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Impact of Lean Accounting on Value of the Company at the Jordanian Industrial Companies

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ABSTRACT

The purpose of this study was to determine how lean accounting affected the value of the company in Jordanian industrial companies. The researchers used a descriptive-analytical approach to examine study data collected through a questionnaire and from the annual financial reports of the (52) Jordanian industrial companies listed on the Amman Stock Exchange during the period from 2017 to 2021. The study brought up a number of findings, the most important of which are: the availability of an impact of lean accounting tools in enhancing the company's value in Jordanian industrial public shareholding companies, with a high level of relative importance. The study provided a number of recommendations, the most important of which was that Jordanian industrial companies' management creates well-structured plans and implements effective strategies to support increasing the value of the company and achieving excellence and prosperity.

Keywords: Lean Accounting, The Value of the Company, Jordanian Industrial Companies
JEL Classifications: M41, M49, M51, G10

1. INTRODUCTION

The industrial sector in particular and the rest of the globe have seen quick changes and advancements, such as the widespread adoption of Japanese management concepts including eliminating waste and loss, gradual and continuous improvement, and worker collective engagement. The Japanese automaker TOYOTA has used these concepts in all stages of manufacturing and was the first to adopt lean production in the process of creating cars in all production lines, which participates in eliminating extra costs and maximizing profits. Since the reason behind these sophisticated and sophisticated technologies is the increasing intensity of rivalry among industrial enterprises that are attempting to obtain client happiness and satisfy their desires, as a result, conventional management accounting methods have become ineffective in making the best use of a company's resources and achieving its objectives. Hence, new management accounting systems, such as lean accounting, become required to help businesses minimize expenses, maximize profits, and raise the value of the company (Al-Dulemi and Shehadeh, 2018).

1.1. Importance of the Study

1.1.1. First: Scientific significance

The researcher concentrated on the idea of lean accounting as one of the contemporary administrative accounting systems which are crucial for industrial companies in all of their domains since it works to reduce waste and losses or reduce damaged and missing items and it includes the optimal use of the resources and capabilities available to the company and takes into consideration the gradual and continuous improvement in operations and activities, which helps to reduce manufacturing costs and raise the company's value. Through this research, theoretical literature explaining how lean accounting affects a company's value as well as the characteristics of lean accounting techniques will be improved (Performance Measurement linkage chart, continuous improvement "Kaizen," value stream maps, target cost).

1.1.2. Second: The Practical significance

The importance of the study lies in measuring the impact of lean accounting tools and its relationship to increasing the value of the

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company. The researcher focused on Jordanian public shareholding industrial companies listed on the Amman Stock Exchange, and as such, the scientific significance is centered on the importance of Jordanian industrial companies, which is the study community. The study also aims to attract the attention of administrators and decision-makers and provide them with the most crucial flexible practices that move companies toward the application of advanced techniques that will address the shortcomings in cost-cutting, performance improvement, and company value growth.

1.2. Aims of the Study

1. What is the relative importance of the company's value in Jordanian industrial companies?
2. What is the relative importance of lean accounting in Jordanian industrial companies?
3. A description of how lean accounting tools (Performance Measurement linkage chart, continuous improvement "Kaizen," value stream maps, target cost) have improved the value of the company of Jordanian industrial companies. This goal gives rise to the following sub-goals:
   - Determining how the Performance measurement linkage chart has affected the company's value among Jordanian industrial companies
   - Determining how continuous improvement, "Kaizen," affects a company's value in Jordanian industrial companies
   - Determining how value stream maps affect the value of the company in Jordanian industrial companies
   - Determining how the target cost will affect the company's value among Jordanian industrial companies.

1.3. Problem of the Study

The Problem of the study is to raise the company's value in Jordanian industrial companies through the impact of lean accounting. And since those companies, in general, face significant problems and changes in many areas due to the intense competition and openness to global markets, traditional management accounting systems became now unable to satisfy the criteria of modern production systems due to the inability of many businesses to integrate the concepts of rationalization-whether it be decreasing loss or damage and attaining the highest and best quality of products. This led to the development of traditional systems in management accounting through the employment of knowledge and thought to find new tools in management accounting that increase the capabilities of companies to generate value, so attention turned to lean accounting as a new method in the field of management accounting.

1.4. Questions of the Study

The main question: Does the use of lean accounting tools affect increasing the value of the company in industrial Jordanian companies? The following sub-questions can be derived from this main question:

- The first sub-question is: Does the Performance Measurement linkage chart has an effect on improving the value of Jordanian industrial companies?
- Second sub-question: Does continual improvement, "Kaizen," affect how much a company is valued in Jordanian industrial companies?
- The third sub-question: Do value stream maps have an impact on improving the value of Jordanian industrial companies?
- The Fourth sub-question: Does the target cost have an impact on enhancing the company's value in Jordanian industrial companies?

1.5. Hypothesis of the Study

The first main hypothesis: There are no statistically significant differences at the level of significance ($\alpha \leq 0.05$) for the lean accounting tools with its dimensions (Performance Measurement linkage chart, continuous improvement "Kaizen," value stream maps, target cost) in enhancing the company's value in Jordanian industrial companies.

The following sub-hypotheses were derived from this hypothesis:

- The first sub-hypothesis: There are no statistically significant differences at the significance level ($\alpha \leq 0.05$) of the Performance Measurement linkage chart in enhancing the company's value in the Jordanian industrial companies
- The second sub-hypothesis: There are no statistically significant differences at the level of significance ($\alpha \leq 0.05$) for continuous improvement, "Kaizen", in enhancing the company's value in the Jordanian industrial companies
- The third sub-hypothesis: There are no statistically significant differences at the level of significance ($\alpha \leq 0.05$) for the value stream maps in increasing the company's value in the Jordanian industrial companies
- Fourth sub-hypothesis: There are no statistically significant differences at the level of significance (($\alpha \leq 0.05$) for the target cost in increasing the company's value in the Jordanian industrial companies.

