

## Analysis Study the Effect of Lean Supply Chain On Performance Supply Chain In AL-Ittihad Company at Food Industries of Babylon

*Hamid Kathim Mutaab Alshbawi<sup>1</sup>, Fadheelah Hussein Oleiwi Nasir<sup>2</sup>*

<sup>1,2</sup> Department of Business Administration, College of Administration and Economics,  
University of Al- Qadisiyah, Iraq

[Hamid.mutaab@qu.edu.iq](mailto:Hamid.mutaab@qu.edu.iq)

**Abstract:** The current study aim for evaluation the effect of lean supply chain on the performance Analysis Study At Al Ittihad Food Industries Company of Babylon, the study date adopted the descriptical analysis. The sample were 300 persons consist of the staff of Al Ittihad Food Industries Company in Babylon province who has knowledge and skills in their field of work, where their responses were recorded on a set of test items distributed to them in a questionnaire prepared by the researcher to identify the interest and availability of the lean supply chain dimensions in the company in question and the performance indicators of a chain Fit in. The results of the statistical analysis of the data were positive effect of the supply of lean Supply chain dimensions on Supply Chain Performance and it was a direct impact on improving the performance of the processing chain of company. The development of the industry should be carried out by increasing attention to the dimensions of Lean Supply Chain and included the efficient treatment of waste, dissemination of and the design of marketing mix for lean products according to market requirements.

**Keywords:** Lean supply chain dimensions, supply chain performance.

### I. INTRODUCTION

Many companies are now seeking to adopt and implement modern economic concepts, especially in the conservation of environmental resources, the lean processing chain of concepts that many companies have adopted scarcity. The lean supply chain is the way to understand what it must behave about these causes and their waste impacts that may be causing a company to be less efficient and less productive, as continued improvement in products and processes creates significant opportunities to prevent it waste reduction marketing can be used, for example, to reduce resource waste during marketing customers. This reduces the cost of packaging and recycling, thereby enhancing the social reputation of companies and improving their services and product quality. The process of lean processing chain has also received the attention of companies, as it has emerged as an alternative and effective method to address the impact of resource shortages and to examine and identify the strengths and weaknesses of large production systems in local markets The more the customer is willing to pay, the better the value of the product and the more the logistics of lean supply chain, the more the customer is willing to pay, the more the product will improve the value of the product and create a special feature of the services of lean supply chain. In addition to developing the processes immediately and with the required quality of the products without wasting the input that is different from the traditional process applications [1] in this research, the effect of the lean processing chain as economic concepts and approaches adopted by many companies will be discussed and the impact of this effect on the performance of the supply chain at the Union Food Industries Company in Babylon.

### II. STUDY METHODOLOGY

#### 1. STUDY PROBLEM:

With business development moving, many companies are now seeking to adopt and implement modern economic concepts, especially in the conservation of environmental resources, lean processing chain of concepts adopted by many companies. When looking lean, we see that their time seems to be focused on reducing waste, but their results are toward seeking a more efficient system to reduce the production of unwanted products. those of lean supply chain and the competitive requirements of companies. Effective logistics systems can improve the efficiency of different activities such as transport and lower the cost of rotation, while efficient production processes can improve production flexibility,

reduce product lifecycle time and make them available to customers more quickly To reduce environmental costs and reduce corporate toxic emissions [2] The dimensions that support lean are dimensions and activities that may be somewhat similar in creating an efficient and organized system dedicated to continuous improvement where the concept (lean supply chain) helps It can be said that it is an effective tool to improve operations and minimize waste not only by reducing value-adding activities but also by reducing the material waste the system produces on which the current search problem is determined by the question " **What is the effect of lean supply chain on supply chain performance?**

## 2. IMPORTANCE OF RESEARCH

- It provides economic and business researchers with a conceptual or conceptual framework for the variables it has addressed, lean processing chain, the performance of the processing chain and the sub-dimensions of each.
- It contributes to building a clear vision among industrial firms' workers about the activities and the lean supply chain its impact and role in improving the performance of the processing chain.

