

# A Proposed Accounting Model for Measuring and Evaluating the Sustainable Performance of Lean Accounting Services in Iraqi Hotels

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The aim of this study is to provide genuine justification for the use of the measurement and evaluation model for the sustainable performance of lean production. This study emphasises the main justification for the use and application of this model in organisations. It is considered an integrated and comprehensive system for measuring and evaluating sustainable performance. Also, this study demonstrates the role of the model in connecting general strategy with the operational strategy of the organisation. There are three basic steps to be followed in building a model for achieving sustainable development: the implementation of the model for sustainable performance; building and application of the proposed model; and determination of the target outputs of the proposed model. This study found that the most essential factors for the construction and implementation of the proposed model are related to the organisational culture and the management of relations with different parties, such as senior management, shareholders, customers, workers, suppliers, legislators and society. Due to the many impacts on sustainability during the product life cycle, organisations and non-organisations are only interested in the production phase. Lessons can therefore be learnt from other industrial environments by dividing the organisations into many paths and administrative units. Practically, the study tested the validity of the model for economic, environmental and social performance in order to obtain an indicator showing sustainable performance and the achievement of a sustainable development strategy.

**Key words:** *Sustainable performance, Lean, production & services, hotels.*

## Introduction

An important role is played by accounting in the success of an organisation. By providing information that helps to analyse the strengths and weaknesses of the internal environment of an organisation and to try to eliminate weaknesses and increase strengths, accounting provides information that can help management make decisions. Accounting helps in the assessment of opportunities and threats in the external environment and seeks to make use of as many opportunities as possible to overcome the threats to an organisation. The adoption of sustainable development by many organisations has resulted in the emergence of sustainable development accounting which supports firms to achieve sustainability through a focus on environmental and social decisions, costs, risks and climate. This has in turn changed the measurement and performance assessment systems in order to cope with the sustainable development strategy.

In other words, some organisations are currently interested in employing strategies of soft production as an operational strategy that can contribute to the competitive advantages of the organisation. The production strategy can strengthen the relationship between suppliers and the customer rather than traditional manufacturing methods that are concerned with producing the largest number of services without considering customer satisfaction. Activities that increase value from the customer's point of view must be encouraged in order to transform units from a large-scale manufacturing strategy into a lean production strategy. The customer's value is increased by minimising the activities with no value but an only increase the resources consumed by the organisation and at the same time does not add value to customers.

The system of measuring and evaluating financial performance adopted by organisations pays attention to the improvement of the financial performance of the firms in the short term without attention to an improvement of performance in the long term. This is revealed through attention to meet the wishes of customers and the interests of the organisation to achieve their own objectives in order to maximize the value of the employees without ignoring parties with interests. The environmental and social dimensions should be considered in decision-making and performance evaluation processes. From the above assertions, the following questions are derived from the focus of the research:

1. Does the integration of lean production and accountability for sustainable development improve the financial, environmental and social performance of the organisation?
2. Can a model be designed to measure and evaluate the sustainable performance of an organisation that follows the lean production method?

This study aims to achieve the following objectives:

1. To identify the accounting techniques for measuring and evaluating sustainable performance.
2. To establish a mechanism for the integration of lean production and accountability for sustainable development.
3. To propose an accounting model to measure and evaluate sustainable performance in a lean production environment.

The importance of this study is related to the presentation of the current trend in the accounting of sustainable development. Many international bodies and institutions are concerned about this topic. The study pays attention to environmental and social dimensions, attempts to limit the significant deterioration of resources and harm to the climate and the environment. Thus, this topic may be of interest to all parties related to the relevant organisations.

### **Literature Review**

An appropriate accounting system is required for these activities in order to measure and record environmental and social events and the recording of events and economic activities. This has motivated some academics, such as Schaltegger and Burritt (2010), to examine the importance of including environmental and social dimensions within the accounting system in order to achieve accounting sustainability.

By focusing on environmental, social and financial aspects, the use of sustainable development accounting has emerged to expand both financial accounting, cost accounting and management accounting. This has also led to attention of the identification of a balanced performance, the delivery of its strategy to all parties involved and the establishment of integrated reports that are to be achieved. The attention is therefore channelled to the supply of social and environmental information that enables organisations to make sound decisions (Bebbington & Larrinaga, 2014; Schaltegger & Burritt, 2010).

Stasiskiene and Jasch (2005) defined accounting for sustainable development as being specialised and concerned with activities, methods and systems for the purpose of recording, analysing and reporting the environmental and social dimensions that affect financial performance. Schaltegger and Burritt (2010) additionally reported that accounting for sustainable development is an extension of conventional accounting and reporting systems in its focus on environmental and social systems. Greenham (2010) defined accounting for sustainable development as the measuring of the impact of human activity on ecosystems and resources, and the social impact of enterprises' practices on their activities. The importance of including social, economic and environmental indicators within an information system is emphasised by Heeren (1998) while administrative accounting is established for the purpose of making decisions.