1.6. Model of the Study

Based on the analysis of previous studies relevant to the study topic and its variables, hypothetical relationships can be represented in the study through the study model, as shown in Figure 1:

1.7. Conceptual Definitions

1.7.1. Lean accounting

Is a contemporary accounting method that reflects flexible practices and adaptability by enhancing the usefulness of work, enhancing the decision-making process by providing understandable and accurate information, and eliminating waste and loss brought on by conventional accounting systems. It also works to continuously improve the economic unit, which helps to reduce production costs and increase profits (Kazim, 2014).

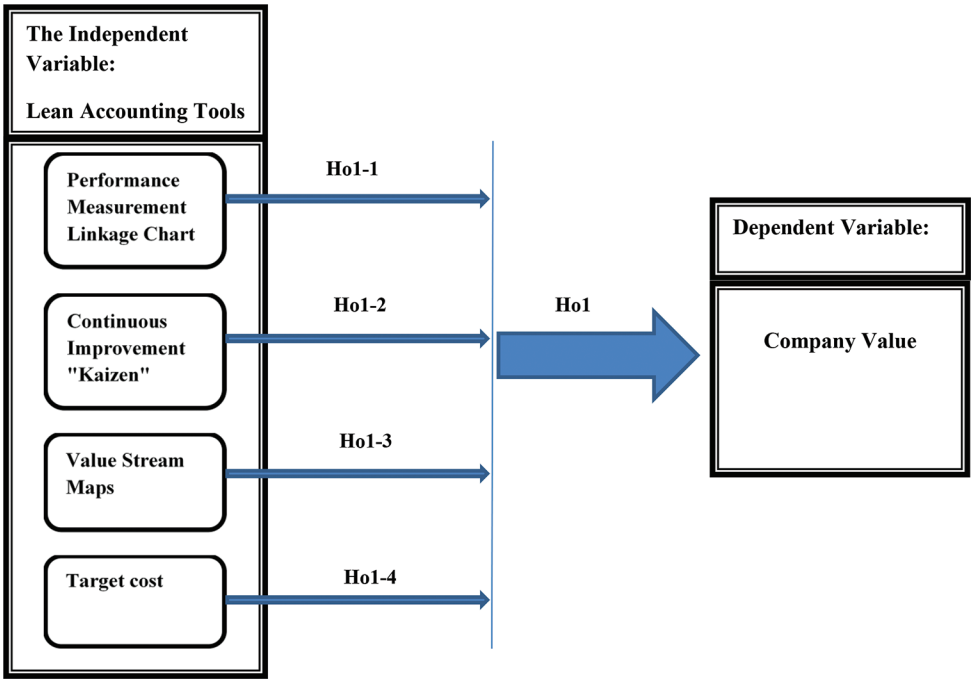
1.7.2. The value of the company

Is the amount of cash flows that shareholders are expected to obtain by investing their money in the shares of a particular company, which means that the value of a company is determined by the value of its shares in the financial markets and that the value of a company is determined by the market value of one share multiplied by the number of the subscribed shares (Halim and Hamid, 2019, 195).

1.8. Limitations of the Study

- Objective limits: The study focused on measuring the effects of some dimensions of lean accounting tools represented

Figure 1: Study variables



Independent variable	The study
Lean accounting	(Alotaibi et al., 2021), (Atkinson et al., 2018), (Al-Dulemi and Shehadeh, 2018), (Al-Rawi, 2019) (Al-Rahimi, 2016), (Okour, 2018) (El- basha 2017), (lliemena et al., 2020)
Dependent variable	
Company value	(Al-Khafaji and Al-Awad, 2021), (Bosna, 2019), (Badr El-Din and Mouloud, 2019)

Source: The researcher prepared this model using the following sources

in (the Performance Measurement linkage chart, material flow, and material withdrawal, value stream maps, target cost), and these dimensions were selected because they are the most well-known ones applied in Jordanian industrial companies and their effects on enhancing the value of the company.

- Spatial Limits: The current study will focus on the numerous Jordanian industrial companies listed on the Amman Stock Exchange, a total of (52) company that comprised the study community.
- Human Limits: Consisted of the members of the financial department and members of the board of directors.

2. PREVIOUS STUDIES

2.1. Introduction

The researcher has reviewed a number of previous works in Arabic and English that are directly or indirectly related to the topic of his study and that deal with one or more of its dimensions. The researcher has summarized these works in two parts, the first of which is studies in Arabic and the second of which is studies in a foreign language and has arranged them chronologically (from the most recent to the oldest).

2.2. Arabic Studies

Mane and Buqsari's (2021) study entitled "The impact of Lean Production on Reducing Production Costs for Industrial Companies."

In this study, the researchers were concerned with determining the influence of lean production on reducing production costs for Algerian industrial institutions, notably the sanitary ceramic production unit in Algeria's Chlef state. The researchers used a questionnaire to collect data, and some of the findings they came to include: the features of lean production have a good impact on reducing production costs in the institution under study. The researchers suggested a number of recommendations, the most significant of which is a rise in industrial institutions' interest in lean production because it is considered an advanced production philosophy and suitable for both large and small businesses.

Marghani et al. and others' study (2021) entitled "The Difficulties of Implementing Lean Accounting in Economic Institutions (Analysis of a Sample of Al-Wadi state)."

The researchers concentrated on the obstacles and problems associated with the implementation of lean accounting in economic institutions in Algeria's Al-Wadi state. The researchers wanted to identify lean accounting as a current introduction to cost reduction, as well as measure the extent of the obstacles and challenges associated with applying lean accounting methods in economic institutions in Algeria's Al-Wadi state. The researchers created a questionnaire appropriate for the study's topic, and one of their most significant findings is that while the economic institutions in Algeria's El-Wadi state have a lot of requirements for applying lean accounting, there are some challenges and barriers that prevent its application. The researchers made several recommendations,

including the essential need to use lean accounting, which helps eliminate waste and loss and increases profits.