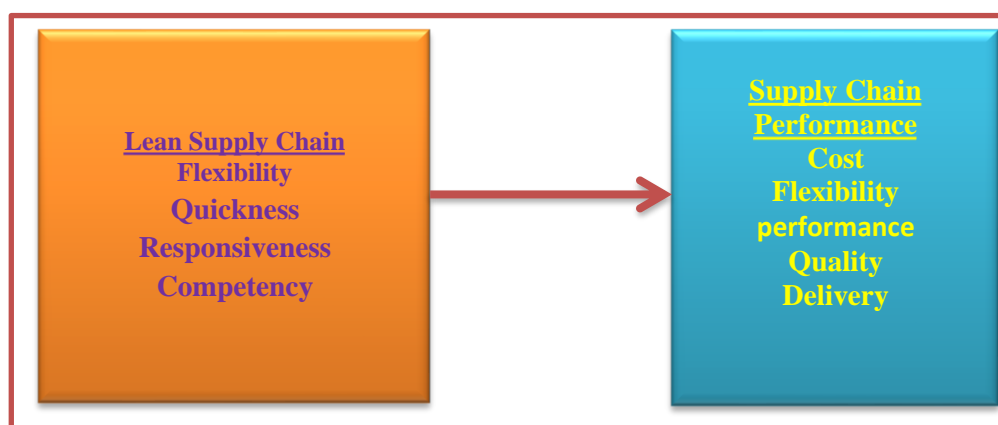
## 3. RESEARCH OBJECTIVES

The current research aims at identifying the lean supply chain and its effect on the performance of the supply chain at the Al-Ittihad Food Industries/Babylon Company through answering a number of questions including:

- What is the level of the company's considered implementation of the dimensions of the lean supply chain .
- What are the effect of the lean supply chain on the improvement of the supply chain performance?
- How the dimensions of the lean supply chain affect the performance of the supply chain.

## 4.HYPOTHETICALS AND RESEARCH HYPOTHESES

The research hypothesis chart presents the main idea of research, by showing the effect of the independent variable (lean process chain dimensions) on the dependent variable (supply chain performance dimensions), as in Figure( 1) below.



Source: Researcher preparation

### 1. CORRELATION RELATIONSHIP HYPOTHESES

**H1: This is a very important relationship between the dimensions of lean supply chain combined and the supply chain performance of the processing chain in the company's study community.**

1. There is a significant effect the flexibility on supply chain performance of the processing chain in the company's study community.
2. There is a significant effect the Response on the supply chain performance of the processing chain in the company's study community.
3. There is a significant effect the Speed on supply chain performance of the processing chain in the company's study community.
4. There is a significant effect the efficiency on supply chain performance of the processing chain in the company's study community.

### 5. IMPACT HYPOTHESES

**H<sub>6</sub>: There is a significant impact between the dimensions of lean supply chain combined and the supply chain performance of the processing chain in the company's study community.** The following sub-hypotheses follow from this main hypothesis:

1. There is a significant effect between flexibility and performance of the processing chain in the company's study community.
2. There is a significant effect between the Response and the performance of the processing chain in the company's study community.
3. There is a significant effect between Speed and performance of the processing chain in the company's study community.
4. There is a significant effect between efficiency and performance of the supply chain in the company Study Community.

## 5. LIMITS OF RESEARCH

1. Human borders: Represented by a sample of employees and department managers in the Union Company for Food Industries in Babylon
2. place borders: Represented in the headquarters of the Union Company for Food Industries in Babylon where the research was carried out
3. time limits: The application of the search was extended from 27/12/2021 to 6/5/2022.

## 6. SOCIETY AND THE RESEARCH SAMPLE

- **Research community:** The current research community comprises all workers of the Union Food Industries Company in Babylon (workers, employees, people and unit officials, their assistants and department managers), reaching the research community (1125).
- **sample:** In its final form, it was comprised of (300) individuals, at 26% of the research community, where the sample size was determined by the equation (Steven Thambson) in (Shmati, 2014:90) described below.

$$n = \frac{N * P(1 - P)}{(N - 1 * (D^2 + Z^2)) + P(1 - P)}$$

whereas:

n = sample size

N = community size

P = probability value equal to 0.05

Z = the standard score corresponding to the significance level (95 (0.

D = error rate equal to 0.05

## 7. RESEARCH METHODOLOGY

This is the first time that the research has been based on the study of the problem and the answer to the questions of the research, the researcher has adopted the descriptive analytical method of research.

## 8. RESEARCH TOOLS AND DATA COLLECTION METHODS:

1. resolution form: Designed with five alternatives (strongly agreed, agreed, neutral, not lean, strongly and measured in accordance with the 5-Laker measure.
2. Documents and records in the Union Company for Food Industries \ Babylon.

## 9. STABLE AND TRUE RESOLUTION

1. Stability : Axis, vertebra number, the vacuum coefficient.
2. Apparent honesty: Offering resolution to referees.

## 10. Statistical methods

The following statistical methods and methods will be adopted:

1. **frequencies:** to review the answers of the study sample members.
2. **mean:** to display the average answers of the study sample members about the study variables.
3. **Standard deviations:** to find out the dispersion of the answers of the study sample members received from their arithmetic averages
4. **Relative importance:** the percentage of answers of the study sample members to the study variables.
5. **Pearson correlation coefficient** to find out the type and strength of the relationship between of the study variables.
6. **Simple Liner regression** coefficient to determine the effect of the independent variables (lean supply chain) on the dependent variable (supply chain performance).

