The longer the time elapses from the moment of generation of the word to the final design and short production, the more the organization has a leading edge than the competitors.

4. Flexibility

Flexibility is the ability of the organization to provide a wide range of goods or services to its customers, it time required for the organization to develop its products and transform its operations to introduce a new product, and is seen as the ability to change the process in one way or another. This may mean a change in what this process does and how it does, In particular, customers will need to change the process so that they can provide four kinds of flexibilities are:

A-flexibility of the new product or service means the ability to introduce or offer new or modified goods or services.

B - Mix flexibility: is the ability of the process to produce a wide range or combination of goods or services.

C - Flexibility Size: The ability of the process to change the level of production or activity by producing different quantities or sizes of products or services at a later time.

D-Flexible delivery: is the ability to change the timing of the delivery of products or services.

5 - Creativity: Competitive precedence means the uniqueness and excellence of the products of the organization of other products for competitors and the speed and development of the new product, as organizations that seek to have the primacy of creativity must focus seriously and prominently and exceptionally on research and development at the beginning of its activity, because the important factor for its success in the face of its opponents Is its ability to innovate and offer new products.

Third subject: Research Application side

First : Analysis of the results of the research sample

The objective of this study is to present the results based on some statistical methods and tools for the variables of the study and its paragraphs, namely the standard deviation to measure the extent of the dispersion of the values from the arithmetic mean, as well as the average difference of each paragraph and variable to know the dispersion of the answers, as well as the computation of the variables and their variables for the purpose of determining the level of each answer. The study determined the level of the responses in the light of the arithmetic averages by determining their affiliation to each category. Because the measure of the study is the five-dimensional Likert scale, there are five categories that belong to the arithmetic mean and determine the class by finding the length of the range (5-1 = 4) number of categories (4/5 = 80.) And then add it to the minimum scale to be categories:

(80. + 1 = 1.80) which indicates a very weak tendency for sample study subjects.
(1.81-2.60) low
(2.61-3.40) moderate
(3.41-4.20) high tendency
(4.21-5) is a very high tendency

1 -Describe the responses of the research sample

A- Description of Variable Paragraphs (Modern Manufacturing)

this variable has a mean (3.26), a moderate slope of the sample and a deviation of (.277) and a standard deviation coefficient (22.29) which indicates the homogeneity and agreement of the members of the sample of the refinery company on the paragraphs of this variable and the explanation of the dimensions of the independent variable.

(1) Description of variables of the strategy of the lean production of juice in the refinery sample research.

Lean Production strategy: This approach attempts to minimize activities that do not add value to the product and process, as well as reduce the use of resources, energy and processes to reduce waste and increase the efficiency of the process. This is confirmed by the comprehensive environmental quality management, Continuous, customer focus and engaging processors.

Table (6) shows the values of the arithmetic mean, the standard deviation and the variance coefficient for the independent variables (for agile and lean production). The mean is 3.347. This indicates an acceptable tendency for the study sample members on the paragraphs of this variable. Modern methods of production. This variable obtained a standard deviation (.979) and a difference coefficient (29.27).

Table (6) Arithmetic mean, standard deviation, and coefficient of variation of the variables of the dependent variable for fine production

Coefficient of variation	standard deviation	mean	Paragraph	n
33.14	1.166	3.52	The liquidator is committed to applying the standard of quality in all its products	1
32.39	1.084	3.35	The liquidator shall comply with the standard of environmental management.	2
31.04	1.026	3.31	The operations of the refinery through its approved system contribute to reducing the forms of waste	3
30.19	1.026	3.40	The dispenser provides the customer with the product on time	4
34.77	1.121	3.22	Process scheduling in the refinery is in accordance with the request.	5
32.36	.9967	3.08	The liquidator can offer its customers a wide variety of products on demand.	6
32.64	.9924	3.04	The refinery uses comprehensive productive maintenance techniques	7
29.40	.9722	3.30	The liquidator uses techniques for continuous improvement of work.	8
31.24	1.003	3.21	The working system in the refinery gives the operator the freedom to operate, maintain, maintain, repair, and stop the machine when necessary.	9
27.23	.8970	3.29	The refinery's operating system has technologies for disposal of pollution sources that cause environmental problems.	10
31.037	1.026	3.32	The refinery needs to reorganize production processes to ensure maximum utilization of available resources.	11
29.40	.972	3.31	The liquidator shall comply with the controls and instructions that ensure the disposal of all that is unnecessary and does not add value	12
31.24	1.003	3.21	The liquidator shall examine the reasons for the non-conformity of to the production.the planned results and the causes of waste generation in order to address them.	13
32.39	1.084	3.35	The liquidator uses control and control schemes often.	14
30.19	1.026	3.40	The refinery considers implementing the reuse program for some of its obsolete units as economically and environmentally feasible.	15
26.38	.8635	3.2733	Total arithmetic mean, standard deviation and variance coefficient of independent variable	