Ba'lash and Al-Sheikhi's study (2020) entitled "A Theoretical Investigation of the Concept of Lean Accounting and what Distinguishes it from Traditional Accounting."

The researchers focused on identifying the methodologies and tools of lean accounting and how they differ from traditional accounting. The researchers wanted to identify the advantages of using lean accounting as well as the most significant contrasts between traditional accounting and modern lean accounting. The descriptive approach was adopted by the researchers. One of the most significant findings of this study is that productive activity is the most essential factor in the implementation of lean principles and lean accounting. The researchers suggested that courses be held to highlight the benefits of using lean accounting in minimizing waste and making sound judgments.

Al-Rawi study (2019) entitled "Lean Accounting in Planning Production Costs in Jordanian Public Shareholding Industrial Companies."

The researcher dealt with the methods and principles of lean accounting in planning production costs in Jordanian public shareholding industrial companies. The study's independent variable is represented by the lean accounting tools (continuous improvement "Kaizen," points box, value stream maps, Hushen policy). The study population consisted of accountants, account department managers, internal auditors, and financial managers in Jordanian industrial companies. The researcher's most important findings are: that the use of continuous improvement methods "Kaizen," points boxes, value stream maps, and Hushen's policy have a significant positive impact on planning costs of production operations in Jordanian industrial companies, as well as the need to hold courses and conferences that help define methods and tools lean accounting and its benefits for Jordanian industrial companies.

Al-Zubaidi and Al-Bakri (2015) Bakri's study titled "The Role of Lean Accounting in Supporting Corporate Governance to Achieve Competitive Advantage (A Case Study Conducted at Diyala Electrical Industries Company)."

It is a comprehensive study about the role of lean accounting in assisting company governance in achieving and maintaining competitive advantage. The researchers aimed to pay special attention to the use of lean accounting because it plays an important role in increasing the role of corporate governance and identifying the term governance from various perspectives, as well as the positive impact of modern management accounting methods on supporting corporate governance and focusing on the idea of customer satisfaction. One of the most important results is that lean accounting is an information system that focuses on financial and non-financial information efficiently and effectively and is thus based on giving information to all administrative levels in the Diyala General Company for Electrical Industries. Among the most significant and effective suggestions made by the researchers: Focus on customer satisfaction in the Diyala General Company for Electrical Industries in a vital approach to developing and achieving competitive advantage.

2.3. Foreign Studies

The study by Alves et al. (2021) entitled "Lean Accounting: A Structured Literature Review"

In this study, the researchers concentrated on conducting a review and analysis of the literature on lean accounting, in order to develop the creation of new, logical perspectives on how to establish, develop, and improve flexible accounting. Since this study provides a critique of previous studies in the field of lean accounting, the researchers carried out a comprehensive evaluation of the literature to categorize and evaluate 39 papers from esteemed journals that dealt with lean accounting between 1996 and 2020. The most significant findings of the study are as follows: Although the lean accounting method is thought to be the best approach for small businesses, there has not been much research on the role of accountants in these organizations or how to integrate its ideas with generally accepted accounting principles (GAAP). The researchers made a number of recommendations, the most crucial of which is that more and more research should be done on the topic of lean accounting because it enhances companies' profitability effectively and efficiently.

The study by Grasso et al. (2021) entitled "Materials for Teaching Lean Accounting"

The researcher focused on a study on lean accounting and lean production because these methods have become more common in developed countries in recent years. According to the study, only a small number of accounting courses focused specifically within the narrow specialization of management accounting and expenses. The researcher also mentioned that one of the reasons for the lack of coverage of lean accounting and lean production is the lack of study material for teaching lean accounting. The researcher also mentioned that the American Accounting Association will add semester courses on lean accounting and lean production to address the shortage, as this contributes to reducing production costs efficiently and effectively. The study resulted in a variety of findings, the most significant of which are: The addition of teaching resources related to lean accounting and lean production helps students understand the principles and tools of lean accounting and lean production and their advantages in reducing waste in the production process and in the company as a whole. The researcher made a number of recommendations, the most significant of which are: it is necessary to add semester courses concerning lean accounting because it successfully and efficiently eliminates waste.

The study by Alotaibi et al. (2021) entitled "Improving Product Quality under the Application Lean Accounting Tools within the Behavioral Approach"

This study is considered as a thorough analysis of the significance of using lean accounting tools and techniques (such as continuous improvement "Kaizen," points boxes, and value streams) and taking into consideration the role of ethical and responsible behaviors on the part of the decision-maker in order to make the

right decision in reducing production costs without compromising quality and disposal waste and loss and to work on gaining customers' delight and fulfilling their needs, which helps to increase revenues. Given that the researchers made a concerted effort to use the lean accounting tools and methodologies in the cement factory in Kufa based on the available laboratory data that they obtained. The study indicated that the research sample represented by the cement factory in Kufa does not use lean accounting procedures and tools and that their adoption helps cut costs while not compromising product quality. The researcher recommended that the Kufa factory's lean accounting procedures and tools be implemented because they contribute to enhancing the company's value and providing customer satisfaction.

The study by Rachael et al. (2020) entitled "An Assessment of the Practicability of Lean Accounting in Health Care Sector."

In this study, the researchers looked at the potential for applying lean accounting in the Nigerian healthcare sector as well as the difficulties or obstacles that stand in the way of such an application as a means of administrative control in this sector. According to the researchers, the majority of studies on the topic of lean accounting tools and methodologies are in the sector of production, particularly the production of automobiles, and the potential for removing waste and loss in the production process and the company as a whole. So, lean accounting tools must be applied across a variety of industry sectors because they effectively help to decrease costs, and profits are maximized. Among the researchers' findings: lean accounting can be used in the Nigerian health care sector because it helps to eliminate waste and loss and so profits are maximized. One of the most important findings advised by the researcher is the need for staff and top managers to be properly trained in lean accounting practices and techniques.