## III. THEORETICAL FRAMEWORK

## 1. LEAN SUPPLY CHAIN

### 1. CONCEPT OF LEAN SUPPLY CHAIN:

Lean [3] processing chain is a well-designed series to deliver products quickly to the end customer while minimizing waste and responding to change, and the agility of the supply chain is a catalyst for the company that strives to become more efficient and lean, and that companies that use the agility of their supply chain are able to Provide better value to the customer by being able to respond efficiently to the needs and needs of the customer. [4] also introduced a concept for a lean processing chain that focused on the added value of the customers that provide quick response to their demands and eliminate the waste of resources in all its forms to ensure the smooth operation of the company and the matching of production operations with the demand for products [5], lean processing chain: It is a business system for organizing and developing products, processes, equipment and customer relations that requires less human effort, less space, less capital invested in equipment, less time to deliver products with less defects and to satisfy the customers' needs and desires than the wide production system.

### 2.IMPORTANCE OF LEAN SUPPLY CHAIN:

The importance of lean supply chain is:

- a. To eliminate or at least reduce waste in any way.
- b. Establish cooperative relationships with partners while achieving balance, cooperation and competition.
- c. Eliminate bottlenecks.
- d. Increasing capabilities .
- e. Increase customer satisfaction
- f. Improve communications.
- g. Limit cycle time.
- h. Reduce storage through lean supply chain.

### 1- REASONS AND MOTIVES FOR LEAN SUPPLY CHAIN

There are several reasons that led the companies to adopt lean supply chain.

- a. The need for improved operations: Due to technological developments, companies have adopted the dimensions of lean processing chain, which has resulted in improved quality levels, as well as reduced business costs to achieve added value and maximize benefits for the benefit of customers and the company.
- b. Increasing external processing levels: Companies increase their purchasing of materials and other components from external sources rather than production, as companies spend a large amount on processing and related activities such as packaging, packaging and sorting.
- c. The spread of globalization: The spread of globalization extends the physical scope of the processing chain as the global processing chain faces many obstacles (after the clients, long waiting times for the processors, the spread of quick delivery opportunities, different circulation, financial volatility factors, cultural and language differences) and others.
- d. Competition pressures: Competition pressures lead to increasing the number of new products, shortened product life cycle and increasing demand for original products, which leads some industrial companies to adopt rapid response strategies and reduced waiting times.
- e. The need for inventory control: Inventory plays a key role in the success of the supply chain, as well as the importance of coordinating stock levels throughout the supply chain.

### 4- DIMENSIONS OF LEAN SUPPLY CHAIN

- a. **FLEXIBLE:** Means the ability of the agile supply chain to provide products and services in a timely and cost-effective manner for a changing and fast-changing environment [6], and that a flexible system must be able to change in order to deal with a changing environment. The principle of flexibility is based on the use of methods and equipment that enable them to perform a variety of tasks under a variety of working conditions [7].flexibility in the lean supply chain gives companies the ability to respond purposefully to environmental changes and uncertainty and contribute to the development of quality products and services. there are several types of flexibility, as follows: [8]
- b. Size flexibility: The ability of a company to change the flexibility of production (increase or decrease) to accommodate changes or fluctuations in the level of customer orders.
- c. Product mix flexibility: Means the ability of the producer to offer a wider range or variety of products to its customers.

- d. Flexibility of delivery: Means the ability of the company to deliver products at different times in response to the demands of the end customers.

1. **QUICKNESS:** company's responsiveness to customers is essential to success, a measure of company performance evaluation and a key competitive advantage that depends on customer satisfaction both now and in the future. [9]

The speed dimension can be defined as the ability of a company to adapt to changes in the environment and the market quickly, efficiently and in a timely manner, and the ability to adjust the mix and quantity of products to the desired quality, and the speed of response is the company's ability to cope with external disturbances easily and intuitively, remote sensing and more responsive. Because they are able to quickly meet demand in peak situations adds the goal of rapid response is to meet the basic requirements of end customers by delivering the right goods in demand, in quantity and quality required and at a competitive cost.

2. **RESPONSIVENESS :** The concept of response is defined as " the ability of a company to respond in a timely manner to meet the needs and desires of its customers". [10] described it as " the company's ability to react to changing customer needs and desires or circumstances ". " The output from the process of the supply chain to provide the greatest customer service in terms of product quality, quantity and time required for the production and delivery of products in a timely manner, " said Beamon. [10] explained that the goal of the response is to deliver on time, reduce costs through the chain, and accurately inform the prediction of demand. Rapid response requires the ability to identify, respond to and recover from changes. In this way, there are three common sub-capabilities to respond: Identifying change, then reacting to change, and recovering from change [11]

3. **COMPETENCY:** The adequacy of the supply and demand side is the main asset that enables the consolidation of lean processing chain and as an important capacity that can lead to competitive advantage, because lean processing chain requires an unusual combination of competencies. Finance, and it (to create value for processors, manufacturers and customers [11]

" we are not satisfied with the requirements of the customer, " he said, adding that the basic objective of the customer is to meet the requirements of the product or service of a particular customer's status, while providing other value-added services. While the supply control capability includes different processes related to raw material (such as cost optimization at different stages such as this enables the company to eliminate waste by effectively controlling time and allocating resources, thus facilitating the agile processing chain to meet customers' needs [12,13]