When we return this variable (the production of lean) to its basic paragraphs, we find the following:

The sample of the research gathers that the refinery company is committed to applying the standard of quality in all its products, but to an acceptable degree. This paragraph (1) obtained a standard deviation of (1.166) (1) of the order according to the priority in the paragraphs (1).

(45.4%) of the study sample for paragraph (2) support the commitment of the liquidator to implement the standard of environmental management. This paragraph obtained a standard deviation of (1.084) which indicates a dispersion of the sample of the study and an average of 3.35 And the explanation for this is that there is a simple investigation of the refinery's commitment to the implementation of the standard of environmental management, as the order of priority paragraph B (12) for the refinery of Dora.

Paragraph (3) represents (46.6%) for (35) members of the sample of the refinery company Dora who support the content of the paragraph contained (the operations of the liquidator through the system adopted to reduce the forms of waste) and this is confirmed by some of the sample, (3.26). The mean deviation of the sample was (1.026), which is acceptable dispersion in the sample of the study sample with a difference coefficient (31.04). (7) of the total sequence of variant variables of lean production.

The statistical results for the fourth paragraph, which include (the availability of the refinery to the customer on time) indicate that the mean was 3.40, which indicates a moderate tendency for the sample of the study sample with a standard deviation (1.026) with a difference coefficient (30.19) This paragraph ranked fifth according to the difference coefficient.

The members of Al Doura Refinery Company collect the refinery by scheduling their operations in accordance with the demand. It obtained a mean mean (3.22) which is a moderatetendency for the sample of the study sample on the fifth paragraph. The standard deviation was (1.121), which indicates a high dispersion of the sample of the study sample (34.77) and its last sequence was ranked 15th.

The results of the sixth paragraph refer to a mean (3.08) which indicates a moderate tendency for the sample of the study sample towards the paragraph containing (the liquidator can offer its customers a wide variety of products according to demand) with a standard deviation (9967). To homogeneity in the views of the sample research.

The results of the statistical analysis of the seventh paragraph after the production show that the percentage of supporters of the refinery Doura (32%), the rest of the ratio between the paragraph of uncertainty, which reached the highest rate (42.7%) and opponents, which got a middle (3.04) For the sample of the company of the refinery of the session on the paragraph contained (the refinery uses the techniques of total productive maintenance) by standard deviation (.9924), which indicates acceptable homogeneity in the views of the sample of the liquidator with a difference coefficient (32.64), which won the rank (13).

Paragraph (8) represents (45.4%), ie (34) persons out of (75) of the members of the sample of the Doura Refinery Company who support the content of the paragraph containing (the refinery uses techniques of continuous improvement of work). (3.30), which indicates a moderate tendency for the sample of the study sample. This is confirmed by the standard deviation, which reached (9722), which is acceptable homogeneity in the views of the sample of the refinery company of the course with a difference coefficient (29.40)), Which obtained the rank (2) of the total sequence of the variable paragraphs of the production of agility.

The statistical results for the ninth paragraph, which include (the working system in the refinery gives the operator the freedom to operate the machine, maintenance, maintenance, repair, and discontinuation when necessary.) The mean was 3.21, which indicates a moderate tendency for the sample of the study sample with a standard deviation (1.003) With a difference coefficient (31.24) which is acceptable dispersion of the sample members in their opinions, and this paragraph obtained the eighth rank according to the difference coefficient.