The study of Teixeira et al. (2019) entitled "Lean Accounting: Economic-Financial Performance of Companies with Lean Manufacturing."

This is an in-depth case study of four top companies listed on the Boveca Stock Exchange (Brazil Stock Exchange) before and after applying lean manufacturing and assessing economic and financial performance using primary and secondary data. The researchers observed that lean manufacturing did not go hand in hand with suitable accounting procedures for the new production environment, which suggests that the management system has to be rethought within the frame of the value flow stream-based lean accounting method. The study came to the following findings: There is a deficiency in the spread of adoption of applying lean accounting in the corporate environment, but Brazilian companies still have a long way to go before they can develop and implement lean accounting because it helps to save costs. The study made the following recommendation: Brazilian companies should fundamentally adopt lean accounting since it helps them increase profitability.

2.4. What Distinguishes this Study from Previous Ones

Through an examination of the literature, books, and past studies, it was discovered that researchers and scholars are interested in the study's topics, dimensions, and factors; this interest has been represented in the multiplicity and diversity of studies that have been addressed. Thus, this study is an extended version and expansion of previous studies, but it differs from previous studies in that it investigates the relationship between these variables directly, whereas previous studies and literature investigated the relationship between these variables indirectly, by linking them to other variables.

3. THEORETICAL BACKGROUND

3.1. Definition of Lean Accounting

According to Abu Hijleh and Mashhour (2020), "Lean Accounting" is a flexible accounting system that includes a set of flexible principles and practices that simulate lean production by offering appropriate control and measurement reports that reveal information about activities that add value for the client by cutting costs and getting rid of pointless steps at each level of production to efficiently and effectively reflect the best financial performance of the company.

On the other hand; Shehadeh (2017), lean accounting is a modern management accounting system based on continuous development and improvement, the pursuit of perfection, the elimination of waste, delivering products to customers on time, achieving the company's desired goals, and assisting in making the appropriate and accurate decision at the right time, all of which contribute to reducing costs and maximizing profits.

Lean accounting, according to Maskell et al. (2017), is a specialized approach to business management based on the foundations of flexible management and flexible production that offer suitable foundations for the use of accounting information that support flexibility in production and management to support cost management, value-adding activities, and elimination of waste from the accounting systems used in the economical units.

As for Kazem (2014), Lean accounting is a modern accounting approach that reflects flexible thinking and practices by enhancing the usefulness of work, enhancing decision-making through the provision of understandable and accurate information, eradicating waste and loss resulting from traditional accounting systems, and working toward the gradual and continuous improvement of the economic unit, it helps to cut production costs and increase profits.

Karen (2012) defined lean accounting as "the accounting methodology that leads to increasing the value of work through the use of flexibility techniques and measuring its financial impact in order to implement flexible improvement actions for the organization."

Lean accounting, according to the two abovementioned researchers, is a contemporary Japanese approach that identifies the best outputs efficiently and effectively, as well as the best products with the lowest costs, highest quality, and more competitiveness, all of which help to raise the value of the company.

3.2. Independent Variables Definition for the Study (Lean Accounting Tools)

Alaa (2011) noted that in order to achieve good and effective management of institutions' performance and their lean activities, lean accounting depends on a variety of tools that are integrated with one another.

From an accounting perspective, the following are the most essential lean accounting tools and techniques:

3.2.1. Performance measurement linkage chart

According to Muhammad and Al-Maini (2013, 303–307), a Performance Measurement linkage chart is a logical diagram that connects Performance Measures for Value Flow with Performance Measures for the Cell. These Performance Measures for the Cell are described in the following five measures:

1. The measure of a machine's operational efficiency: It assesses a machine or piece of operational equipment's capacity to deliver high quality in a timely manner that satisfies clients' demands.
2. The measure of the daily report in hours, which measures how well the cell achieves completion time efficiently and effectively, focuses on the production fit customer's demands and meets their request in a way that minimizes waste and provides the necessary and highly relevant information to the team members working within the cell.
3. The measure of the quality report at the beginning that works on following, checking, monitoring, and controlling the cell at the 1st time to assure whether it functions properly, efficiently, and effectively as well as the efficacy of the machines and equipment, where the machines and equipment are monitored and their upkeep or discontinuation is assessed.
4. The measure of production's control in real operation (work-in-progress) which is concerned with determining inventory reduction in the cell and the costs associated with it.
5. Value stream performance measure: It comprises the cell's hourly and daily reports. These measurements are helpful to prepare weekly or monthly reports that show how the value flow may achieve effective and efficient performance.

According to the two above-mentioned researchers, the Performance Measurement Linkage Chart is a chart based on measuring cell performance by an hour efficiently and effectively by connecting performance measures of value flow with measures of cell performance for the purpose of customer service, meeting their needs, ensuring their satisfaction, and continuous company improvement, all of which help lower costs and increase company value.

3.2.2. Continuous improvements "Kaizen"

According to Shehadeh (2017), continuous improvement "Kaizen" is based on the introduction of gradual and continuous improvements to infinity and the pursuit of perfection, which leads to the development of products efficiently and effectively, improving the quality of products and services, and satisfying customer satisfaction, all of which contribute to lowering production costs, maximizing profits, and achieving the target company's goals.

Drury (2016) thinks that continuous improvement "Kaizen" depends on a particular methodology in the application, and it works on introducing gradual and sequential changes to production through. These enhancements are reflected in continuously reducing costs to the lowest possible level and raising quality to the highest possible level, i.e., it is a continuous search process to get rid of waste, improve quality, get rid of damage or reduce it, and improve the performance of operations that increase the value of customers and satisfy their demands.