## 2. SUPPLY CHAIN PERFORMANCE

1. **CONCEPT OF SUPPLY CHAIN:** Accorded the study of [14] is seen as the integration of key business processes, which include the provision of products, services and information by suppliers to customers in such a way that the customer and the parties involved receive value added. [15] believes that there are a number of performance measures used to measure the efficiency of the company, which achieves effectiveness and benchmark comparison among companies. Performance measurement is important in achieving competitive advantage and continuous improvement among companies, as companies focus on determining the necessary performance standards for the processing chain with several factors to be considered: Quality, service, cost, and wait time [16]. The process chain performance measurement is the process of measuring the real business performance in the company environment to develop plans, programs, processes and continuous improvement through specific criteria such as creativity, cost, customer, quality, etc. and physical monitoring of the arrival of the end product to the customer.

2. **IMPORTANCE OF SUPPLY CHAIN PERFORMANCE:** [17] believes that implementing and improving the performance of the enterprise supply chain benefits in several areas:

- a. Reduction in the cost of processing and capital costs .
- b. Increase market share and sales .
- c. Increase the profit margin of the products and increase the company's cash flows.
- d. Increase the efficiency of manufacturing at all levels and accomplish business in an excellent manner.
- e. Enhance customer contact and acquisition.
- f. Achieve operational excellence and increase the company's market value.

## 3. DIMENSIONS OF SUPPLY CHAIN PERFORMANCE

- a. **Cost:** Providing a service or product at the lowest possible cost to the satisfaction of the company's customers requires it to design and operate operations to make them effective by using accurate analysis of processes, labor processing, methods used, waste or rework, overhead, and other factors such as investments in automated facilities or technology to lower the cost per unit of The producer expressed [18] as efficient, which includes the costs of waste, storage costs, transport costs, labor and profit. It also referred to it [19] as " Sales, demand Planning, Scheduling, Purchase, Wholesalers, Stock circulation, and Rate of return for Storage and Transportation". [20] describes it as " a feature that describes the operating cost of a process and includes labor, material, transport costs ", that the processing chain costs can be direct or indirect, fixed or variable, short-term or long-term, Companies must offer some sort of cost adjustment between the characteristics of their products and services and, in general, most companies choose to reduce total costs in order to lower employee compensation rates and achieve higher levels of productivity [21]
- b. **Flexibility Performance:-** refers to how fast the processing chain performs in responding to changes in the external environment, random market fluctuations, and the ability to change based on customer requirements [22] as defined by [23] as the ability to respond to uncertainty about size, distribution, and response related to the new product. This is essential in building a sustainable competitive advantage in a turbulent market, reducing the impact of uncertainty over the performance of the supply chain by helping companies to introduce new products that quickly support rapid product allocation, reducing the time period in manufacturing and reducing the cost of customized products, The company's performance is therefore improved and its products are delivered in a timely manner [24] and there are several areas in which flexibility can be shown, as follows:
  - i. Product flexibility: Ability to respond to changing customer needs through new product designs.
  - ii. In the case of the first two years of the year, the number of people in the world has increased by more than one year.

Flexibility can be the company's ability to deliver a variety of products at the right time, its ability to develop existing products and improve its processes to deliver new products that meet the needs and desires of our customers (2016:120).

- c. **Quality:** It is an integrated approach to achieve and maintain high quality production with a focus on maintenance, continuous improvement of operations and prevention of defects at all levels and in all company functions in order to meet or exceed customer expectations [25], and quality can be achieved through two dimensions, One is design quality, which means adapting product design to its function, and the other is the matching quality, which represents the company's ability to convert inputs into outputs according to the specific design characteristics [21] Quality is critical to the success of many public or private industrial or service companies as a key pillar for achieving competitive advantage. It is also able to deliver products at a cost and zero defects, ensure that the company is discriminated against in the current market competition, and represent the overall qualities and characteristics of the product that meet the requirements of the customers.it is therefore an important factor for the company's survival, growth and competitiveness [26]. It means the degree of excellence in a particular good or service offered by [27].
- d. **Delivery:-** Delivery is defined as the time lost from the date of receipt of the order from the supplier to the receipt of the product ordered by4 the customer, the Delivery Timeout (the waiting period) consists of several sub-strings including the internal delivery in each of the supplier's departments and the external delivery time associated with the transfer of the final product to the customer [28] early or late deliveries can result in the introduction of products in the form of excess cost in the performance of the supply chain. Early deliveries contribute to increased inventory retention costs while late deliveries contribute to increased downtime costs and loss of a company's reputation in the business market. Delivery is also viewed as the total delivery time the activity requires from start to finish as companies can consider delivery To compete with each other this may include [21]
  - Delivery time, which is a reflection of the efficiency of processing chain performance and a source of competitive advantage when companies try to reduce the time between receiving and accepting customer orders.