(40%) of the sample of the refinery company of the session support the system of operations in the refinery has technologies for disposal of the sources of pollution causing environmental problems .. This paragraph obtained a standard deviation of (.8970), which indicates the homogeneity of the views of the sample (3.29), which is a moderate tendency for the sample of the study, which is higher than the mean mean, and explain that the refinery has a system of operations and technology to get rid of the source of pollution, as the order of the paragraph according to priority (1).

Second: Describe the variables of the strategy of agile production (fast movement) in the refinerysample research

The results of the fourth paragraph indicate the highest mean (3.40) which indicates a high tendency for the sample of the sample to include the paragraph (which includes high elasticity production processes), with a standard deviation (.0.02) and a difference coefficient (30.19) studying.

The results of the statistical analysis for the third paragraph after light production obtained a mean (3.04), which is a moderate tendency for the sample of the company of the refinery of the session on the paragraph included (most of the works of the refinery with a high level of automation) with a standard deviation (.9924) The views of the sample were filtered by a difference coefficient (32.39), which was ranked (2).

Paragraph (1) represents (45.4%) ie (34) persons out of (74) of the members of the sample of the refinery company Dora who support the content of the paragraph contained (rapid response to the needs of the customer by the liquidator ..) This is confirmed by some members of the sample, (3.31), which indicates a moderate tendency for the sample of the study. This is confirmed by the standard deviation (927). It is an acceptable homogeneity in the views of the sample of the refinery company of the course with a difference coefficient 29.40), which obtained the rank (3) of the total sequence of paragraphs of variable light production as well as the fifth paragraph came the same result to the paragraph that includes (there is a role for the customer To participate in product specification specification).

The statistical results for the eighth paragraph, which includes (there are programs for continuous education to develop the skills of the staff), indicate that the mean is 3.30, which indicates a moderate tendency for the sample of the study sample with a standard deviation (9722). In their opinions, this paragraph has been ranked ... according to the coefficient of difference.

The statistical results also show a lower mean of the seventh paragraph, which includes (of the objectives of the liquidator participation of decision-makers in relation to their work), as the mean of the paragraph (3.04).

Coefficient of variation	standard deviation	mean	Paragraph	n
29.40	.972	3.31	Quick response to customer needs by the refinery	1
31.24	1.003	3.21	Quality is achieved through the integration of production processes in the refinery Most of the refinery works with a high level of automation	2
32.39	1.084	3.35	Production processes are characterized by high flexibility	3
30.19	1.026	3.40	There is a role for the customer to participate in product specification	4
29.40	.972	3.31	There are strategic alliances between refinery and suppliers	5
32.36	.9967	3.08	One of the objectives of the liquidator is the participation of the workers	6
32.64	.9924	3.04	making decisions related to their work	7
29.40	.9722	3.30	There are continuing education programs to develop staff skills	8
31.24	1.003	3.21	The presence of teams contributes to improving the performance of the refinery	9
27.23	.8970	3.29	There is a network with all stakeholders	10
26.38	.8635	3.2733	Total arithmetic mean, standard deviation and variance coefficient	

Second. Outstanding performance of operations

This variable includes the excellence performance (20) paragraphs containing (4) sub-variables that included (cost, quality, flexibility and innovation), where the first variable (cost) on (5) paragraphs, and the second sub-(5) paragraphs, and the fourth and last variable (innovation (4 paragraphs)). The following table shows the results and analysis of the paragraphs in the variable (excellence Performance of Operations).

1. Cost

The following table shows the sub-variable (cost) that paragraph (1) obtained the highest mean and reached (4.30) which is a very high tendency for the members of the research sample and this is confirmed by the standard deviation of (571.) The included paragraph (the products of the refinery are considered to be less expensive compared to other refinery products). This is what the personal interviews of the refinery officials indicate. Most of Al-Wasat's products are low compared to other refineries, as well as foreign products, especially European gasoline, as the price of improved gasoline is lower than European and is of the highest quality.