According to many researchers, the definitions mentioned above revolve around one orbit which can be stated in summary as: ‘the interest of accounting for sustainable development comprises measuring, recording and analysing data on environmental, social and economic dimensions together for the purpose of making decisions that affect related parties of the same interest, whether those parties are within or outside the same industry’. The goal of accounting for sustainable development therefore is the need of other stakeholders (especially decision makers both within and outside the industry) to reduce the tendency of those systems towards a fear of failure. The existence of amendments on a continuous basis is needed since the development of new systems in the presence of a changing environment requires acceptance of the idea of possible errors. The objections of the manpower in the organisation are in regard to changes in the systems of measuring and evaluating their performance. This does not affect the fact that these systems are more appropriate than the systems used by the organisations at the present time.

This study aimed to address the following main hypothesis:

‘The proposed model for accounting, measurement and evaluation of sustainable performance in a lean production environment has significant effect on the sustainable development and operational strategies, thereby leading to the interest of all individuals in an organisation to achieve sustainable development and bring together the interests of all relevant parties’.

### ***The Integration of the Environment of Production and Sustainable Development***

The concept of lean production has emerged by re-examining the manufacturing process from research and development, planning, design and processing to customers as a response to market requirements and competitive advantage. It is the basis for directing any manufacturing activity or service targeting the complete disposal of each molecule that does not add any value to the customer. Lean production works on the balanced employment of all the resources of an organisation for the purpose of achieving the goal of customer satisfaction by adding value to the customer needs. The aim of the integration is to achieve customer satisfaction and get rid of activities that do not add value to the customers. Additionally, the aim is to continuously improve the activities of the organisation in a way that helps in achieving those objectives and the ability of the organisation to survive and grow (Bhasin, 2011).

The methods of lean production can lead to successful outcomes if integration is done with the interest of the enterprise in the application of environmentally friendly practices and activities. The existence of many similarities between the two variables is due to the possibility of complementarity of both methods which can clarify the difference between the eco-friendly practices and the strategy used, as discussed in the Table 1:

**Table 1:** Comparison between the use of the production method and the environment friendly practices

<b>Property</b>	<b>Styles of lean production</b>	<b>Environmentally friendly practices</b>
<b>Overall Objective</b>	To increase the profits by reducing costs	Improving the environmental efficiency of the facility and reducing environmental risks
<b>The focus</b>	The focus is on increasing flexibility and cost reduction by removal of waste across the supply chain and paying attention to continuous improvement	Reducing the harmful impact of the enterprise on the environment and focusing on achieving sustainable development through the elimination of waste of resources and reduction of pollution
<b>Customer satisfaction</b>	The focus is on the organisation's customers. Therefore, it is about reducing costs and response time	This is concerned with the achievement of profits and attention to the health of individuals and the environment where they reside. It is achieved by the satisfaction of customers by helping them to pay attention to the purchase of environmentally friendly Services
<b>Organisational Structure</b>	A stable organisational structure consisting of a few hierarchical levels allowing individuals to perform the work	The establishment of an internal environmental management system such as ISO 14000 is allowed which helps to include individuals and encourage them to take care of environmental issues
<b>Supply chain and response time</b>	Reduction in response time without increasing in costs	Reduction in the time spent on materials and services and in the emissions of harmful gases such as carbon dioxide
<b>Relationship with suppliers</b>	Identifying and reducing waste to achieve operational efficiency of services and services by consolidating relationships with a few suppliers, exchange information across the supply chain	Spreading of knowledge about environmental issues to consolidate the relationship between the establishments and each other
<b>Product design</b>	Achieving greater performance and lower costs	After the design of environmentally friendly Services
<b>Procurement of raw materials</b>	Purchase high quality at low price at due time and follow	Focusing on the resource efficiency and waste reduction to achieve environmental benefits. Developing