According to Hilton et al. (2012), continuous improvement "Kaizen" is one of the contemporary, significant, and essential techniques focused on the introduction of consecutive, gradual production improvements that eventually result in cost savings and an enhancement in the output's quality.

The two above-mentioned researchers suggest that continuous improvement ("Kaizen") is the introduction of successive and continuous changes in the company's operational processes and its offered services in a fundamental way that helps increase productivity and maximize profitability.

3.2.3. Value stream mapping

Value stream maps, according to Arnold et al. (2012), are one of the tools and techniques of lean accounting used in the planning and to comprehend the flow of materials from the factory to the consumer and do not only concentrate on comprehending the current condition of operations and flow, but also on accurately defining the non-added and added value of every phase of the process efficiently, which encompasses all activities, even in the processes of storing production and primary materials in the manufacturing process, and is based on eliminating all operations that do not achieve any specific value and represent a loss and a waste for the company's production operations, such as the extending the length of the waiting period for inventory and other types of wastage.

The value stream maps, according to the two above-mentioned researchers, are based on determining materials that enter the company, processing them until they are finished products, then supplying them to customers as needed, and identifying and eliminating the activities that result in the waste, the loss, and the extravagance, all of which help to maximize profits and raise a company's value.

3.2.4. Target cost

It is the approach related to linking cost and value to the characteristics and advantages of the product or the service, which aims to focus on continuous incremental improvement and management and design of the product in areas that have a major impact on decreasing costs and maximizing customer value. In other words, the target cost tool is one of the tools designed for profit planning and cost management in a manner that ensures reducing costs at all levels of production activities and regulating them according to planned and specified control standards. This tool essentially addressed to the user to define his or her needs, objectives, and capabilities. Regarding these needs, they are founded on producing productions that are both

valuable and suitable for this consumer while working in a highly competitive economic environment. It tries to hone its abilities in how to efficiently and effectively oversee all relevant departments involved in the manufacturing process in a way that ensures a profit equal to the efforts and energy expended and takes into account time, development, quality, and cost as success factors. (Jiambalvo, 2019).

The target cost begins with clients in the market deciding an acceptable and reasonable price for a service or product, through which they can promote the product in the market, and then moves on to determining the costs that assure access to that price (Nassar et al., 2018; Muhammed, 2020).

According to the two above-mentioned researchers, the target cost is the method related to setting the desired market price by customers based on social strata, and then setting the profit margin, and then determining the target cost, which is the difference between the market price and the profit margin, which contributes to gaining customer satisfaction.

3.3. The Advantages of Lean Accounting

According to Maskell and Kennedy (2007), using lean accounting systems has a variety of advantages, such as:

1. Contributing to the elimination of waste and loss that occurs during the company's production process in general, this reduces costs and increases profits.
2. The use of lean accounting tools at the company contributes to increasing its capacity to achieve its sustainable advantage and enhance the level of production efficiency and effectiveness.
3. Getting a competitive advantage and manufacturing products that suit the needs of the consumer and are delivered on time.
4. Lean accounting is centered on enhancing the value of sales efficiently and effectively because it provides suitable and appropriate information to decision-makers (management).

According to the two researchers, the lean accounting approach efficiently offers the needed information and is represented by changing traditional financial data and financial reports to produce financial statements that are simple to understand for all beneficiaries.

4. METHODOLOGY OF THE STUDY

4.1. Methodology

The descriptive analytical method was used by the researcher to describe and analyze the study's topic: Impact of Lean Accounting on Value of the Company at the Jordanian Industrial Companies. The study data, collected through a questionnaire and through the annual financial reports of Jordanian industrial companies listed on the Amman Stock Exchange between 2017 and 2021, were evaluated, and the relationship and impact between the variables were discovered.

4.2. Populations of the Study

The study population consisted of the Jordanian industrial companies listed on the Amman Stock Exchange, which totaled (52) industrial companies and were distributed over (9) sub-sectors, according to the official websites of the Amman Stock Exchange (www.ase.com.jo) and the Securities Depository Center (www.sdc.com.jo) for the period (2017-2021).

The study's sample was made up of Jordanian industrial companies that meet the following requirements and are listed on the Amman Stock Exchange:

1. The company maintain the financial market trading continuously during the study period
2. The company has all the information needed to account for the research model's variables
3. The fiscal year of the company closes on December 31st of each year.

As a result, the study sample consisted of (34) industrial companies, accounting for 65.4 % of the study population. The study sample consisted of (170) employees at the upper administrative levels (general and executive managers) and middle administrative levels (departments and unit managers and heads of departments) that are familiar with the instruments of lean accounting and their implementation in the organization.

4.3. Data Collection

The study relies on two sources for data collection:

4.3.1. First, secondary sources

This included articles, refereed scientific periodicals, research, reports, publications, and previous Arab and international studies that dealt with the study variables' themes and dimensions in order to have a comprehensive understanding of the area of study as well as familiarity with the most recent advancements that have occurred. It also contained annual financial statements from Jordanian industrial companies from 2017 to 2021 in order to collect data on the company's value.

4.3.2. Second, primary sources

This included a questionnaire intended to measure the variable of lean accounting tools, which comprised a number of items that reflected the dimensions of the lean accounting tools.

The questionnaire used a five-point Likert scale to measure the sample members' level of agreement with each item as one of five different levels as follows:

Table 1 shows the study sample members' estimated levels of approval for the survey questionnaire and their digital representation (Shehadeh, 2017).

Based on the five-point Likert scale, the following formula was used to assess the relative importance of the items and dimensions:

$$\text{Relative Important} = \frac{\text{Maximum Alternative} - \text{Minimum Alternative}}{\text{The Number of Levels}} = \frac{5-1}{3} = 1.33$$

Where the levels were divided into three groups, and the alternatives were chosen based on the average value of the

Table 1: The study sample members' estimated levels of approval for the survey questionnaire and their digital representation (Shehadeh, 2017)

Answer	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Numerical code	5	4	3	2	1

responses, which are:

- Low if the average is from 1.00 to <2.33
- Average if the average is from 2.33 to <3.66
- High if the average is from 3.66 - up to 5.00.