- Delivery is the standard for companies to comply with delivery schedules previously agreed with customers.

Delivery can be measured by time delay or operating speed at the time specified between a customer's order for a particular product and then the receipt of that product. Delivery can therefore be used as a competitive factor to reduce the costs of any better customer service [24]

### III. PRACTICAL FRAMEWORK

**1. ENCODE THE MEASUREMENT TOOL AND DISPLAY ITS MOST IMPORTANT TESTS:** The study community is a factor (1125) and therefore the study sample covered (292) a factor in the sample concerned, so the researcher tabbed the data and classified them according to the statistical package of the program (SPSS.V.27&AMOS.V.26) in order to extract the required results, in addition to the description of the survey statistics and the interpretation of the study results through the mathematical circles, the relative importance of the standard deviations of the study paragraphs. The second section of this chapter examined the relationship between the study variables and the measurement of the modeling of the structural equation and the response of the adopted variable to the improvement of the individual variables, and for the purpose of facilitating the statistical analysis process, the variables included in the study were substituted by a set of symbols and acronyms shown in Table (1).

Table (1) Encoding of the measurement tool axes

variables	Dimensions	No.	Cod	
<b>lean supply chain</b>	Flexible	5	LA	LSC
	Quickness	5	LB	
	Responsiveness	5	LC	
	Competency	5	LD	
<b>supply chain performance</b>	Cost	5	PA	PSC
	Flexible performance	5	PB	
	Quality	5	PC	
	Delivery	5	PD	

**2. ANALYSIS OF NORMAL DISTRIBUTION :** A normal distribution of study data should be made available when analyzing, and this assumption can be verified by using the Kolmogorov-smirnov test as well as by graphs. If the values are similar to the bell shape, then the data drawn from the studied sample follows the normal distribution. This is explained by the forms of natural distribution of data for the dimensions used in the study, which represent an extension of the results of the natural distribution shown in Table (2). In addition, the acceptance and rejection of the subordination of data to the test of natural distribution depends on two hypotheses:

1. **Zero hypothesis :** Data drawn from the sample studied follows the normal distribution at a sign level greater than (0.05).
2. **Alternative hypothesis :** Data drawn from the sample studied does not follow the normal distribution at a sign level less than (0.05).

Table (2) the normal distribution of study dimensions and variables

Variables	Kol –Smi	D f
Flexible	0.179	292
Quickness	0.145	292
Responsiveness	0.152	292
Competency	0.187	292
<b>lean supply chain</b>	<b>0.199</b>	<b>292</b>
Cost	0.193	292
Flexible performance	0.198	292
Quality	0.193	292



Delivery	0.200	292
supply chain performance	0.188	292

Source: results of SPSS.V.27

The results in the table (2) show that the data in the analysis follows normal distribution and this is because the intangible value of the tests is higher than (0.05), which indicates that the data in the analysis is subject to the normal distribution test and that the alternative hypothesis that requires that is rejected (Data for variables and dimensions in an analysis are not tested for normal distribution.) a zero hypothesis is accepted that (data for variables and dimensions in an analysis are tested for normal distribution).

Source: Researcher preparation based on the outputs of SPSS.V.27

**3. TEST THE MEASURING TOOL:** This paragraph is concerned with measuring the integrity of the study tool by testing the validity and stability that will ensure accurate and objective results toward the paragraphs that have been developed to measure the study variables, as follows:-

**1. STUDY TOOL OSTENSIBLE VALIDITY:** The apparent validity indicates that the resolution measurement tool must be presented to a group of experts in order to evaluate, refine, and judge the tool in order to appear more accurately appropriate to the target sample. Therefore, after the measurement tool has been distributed to a group of experts, according to which agreement reached 75% on the reformulation of some of the items of the tool to be better reflected, which were presented in Annex 1.

**2. THRESHER MEASUREMENT TOOL STABILITY:** Stability is the extent to which the measurement is free of bias or error, and this ensures that the results obtained from the measurement are consistent and stable over different time periods, as stability indicates consistency of the scale of study and stability of the results obtained from the scale over different time periods. The structural stability of the measuring tool is verified by the use of the alpha-kronbach test and the alpha-kronbach value must be higher than (0.70) to be accepted, and the stability coefficient of the tool has been calculated using the alpha-kronbach correlation coefficient to show the stability of the study variables, as in Table (3).

Table (3) alpha coefficients of study variables

variables	Dimensions	No.	alpha coefficients	
lean supply chain	Flexible	5	0.763	0.862
	Quickness	5	0.755	
	Responsiveness	5	0.775	
	Competency	5	0.796	
supply chain performance	Cost	5	0.826	0.829
	Flexible performance	5	0.814	
	Quality	5	0.828	
	Delivery	5	0.813	

The results in Table( 3) for alpha-chronbach coefficients indicate that all study variables dimensions range from 0.740 to 0.828, which are statistically acceptable values in administrative and behavioral research because their value is greater than the required standard, and the study measurement tool is relatively stable. This is the same as the persistence of study variables by (0.862), lean supply chain, and (0.829) for the performance variable of the supply chain, so it can be said that the measurement tool can be highly stable in the interest of the sample studied and achieve its intended objectives.