	the withdrawal system upon customer request	manufacturing capabilities and reusable components
<b>Inventory</b>	Reducing costs and inventory with increase in turnover	<b>Reduction in</b> inventory, raw materials and exploited areas. . Reuse of raw materials
<b>Transportation</b>	During the manufacturing process: reduce the handling of raw materials which encourages the delivery of raw materials frequently and in less quantity as supplied	Reduction of transport frequency in order to reduce fuel consumption and environmentally friendly emissions of carbon dioxide
<b>End of life cycle</b>	The effect of using the product or returning the product again is negligible	Interested in reusing the product
<b>Results of the Activity</b>	Quality, cost, delivery, customer satisfaction and profitability	Market position, reputation, product design, loss of operations, quality, cost, delivery, customer and economic satisfaction
<b>Critical performance indicators</b>	Cost and level of service	Carbon dioxide and service level
<b>Scope of the costs</b>	Tangible and material costs	Future generation Costs
<b>The main tool</b>	Understanding all the processes required for product emergence in the market through a value track map	Understanding of all processes required for product emergence in the market through attention to product design and use through the lifecycle assessment
<b>Methods of reducing waste</b>	The seven causes of common losses including vision, strategy, innovation, partnership, supportive functions	Re-design of the product, the production process, replacement of jaw, re-manufacturing and reuse of materials for packaging, recycling, cooperation and partnership
<b>Tools and principles</b>	Use of procurement and manufacturing in controlled time, reduction of response time, value map, loss reduction, dissemination of information through electronic networks.	Response time, reuse of raw materials, reduction of waste of energy, water and raw materials, reduction of transport, Sustainable resource utilisation and reduction of raw material use

Many similarities between the application of lean production practices and eco-friendly practices are shown in Table 1. This includes ways to reduce individual waste, critical performance indicators, tools and practices that can be used, reduce response time and manage the relationships with all parties involved in supply chains.

### ***The Proposed Model for Measuring Sustainable Performance and Lean Production in the Environment***

The proposed model is the combination of economic, environmental and social performance as follows (Mohammed, Flayyih, Mohammed & Abbood, 2019; Abdullah, Salman & Ahmed, 2019):

1. **Economic Performance:** This comprises the percentage of the cost of waste to the value of sales, the rate of return on investment, the rate of return on equity, the cost of quality index and the value of environmentally friendly services to total sales and fines paid to sales value. The result of the economic dimension result is measured by aggregating the indicators for that dimension after multiplying the weight of the scale  $x$  actually completed / the target set for each indicator.
2. **Environmental performance:** This includes the proportion of environmentally friendly services that have been created to total services, the number of trained workers on the rationalisation of natural resources to total employees, the number of investments in environment-friendly technology to total investments, the total environmental and industrial losses to the resources used, the percentage of the number of prizes obtained by the organisation in the field of environmental protection to the total number of awards and the application of facilities for environmental management systems and obtaining the ISO certificate. The overall environmental performance index of the facility is obtained by aggregating the indicators for that dimension after multiplying the weight of the scale  $x$  actually completed / the target set for each indicator.
3. **Social performance:** This performance includes the number of customer complaints as a percentage of the number of units sold, the number of work days lost due to work injuries to the total number of working days, the average number of suppliers of raw materials, the total number of proposals exchanged, the application of the establishments to occupational safety and health standards, the most important parts of the establishment to the total number of suppliers, the number of invoices paid to the suppliers to the total outstanding invoices, the period of delay to the time required to supply the order, the turnover rate of employees, the documents exchanged with suppliers through the EDI network, the preparation of sustainable development reports and the ratio of the number of suppliers included in the quality improvement programs to the total number of suppliers. The general index of the social performance of the enterprise is obtained by aggregating the indicators