4.4. Reliability of the Study

Cronbach Alpha Coefficient was used to test the reliability of the tool used to measure the independent variable. According to Sekaran (2010), Cronbach's alpha value must be more than (0.70) for the scale's result to be considered statistically acceptable, and the closer it is to 100%, the more stable the study tool is. The results were as shown in Table 2:

As shown in Table 2, the values of the internal consistency coefficient Cronbach's alpha for the items of the lean accounting tools all seemed to be more than (0.70), ranging between (0.845 and 0.859), and the value of the Cronbach's alpha coefficient for the study tool as a whole was (0.949), indicating the consistency and reliability of the study tool's items.

4.5. Multicollinearity Test

The multiple linear correlation test is used to ensure that there is no high correlation (perfect or near perfect) between the independent variables because the high level of correlation causes the coefficient of R2 to rise more than its real value. To confirm this, Pearson Correlations were calculated using a matrix of independent variables. Correlation coefficient values <0.80 indicate that there is no multi-linear correlation problem (Gujarati, 2004). The results were as follows:

Table 3 reveals that the correlation coefficient reached its highest value (0.825), which is between (value stream maps) and (target cost), while the rest of the values were <(0.80), indicating that there is a multiple linear correlation (Gujarati, 2004).

To validate or reject this result, the Variance Inflation Factor (VIF) was calculated for the independent variables, where a VIF of more than (10) indicates the existence of the multiple linear correlation problem (Gujarati, 2004). As shown in the following table:

Table 4 shows that all variance inflation factor values were <10, which rejects the preceding result and indicates that the data is free of the multiple correlation problems.

4.6. Statistical Analyses Used

Several statistical methods were used to evaluate and analyze the primary data, Eviews software was used to answer the study's questions, achieve its objectives, and test its hypotheses, which are as follows:

- Average, standard deviation, maximum value, and minimum value: to describe the study variables
- Internal Consistency Test, Cronbach's Alpha, to assess the reliability of the study tool
- Pearson Correlations and Variance Inflation Factor (VIF) Test: to ensure that the data does not have multiple linear correlations
- Simple and Multiple Linear Regression Test: To test the study's hypotheses.

Table 2: The values of the internal consistency coefficient for the study tool

No.	Variable/dimension	Cronbach alpha
1	Performance measurement linkage chart	0.845
2	Continuous improvement "Kaizen"	0.851
3	Value stream maps	0.859
4	Target cost	0.849
5	Lean accounting tools	0.949

Table 3: Correlation matrix between independent variables

Variable	Performance measurement linkage chart	Continuous improvement "Kaizen"	Value stream maps	Target cost
Performance measurement linkage chart	1.000			
Continuous improvement "Kaizen"	0.701*	1.000		
Value stream maps	0.698*	0.778*	1.000	
Target cost	0.709*	0.694*	0.825*	1.000

(*) at a significance level of≤0.05

Table 4: Variance inflation factor

Variable	Variance inflation factor VIF
Performance measurement linkage chart	2.444
Continuous improvement "Kaizen"	2.891
Value stream maps	4.238
Target cost	3.523

5. IDENTIFY THE STUDY VARIABLES

The study variables included each of the lean accounting tools (performance measurement link chart, continuous improvement "Kaizen," value stream maps, target cost), which indicated the independent variable, and the company's value, which indicated the dependent variable, and it was measured by Tobin Q ratio during the period (2017-2021). Descriptive statistical approaches, including averages, standard deviations, relative importance, and maximum and minimum values were used to describe these variables. As shown in Table 5:

5.1. Identify Lean Accounting Tools

Table 5 shows that the sample participants' tendencies were

Table 5: Identify lean accounting tools

Variable	Average	Standard deviation	Rank	Relative importance
Performance measurement linkage chart	4.126	0.652	1	High
Continuous improvement "Kaizen"	3.978	0.722	2	High
Value stream maps	3.764	0.755	4	High
Target cost	3.821	0.380	3	High
Lean accounting tools	3.922	0.634		High

toward the high relative importance of lean accounting tools in Jordanian industrial companies, with a general average of (3.922) and a standard deviation of (0.634). All of the lean accounting tools demonstrated high relative importance, as (Performance Measurement Link chart) was in the first place, with an average (of 4.126), and a standard deviation (of 0.652), while (Value Stream Maps) was in the last place, with an average of (3.764), and a standard deviation of (0.755).

5.2. Identify the Company Value

According to Table 6, the average of the Tobin Q in Jordanian industrial companies during the period (2017-2021) was (1.090%), the standard deviation was (0.814%), and the value of the highest observation during the period was (4.387%), which was at The Jordan Wood Industries Company (JWICO) in 2019, while the value of the lowest view was (0.117%) with the Industrial Resources Company. The values show a difference in the value of the Jordanian industrial companies.

Table 6: Identifying the company's value variable in jordanian industrial companies during the period (2017-2021)

Scale	Company value (%)
Average	1.090
Standard deviation	0.814
Maximum value	4.387
Minimum value	0.117

5.3. Hypothesis Testing

The main hypothesis states that: There are no statistically significant differences at the level of significance ($\alpha \leq 0.05$) for the lean accounting tools with its dimensions (Performance Measurement linkage chart, continuous improvement "Kaizen," value stream maps, target cost) in enhancing the company's value in Jordanian industrial companies.

The main hypothesis has been divided up into four sub-hypotheses, each of which examines how lean accounting tools independently affect a company's value in Jordanian industrial companies.