#### 4. TEST AND ANALYZE STUDY HYPOTHESES

##### 1. TEST CORRELATION HYPOTHESES

This paragraph is concerned with measuring the Correlation between the lean supply chain and the performance of the supply chain by using the Sperman Correlation based on [29] in order to determine the strength and type of the relationship between the study variables, as shown in Table (4). Table (4) scale criterion for the power of a coefficient of a Correlation

degree of correlation	strength of correlation
-----------------------	-------------------------



<b>1.00-.90</b>	very strong
<b>.90-.70</b>	strong
<b>.70-.50</b>	moderate
<b>.50-.30</b>	low
<b>.30-.00</b>	very low

**Source:** Agunbiade, Dawud Adebayo & Ogunyinka, Peter I. , 2013 , " Effect of Correlation Level on the Use of Auxiliary Variable in Double Sampling for Regression Estimation " Open Journal of Statistics, NO. 3, ,p 314.

The correlation matrix (5) results show a correlation between study variables, which can be explained as follows:

**H2:** A statistically significant correlation between lean supply chain and the performance of the processing chain.

The results of table 6 show that there is a strong, statistically significant correlation between lean supply chain and the performance of the processing chain (0.816). The strength of the Correlation toward the dimensions of the performance of the supply chain ranged from (0.696) to (0.796) for the performance flexibility dimension to (0.796) for the cost dimension, indicating the focus of the studied sample on improving the flexible supply chain performance in order to enhance the flexibility of the supply chain.

1. There is a correlation of moral statistical significance between the flexibility of processing and the performance of the processing chain of its dimensions (cost, flexibility of performance, quality, and delivery). The results of the table (5) indicate a statistically significant correlation between the processing flexibility and the performance of the processing chain and a strong (0.599), which is moderate according to the assessment ([29]) and the strength of the Correlation to the performance dimensions of the processing chain ranged from (0.523) to (0.583) for the performance flexibility dimension.
2. There is a correlation of moral statistical significance between the speed dimension and the performance of the processing chain in its dimensions (cost, flexibility of performance, quality, and delivery). The results of the table (5) show a statistically significant correlation between the speed dimension and the performance of the supply chain and a strong (0.783). He pointed out that the studied sample focused on the speed of responding to customers' requirements by improving performance flexibility and delivering these requirements on time.
3. There is a correlation of moral statistical significance between the response dimension and the performance of the processing chain in its dimensions (cost, flexibility of performance, quality, and delivery).

The results of table (5) have resulted in a strong, statistically significant correlation between response and supply chain performance (0.765), which, according to the assessment of [29], is strong. The strength of the correlation toward the dimensions of the performance of the supply chain ranged from (0.662) to (0.726) for the performance flexibility dimension to (0.726) for the quality of the quality of the products required by the market, pointing out the interest of the studied sample in responding to the specifications of the products required by the market through focusing on the quality of the raw materials in order to be introduced into the manufacturing process and reducing waste.

4. There is a correlation of moral statistical significance between the adequacy dimension and the performance of the processing chain with its dimensions (cost, flexibility of performance, quality, and delivery).

The results of the table (5) show a statistically significant correlation between the adequacy dimension and the performance of the processing chain and a strong (0.738), which according to the evaluation of [29] and the strength of the Correlation to the dimensions of the performance chain performance range ranged from 0.604 for the performance flexibility to 0.764 for the cost dimension.

Table (5) correlation matrix between lean supply chain and the supply chain performance

<b>dimensions</b>	<b>Cost</b>	<b>Flexible performance</b>	<b>Quality</b>	<b>Delivery</b>	<b>supply chain performance</b>
Flexible	.583**	.523**	.548**	.549**	.599**
Quickness	.737**	.678**	.723**	.742**	.783**
Responsiveness	.720**	.662**	.726**	.705**	.765**
Competency	.764**	.604**	.688**	.663**	.738**

lean supply chain	.796**	.696**	.760**	.753**	.816**
-------------------	--------	--------	--------	--------	--------

**Second: Test the hypotheses of effect :** This section is concerned with testing pre-determined Impact hypotheses for the purpose of determining whether they can be judged by acceptance or rejection as described in the following paragraphs:

**Key hypothesis1:** A significant impact relationship to the dimensions of lean processing chain (flexibility of processing, speed, response, adequacy) and process chain performance at its dimensions (cost, flexibility of performance, quality, and delivery)

This will be investigated according to the multiple linear regression equation as follows:

$$Y = a + \beta_1 LA + \beta_2 LB + \beta_3 LC + \beta_4 LD$$

Since:

A= represents the slope parameter

B= is the value of the beta coefficient

Y= represents supply chain performance

Thus, the levels of impact among the variables will be analyzed by testing the fourth key hypothesis.