Table (8) Description of responses to the post-cost study sample

Coefficient of variation	standard deviation	mean	Paragraph	n
13.279	.571	4.30	Refined products are less expensive than other refinery products.	1
11.475	.459	4.00	The refinery is characterized by reduced administrative and operating costs and other labor costs.	2
21.450	.858	4.00	The optimal use of workers reduces waste and loss rates and ensures the best customer service	3
27.296	1.119	4.10	Refined products are less expensive than other refinery products.	4
34.4	1.118	3.25	The refinery is characterized by reduced administrative and operating costs and other labor costs.	5

2. Quality

The table below shows the sub-variable (quality) of the mean of paragraph (1) which reached (3.95) is a high mean compared to the rest of the paragraphs and reached the standard deviation (999.) indicating the consistency of the opinion of the research sample of the paragraph included (characterized by high quality liquidator services) The lowest paragraph was for paragraph (3) of the second dimension (quality) of the dependent variable, and through personal interviews it was confirmed that there are training programs for the purpose of improving the quality of products provided to the customer.

Table (9) Describe the sample responses to the search about the quality dimension

Coefficient of variation	standard deviation	mean	Paragraph	n
25.291	.999	3.95	The refinery services are of high quality	1
21.648	.801	3.70	Continuous evaluation of employee performance and development work helps the liquidator to develop the best customer service.	2
37.375	1.196	3.20	The liquidator always seeks to develop training programs for the employees to improve the quality of products provided to the customer.	3
32.20588	1.095	3.40	The refinery management seeks to adopt the principle of continuous improvement in the search for the most efficient methods in the service of the customer.	4
44.49123	1.268	2.85	The refinery services are of high quality	5

3. Flexibility

The table below shows that the arithmetic mean of paragraph (2) is the highest mean of all the paragraphs (3.65) and a standard deviation of (1.268). This indicates a high dispersion and disagreement of the sample of the study on the included paragraph The manufacturer designs the training programs in the light of the results of the performance evaluation to increase the capabilities and capabilities of the employees to quickly adjust the size of the current products and respond to the wishes of customers (and despite the divergence of opinion that the mean of the calculation indicates that the second paragraph is high tendency of the sample of the research sample that there is a good design programs Training to increase the capacity of the year Yen as it sees the company for the purpose of continuous improvement of the desire to respond to the customer.

Table (10) describes the responses of the search sample around after flexibility

Coefficient of variation	standard deviation	mean	Paragraph	n
36.909	1.218	3.30	Local and ongoing performance assessment drives employees to the creativity that the liquidator adopts when planning.	1
34.73	1.268	3.65	The factory designs training programs in the light of performance evaluation results that increase the capabilities and capabilities of employees to quickly adjust the size of existing products and respond to the wishes of customers.	2
45.111	1.218	2.70	The refinery has a high flexibility in responding to changes in the needs and desires of customers.	3
21.450	.858	4.00	The refinery has the ability to fulfill customers' demands faster than other factories.	4
27.292	1.119	4.10	The performance evaluation method used in the liquidator leads to reduced waste in time.	5

3. Creativity

The table below shows the sub-variable (creativity). The paragraph (managers seek to provide a high organizational culture for their employees in order to communicate with the changes occurring in the environment of the liquidator) contains a high mean relative to the rest of the paragraphs (3.35). This is what the research indicates and reached the standard deviation 1.100). This deviation indicates a lack of agreement and a high dispersion in the opinion of the sample. Although there is a high tendency for the sample of the study sample to be found in paragraphs after innovation, there is an acceptable tendency for paragraph (2) to include (allows managers of subordinates to use new methods to solve the problems they face in the practice of implementation) To lower the middle of my account.