As shown in Table 7, multiple linear regressions were used to test the main hypothesis while simple linear regression was used to test the sub-hypotheses, and the results were as follow:

Table 7: *The results of a multiple linear regression analysis to demonstrate the influence of lean accounting tools on the value of the company

Variable	Coefficient	Standard chart	(T) Value	(Sigt)
Performance measurement linkage chart	0.346	0.073	4.758	0.000
Continuous improvement "Kaizen"	0.090	0.036	2.527	0.012
Value stream maps	0.621	0.065	9.577	0.000
Target cost	0.318	0.103	3.101	0.002
Regression analysis	3.129	0.344	9.088	0.000

(R2) 0.414, (Adjr^2) 0.400, (F) 29.198, (Sigf) 0.000, (D-W) 1.654, Dependent variable: company value. * The effect is statistically significant at the level ($\alpha \leq 0.05$)

5.3.1. Result of the main hypothesis test

The findings of a multiple linear regression analysis of the effect of lean accounting tools on the company's value are shown in Table 7, which indicates the significance of the model as it reached a value of (F = 29.198) and a significance level of (SigF = 0.000), which is <0.05. The value of the coefficient of (R2 = 0.414) showed that the lean accounting tools were able to account for a percentage of (41.4%) of the change in the company's value, with all other factors held constant.

The table also demonstrates that there is a substantial positive influence on all of the lean accounting tools, where the value of B at the dimension of Performance Measurement linkage chart was (0.346) and the value of T was (4.758) with a level of significance (SigT = 0.000) <0.05. The value of B at the continuous improvement dimension "Kaizen" was (0.090), while the value of T was (2.527), both at a level of significance (SigT = 0.012) < (0.05) at the value stream maps dimension, the value of B was (0.621), It had a T-value of (9.577) and a significance level of (SigT = 0.000), both of which were <0.05. Furthermore, the value of B at the target cost dimension was (0.318), and the value of T was (3.101), both with a significance level (SigT = 0.002) <0.05. Based on the preceding, the main hypothesis is rejected, and the alternative hypothesis is accepted which states that "there is a statistically significant effect differences at the level of significance ($\alpha \leq 0.05$) for the dimensions of lean accounting tools," (Performance Measurement Linkage Chart, Continuous Improvement "Kaizen," Value Stream Maps, Target Cost) in enhancing the value of Jordanian industrial companies.

5.3.2. The results of the sub-hypothesis test of the main hypothesis

First: Results of the First Sub-Hypothesis Test

The first sub-hypothesis states that "There are no statistically significant differences at the significance level ($\alpha \leq 0.05$) of the Performance Measurement linkage chart in enhancing the company's value in the Jordanian industrial companies."

Table 8 shows the findings of a simple linear regression analysis of the effect of the Performance Measurement linkage chart on the company's value. The table shows the model's significance,

as it reached a value of (F = 59.648) and a significance level of (SigF = 0.000), which is <0.05, The coefficient value (R2 = 0.262) indicated that the Performance Measurement linkage chart could explain a percentage of (26.2%) of the change in the company's value, with all other factors held constant.

Table 8 also shows that there is a positive significant effect on the Performance Measurement linkage chart, where the B value was (0.647) and the T value was (7.723) and the level of significance (SigT = 0.000) is <0.05. Therefore, the first sub-hypothesis is rejected and the alternative hypothesis is accepted, which states: "There is a statistically significant differences t at the level of significance ($\alpha \leq 0.05$) of the Performance Measurement linkage chart in enhancing the company's value in the Jordanian industrial companies."

Second: The Results of the Second Sub-Hypothesis Test

The second sub-hypothesis states that: "There are no statistically significant differences at the level of significance ($\alpha \leq 0.05$) for continuous improvement "Kaizen" in enhancing the company's value in the Jordanian industrial companies."

Table 9 shows the results of the simple linear regression analysis of the effect of continuous improvement "Kaizen" on the company's value. The table also shows the model's significance, as the value of (F = 57.382) and the level of significance (SigF = 0.000) are <0.05. The value of the coefficient (R2 = 0.255) indicated that the continuous improvement "Kaizen" was able to explain a percentage of (25.5%) from the change in the company's value, with all other factors kept constant.

The table also shows that there is a positive significant effect on continuous improvement "Kaizen," where the B value was (0.728) and the T value was (7.575) and the level of significance (SigT = 0.000) is <0.05. accordingly, the second sub-hypothesis is rejected and the alternative hypothesis is accepted, which states: "There are no statistically significant differences at the level of significance ($\alpha \leq 0.05$) for continuous improvement "Kaizen" in enhancing the company's value in the Jordanian industrial companies."

Third: The Results of the Third Sub-Hypothesis Test

The third sub-hypothesis states that: "There are no statistically significant differences at the level of significance ($\alpha \leq 0.05$) for the value stream maps in increasing the company's value in the Jordanian industrial companies."

Table 10 shows the results of a simple linear regression analysis of the effect of value stream maps on the company's value. The table shows the model's significance, as it reached a value of (F = 102.492) and a significance level of (SigF = 0.000), which is <(0.05). The value of the coefficient of determination (R2 = 0.379) indicated that the value stream maps could demonstrate 37.9% of the change in the company's value, with all other factors kept constant.