Table () shows that the statistical indicators between lean processing chain and the performance of the processing chain are as follows:

$$Y = a + \beta_1 LA + \beta_2 LB + \beta_3 LC + \beta_4 LD$$

$$Y = 0.381 - 0.042 LA + 0.403 LB + 0.356 LC + 0.184 LD$$

Based on the regression equation referred to above, several fundamental points may be identified, the most important of which are:

1. The calculated value of the model is 116.166, which is higher than the tabular value of 1.879 at a sign level equal to 0.001, i.e. a significant value of 0.05, and based on the above, the alternative hypothesis of a significant Impact relationship to the dimensions of the processing chain (flexibility, speed, response, and In addition to the above, the Durban-Watson test (1.602) shows that there is no linear relationship between the dimensions of one variable because it is close to (2).
2. The value of the determination factor (R) shows the contribution of lean processing chain to the interpretation of 0.698 of the changes and issues that limit the improved performance of the processing chain, and the residual value is due to variables outside the limits and model of the current study.
3. The  $\beta_1$  has contributed to the interpretation of the processing chain's performance (-0.042), indicating an interest in improving processing flexibility by one unit in order to ensure an improvement of the processing chain's performance of 0.042. The  $\beta_2$  has also contributed to explaining (0.403) the performance of the supply chain, meaning that a 1-unit speed increase results in an improvement of (40%) the performance of the supply chain. The  $\beta_3$  shows a downstream factor that contributed to an explanation (0.356) of the processing chain performance, meaning that a 1-unit increase in response results in an improvement of (36%) the performance of the processing chain. It is evident that the  $\beta_4$  has contributed to explaining (0.184) the performance of the processing chain, meaning that an increase in efficiency of one unit results in an improvement of (18%) the performance of the processing chain.

Table(6) effects of the effect of lean supply chain on the performance of the supply chain using multiple linear regression

Variables		lean supply chain performance
Constant		0.318
Flexible	$\beta_1$	- 0.042
Quickness	$\beta_2$	0.403
Responsiveness	$\beta_3$	0.356
Competency	$\beta_4$	0.184
Correlation coefficient value	<b>R</b>	0.836

Selection parameter value	<b>R<sup>2</sup></b>	0.698
F calculated value		166.166
F tabular value		1.879
<b>Sig.</b>		<b>0.000</b>
Significance level at 0.05		<b>moral</b>
Durban Watson Value		<b>1.602</b>

The nature and type of relationship of the effects of lean supply chain dimensions on the performance of the supply chain can also be explained by the following subassumptions:

#### **Conclusions:**

The presence effect of the lean supply chain on the performance, indicating the contribution of each the lean supply chain and the performance to ensuring a high improvement the performance company.

#### **Recommendations:**

We can recommendation for:

1. For improvement of companies sufficiency must be apply the standard dimensions of lean supply chain in all food industrial companies.
2. Induce the searchers to used other dimensions for lean supply chain of other studies.

#### **Proposals**

In addition to the current research, the researcher suggests conducting similar studies, including:

1. The lean supply chain and its impact on the performance of the supply chain achieving logistic.
2. The lean supply chain and its impact on the performance of the supply chain achieving competitive advantage .

#### **REFERENCES**

1. Kruczek, M., & Żebrucki, Z. (2011). Doskonalenie struktury łańcucha dostaw z wykorzystaniem koncepcji Lean. Logistyka, 2, 355-362.
2. Jia, X., & Wang, M. (2019). The Impact of Green Supply Chain Management Practices on Competitive Advantages and Firm Performance. In Environmental Sustainability in Asian Logistics and Supply Chains ,Springer, Singapore
3. Sezen, Bulent and , Sema Frdogan, (2009), "lean philosophy in strategic supply chain management and value creating", journal of global strategic management Vol.3,No.1,68-73
4. Womack, J. P., & Jones, D. T. (1994). From Lean Production to the Lean Enterprise. Harvard Business Review, 72 (2), 93-103.
5. Bruce ,Margaret and Lucy Daly ,(2004),"Lean or agile A solution for supply chain management in the textiles and clothing industry?" ,International Journal of Operations & Production Management Vol. 24 No. 2,pp. 151-170 .
6. Aziati, A. H. Nor & Ling, Yong Man & Ahmad, Md Fauzi & Abdullah, Nor Hazana, (2018) , The Influence of Information Technology and Operational Competencies toward Supply Chain Agility: Findings from Textile Manufacturer", Journal of Physics: Conference Series, International Postgraduate Conference on Applied Science & Physics, Vol. (1049).
7. Min, S. and J.T. Mentzer. (2004). "Developing and Measuring Supply Chain Management Concepts." Journal of Business Logistics 25 (1) .
8. Behrouzi, F., Wong, K. Y., & Behrouzi, F. (2011, December). A study on lean supply chain performance measures of SMEs in the automotive industry. In 2011 IEEE International Conference on Industrial Engineering and Engineering Management (pp. 237-241) IEEE.
9. Krajewski, J. Lee & Ritzman, P. Larry & Malhotra, K. Manoj,(2010) "Operations management processes and supply chains ", 9th Ed, Pearson, New Jersey .
10. Hayat, Khizer & Abbas, Aamir& Siddique,M. &Cheema, Khaliq (2012) “ A study of the different factors that affecting the supply chain responsiveness” , Savap International, vol 3, No3-November, <http://www.journals.savap.org.pk>
11. Flothmann, Christoph & Hobergm Kai & Wielandm Andreas, (2018 ),Competency requirements of supply chain planners and analysts and personal preferences of hiring managers, Supply Chain Management: An International Journal, Vol. (23) No. (6).
12. Mandal, S. (2015). Supply chain responsiveness: a logistics integration perspective and impact on firm performance. International Journal of Applied Management Science, 7(3), 244-268 21)