Table (11) Describe the responses of the research sample about dimination innovation

Coefficient of variation	standard deviation	mean	Paragraph	n
29492.54	.988	3.35	Managers seek to provide a high organizational culture for their employees in order to communicate with changes in the refinery environment	1
27483.87	.852	3.10	Managers allow subordinates to use new methods to solve the problems they face in exercising their realization	2
29753.85	.967	3.25	The liquidator is interested in improving the methods of performing the work despite its high cost	3
39.78462	1.293	3.25	The subordinates conduct the experiment and try to make continuous improvements in the liquidator's performance	4

Third: the correlation between the variables and the dimnation of research

Before testing any of these hypotheses, we should test the interconnection of the core components of the model using Pearson Correlation and then test the correlation and regression between the basic components of the research model.

The table below shows that there is a strong correlation between modern manufacturing (the main independent variable) and the outstanding performance of the refinery processes at a significant level (0.01) at 99% confidence level. This indicates, The refinery is constantly updated with new technologies and technologies that can be used in manufacturing and production. The table below shows the correlation value between the two variables.

Table (12) The correlation between search variables

Excellence dependent variable (the performance of operations)	Independent variable
.667(**)	Modern manufacturing
.000	Level of significance

Fourth: The impact of modern manufacturing on the excellence performance of operations

Table (12) shows that the value of the coefficient of determination (R2 = 754). This explains that (75%) of the independent variable (modern manufacturing) which represents the production of light and light production, while the value of (F = 88.539) calculated greater than Tabulated company refinery, as it interprets that there is a degree significant effect at the level (0.01), has reached the fixed value (a = 1.332), which explain when the manufacturing systems of modern) slim and light) equal to zero, the outstanding performance of operations will not Is less than this value, while the coefficient of (β = .. 574) for modern manufacturing systems and this value means any change in the value of manufacturing systems by one unit The value of the dependent variable shows the outstanding performance of the operations by this value, while the regression coefficient value (t) is significant among the variables. This confirms the importance of the variables of the modern manufacturing systems in the study model.

Table

Table (..13.) The impact of modern manufacturing systems on the excellence performance of operations

								Independent variable
Excellence performance of operations	Sig.	F	R2	Sig.	t	B		
	.000(a)	88.539	.754	.000	6.335	1.332	a	Modern manufacturing
				.000	9.515	.574	B	

VIII. Conclusions And Recommendations

1- **Conclusions**

A - The results showed that there is a great interest by Al Doura refinery in manufacturing systems as follows: a. Used by a range of systems, the use of lean manufacturing is primarily aimed at eliminating waste in production time, redundant storage, unnecessary transport of materials and waiting for workers.
B. It is clear that the refinery operating most of the work of the refinery with a high level of automation.
T. The liquidator shall comply with the controls and instructions that ensure the disposal of all that is unnecessary and does not add value to the production.
W. The products of the refinery are of high quality. Application of systems such as Quality Management System (QMS) and Environmental Management System (EMS) has helped improve the refinery's performance.
C. It has been shown that the refinery of the course has the ability to adapt to technological changes through continuous observation of the technical and technological environment and this enhances its position in the oil market.
H. The rapid response to customer needs is the strength of the refinery and this contributes to achieving outstanding performance.
E. It is possible to raise the amount of production by eliminating losses in time and energies to achieve better returns for the refinery, as well as to eliminate the stops of the refining units due to the fullness of the reservoirs of black oil.

2- A - The need to strengthen the manufacturing systems for the purpose of the products are highly efficient refinery cycle and to upgrade their products towards green products, and there is a need to start the implementation of the system of environmental quality management (ISO 14001).
B - the need to accelerate the investment projects that will enhance the national product and not rely on imported foreign products.
C - the need to deepen the concept of thin production to facilitate the task of the refinery towards the direction of high productivity, and achieve the outstanding performance of production processes.
D- Promotion of light manufacturing culture in Al-Wasat Company, especially Al-Doura refinery because of its reputation and great position among Al-Wasat refineries.
C - the need to employ more to keep away the outstanding performance of production processes, as it is necessary to be characterized by reducing the administrative and operating costs and other labor costs. Also, managers should allow subordinates to use new methods to solve the problems they face in the practice of their realization.
H - the management of the refinery to adapt to and respond to changes in the needs and desires of customers.
The necessity of continual improvement in all training programs for employees in order to achieve permanent excellence in the oil industry.

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