Table 8: *Results of an analysis using simple linear regression to show how the performance measurement linkage chart's impacts on the value of the company

Variable	Coefficient	Standard chart	(T) Value	(Sigt)
Performance measurement linkage chart	0.647	0.084	7.723	0.000
Regression Analysis	1.239	0.339	3.652	0.000

(R2) 0.262, (Adjr^2) 0.258, (F) 59.648, (Sigf) 0.000, (D-W) 1.710, Dependent variable: company value, *The effect is statistically significant at the level ($\alpha \leq 0.05$)

Table 9: *Results of simple linear regression analysis to show the impact of continuous improvement "Kaizen" on the company's value

Variable	Coefficient	Standard chart	(T) Value Computed	(Sigt)
Continuous improvement "Kaizen"	0.728	0.096	7.575	0.000
Regression analysis	1.343	0.369	3.636	0.000

(R2) 0.255, (Adjr^2) 0.250, (F) 57.382, (Sigf) 0.000, (D-W) 1.714, Dependent variable: company value, *The effect is statistically significant at the level ($\alpha \leq 0.05$)

Table 10: * Results of simple linear regression analysis to show the impact of value stream maps on the value of the company

Variable	Coefficient	Standard chart	(T) Value	(Sigt)
Value Stream Maps	0.111	0.011	10.124	0.000
Regression Analysis	2.607	0.413	6.320	0.000

(R2) 0.379, (Adjr^2) 0.375, (F) 102.492, (Sigf) 0.000, (D-W) 1.919, Dependent variable: company value, *The effect is statistically significant at the level ($\alpha \leq 0.05$)

The table also demonstrates that there is a significant positive influence on the value stream maps when B = 0.111 and T = 10.124 and the level of significance (SigT = 0.000) is <0.05. Accordingly, the third sub-hypothesis is rejected and the alternative hypothesis is accepted, which states: "There is a statistically significant difference at the level of significance ($\alpha \leq 0.05$) for the value stream maps in enhancing the company's value in the Jordanian industrial companies."

Fourth: The Results of the Fourth Sub-Hypothesis Test

This hypothesis states that: "There are no statistically significant differences at the level of significance (($\alpha \leq 0.05$) for the target cost in increasing the company's value in the Jordanian industrial companies."

Table 11 shows the findings of a simple linear regression analysis of the impact of the target cost on the company's value are shown in Table 11. The table shows the model's significance, as it reached a value of (F = 74.649) and a significance level of (SigF = 0.000), which is <0.05. The value of the coefficient of determination (R2 = 0.308) indicated that the target cost illustrated (30.8%) of the change in the company's value, with all other factors kept constant.

Table 11 also shows that there is a positive significant effect at the target cost, where the value of B was (0.900) and the value of T

Table 11: *Results of simple linear regression analysis to show the impact of the target cost on the value of the company

Variable	Coefficient	Standard chart	(T) Value computed	(Sigt)
Target cost	0.900	0.104	8.640	0.000
Regression analysis	1.926	0.385	5.003	0.000

(R2) 0.308, (Adjr²) 0.304, (F) 74.649, (Sigf) 0.000, (D-W) 1.701, Dependent variable: company value, *The effect is statistically significant at the level ($\alpha \leq 0.05$)

was (8.640) and the level of significance (SigT = 0.000) is <0.05. Thus, the fourth sub-hypothesis is rejected and the alternative hypothesis is accepted, which states: "There is a statistically significant difference at the level of significance ($\alpha \leq 0.05$) for the target cost in increasing the company's value in the Jordanian industrial companies."

6. FINDINGS AND RECOMMENDATIONS

6.1. Findings of the Study

1. According to the results of the descriptive analysis, trends of sample members were towards agreeing that the use of lean accounting tools had a positive effect with a high percentage significance on enhancing the value of Jordanian industrial public shareholding companies. Additionally, it was observed that the sample participants agreed that the tool (the Performance Measurement linkage chart) was the tool with the highest relative relevance among all the lean accounting tools, while the tool (Value Stream Maps) was the tool with the lowest relative importance.
2. According to the results of the first main hypothesis test, adopting lean accounting has a positive impact with a high percentage significance on increasing the company's value in Jordanian industrial public shareholding companies. This result is in line with the sample members' responses, which indicated that implementing lean accounting tools would have a significant impact on the company's value.
3. The results of the test of the sub-hypotheses deriving from the first main hypothesis indicated that there is a role of using lean accounting tools (the Performance Measurement linkage chart, continuous improvement "Kaizen," value stream maps, and target cost) in increasing the company's value in Jordanian industrial public shareholding companies. When examining the sample members' responses to each of the individual lean accounting tools individually, the results are consistent with the sample members' responses, which were about having an effect, with a high -percentage significance, of the adoption of lean accounting tools in raising the value of the company.
4. There is a difference in the value and size of Jordanian industrial companies according to Tobin Q during the period (2017-2020).

6.2. Recommendations

The study suggests the following:

1. In order to increase the flow of value in operational activities, and to identify and enhance activities that add value to products, and to eliminate activities that do not add value to products, senior management and executive management in industrial companies must commit to increasing activating of the use of lean accounting tools, this helps to maximize the value of the company.
2. Enabling the use of the value stream mapping tool in lean accounting to fully determine the flow of all production activities and their workflow in an integrative way, as well as to control production processes and their timing, and to create daily hourly reports to measure the increase in the ability to discover and solve obstacles in order to participate in increasing the company's value.
3. To familiarize industrial companies with lean accounting and its tools, significance, and advantages by conducting training sessions and workshops by the relevant authorities in the Jordanian industrial sector
4. Enhancing the management of Jordanian industrial companies' attention in capturing possibilities and offering new products and services that will enable them to produce and enhance future earnings.
5. Jordanian industrial companies' management should develop detailed plans and implement effective strategies to help increase the company's value and improve quality and success.
6. Increasing the level of employee involvement in developing plans to enhance quality and performance, taking into account their comments and recommendations regarding the production process, and maximizing the company's value.

7. CONCLUSIONS

In this paper, the impact of lean accounting on the value of company has been studied in Jordanian industrial companies. Twenty five Jordanian industrial companies listed on the Amman Stock Exchange during the period from 2017 to 2021 are selected in this study to examine the lean approach. The outcome of this study are the availability of an impact of lean accounting tools in enhancing the company's values in Jordanian industrial public shareholding companies, with a high level of relative importance. In the future, the lean accounting and its affect on the value of profit should be studied in Jordanian banks.

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