13. Mandal, S., Bhattacharya, S., Korasiga, V. R., & Sarathy, R. (2017). The dominant influence of logistics capabilities on integration: Empirical evidence from supply chain resilience. *International Journal of Disaster Resilience in the Built Environment*, 8(4), 357-374.
14. Wüllenweber, Kim, Daniel Beimborn Tim Weitzel, T., & König, W. (2008), "The impact of process standardization on business process outsourcing success, *Information Systems Frontiers*, journal Vol 10(2), 211-224.
15. Beamon, Benita M. (1999) "Measuring supply chain performance", *International journal of operation and production management*, vol 19, No3 <http://flp.itp.ac.id>
16. Zhang, Y., Hong, J., & Ding, M. (2018). Sustainable supply chain management practices, supply chain dynamic capabilities, and enterprise performance. *Journal of Cleaner Production*, 172, 3508-3519.
17. Mentzer, J. T., Flint, D. J., & Hult, G. T. M. (2001). Logistics service quality as a segment-customized process. *Journal of marketing*, 65(4), 82-104.
18. Ferry J., Kevin P., Rodney C. (2007) Supply Chain Practice, Supply Chain Performance Indicators and Competitive Advantage of Australian Beef Enterprises: A Conceptual Framework Australian Agricultural and Resource Economics Society (AARES 51st Annual Conference), Faculty of Rural Management University of Sydney
19. Little, Arther D. (2010) "supply chain performance excellence", <http://www.adle.com>
20. Halme, Jussi (2012) "Global supply chain management and performance measurement" <http://Leka-hanke.wikispaces.com>
21. Abou-Moghli, A. A., Al Abdallah, G. M., & Al Muala, A. (2012). Impact of innovation on realizing competitive advantage in banking sector in Jordan. *American Academic & Scholarly Research Journal*, 4(5). [www.sciencedirect.com](http://www.sciencedirect.com)
22. Shafiee, M., Lotfi, F.H., Saleh, H., (2012). Supply Chain Performance Evaluation with Data Envelopment Analysis and Balanced Scorecard Approach. (Doctoral Dissertation), Shiraz Branch, Islamic Azad University, Shiraz, IRAN.
23. Mogeni, L.M., (2016). Effect of green logistics practices on performance of supply chains in multinational organizations in Kenya. *Industrial Engineering Letters*, 6(4), 2224-6096.
24. Porter, A. (2011). Operations management. Second Edition Designed for high-achieving graduates across all disciplines, London Business School's Masters .For more information visit [www.london.edu/mm](http://www.london.edu/mm). email.
25. Beckman, S., Sinha, K.K., (2005). Conducting academic research with an industry focus: production and operations management in the high-tech industry. *Production and Operations Management*, 14(2), 115-124.
26. Al-najjar, F. J. (2016). Social Responsibility and its Impact on Competitive Advantage (An Applied Study on Jordanian Telecommunication Companies). *International Journal of Business and Social Science*, 7(2). [www.tandfonline.com](http://www.tandfonline.com)
27. Chamsuk, W., Fongsuwan, W., & Takala, J. (2017). The effects of R&D and innovation capabilities on the thai automotive industry part's competitive advantage: a sem approach. *Management and Production Engineering Review*, 8(1). [www.elsevier.com/locate/dsw](http://www.elsevier.com/locate/dsw)
28. Lockamy, A., McCormack, K., (2004). Linking scor planning practices to supply chain performance. *International Journal of Operations and Production Management*, 24(12), 1192-1218
29. Agunbiade, Dawud Adebayo & Ogunyinka, Peter I. , 2013 , " Effect of Correlation Level on the Use of Auxiliary Variable in Double Sampling for Regression Estimation " *Open Journal of Statistics*, NO. 3, ,p 314.