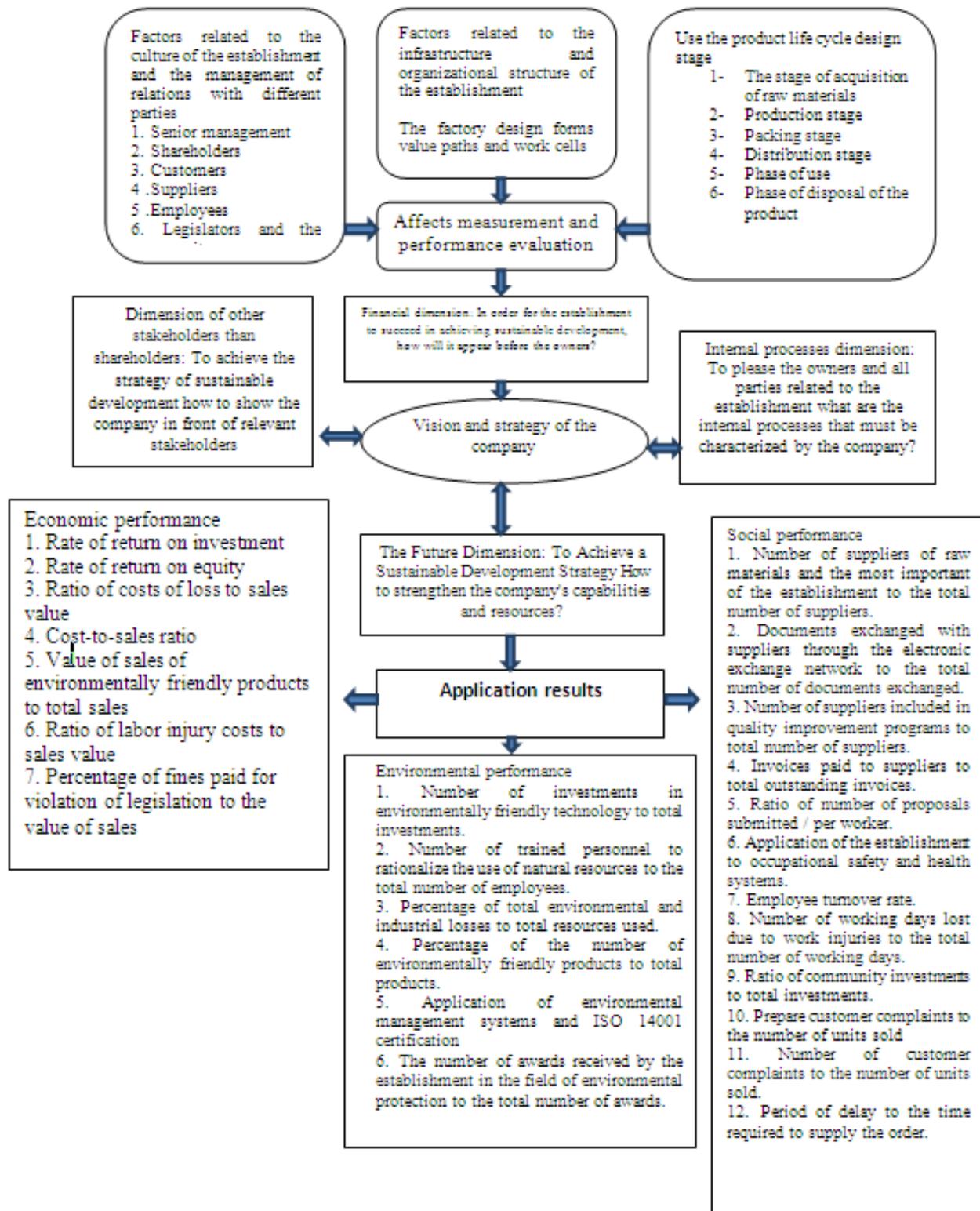


for that dimension after multiplying the weight of the scale  $x$  actually completed / the target set for each indicator.

This study shows that in order to properly evaluate the performance of any organisation, its sustainable performance is compared with the sustainable performance of the best companies in the industry for the purpose of reaching a competitive gap that helps the enterprises to continuously improve their performance.

The stages in the preparation of the measurement model for sustainable performance under the lean production environment in Figure 1 from the identification of the requirements for the application of the proposed model to the target output phase of this model through the phase of building and implementing the model.

**Figure 1.** Requirements for applying a model to measure sustainable performance in a lean



## Application of the Proposed Model

Since they are companies that are part of the development of the tourism sector in Iraq, the cost reductions of tourism services are an important element in achieving economic growth, which reflects positively on achieving sustainable development.

**Table 2:** Relative and targeted weights for sustainable performance measures

Sustainable performance	Weight%	Target
<b>Economic performance</b>		
Rate of return on equity	11.5	17%
Rate of return on investment	12	13%
Ratio of loss to sales value	0.5	0.095%
Percentage of sales value of environmentally friendly services to total sales	14.5	25%
Ratio of the cost of production incentives to the value of sales	0.5	6.25%
Percentage of fines paid for violation of legislation to the value of sales	0.5	0.048%
Ratio of quality costs to sales value	0.5	0.0025%
<b>1. Total economic performance</b>	40	
<b>Environmental performance</b>		
Percentage of investments in environmentally friendly technology to total investments	10	40%
Percentage of trained workers in rationalising the use of natural resources to total employees	2	13.6%
Percentage of total environmental and industrial losses to resources used	0.5	0.5%
The company obtained the ISO 14001 certificate	8.5	100%
Percentage of environmentally friendly services created to total services	5	14%
Number of awards received by the establishment in the field of environmental protection	4	2
<b>2. Total environmental performance</b>	30	
<b>Social performance</b>		
The percentage of suppliers of raw materials and the most important parts of the establishment to the total number of suppliers	5	62.5%
Percentage of documents exchanged with suppliers through the EDI network to total exchanged documents	1.35	25%
Percentage of proposals submitted / per worker	2	31 اقتراح

Percentage of suppliers included in quality improvement programs to total number of suppliers	1	12.5%
Percentage of the company having obtained the OASAS 18001 certificate	9	100%
Proportion of invoices paid to suppliers to total outstanding invoices	4	87.5%
Percentage of customer complaints to the number of units sold	0.05	0.00007%
Percentage of delay to the time required to supply the order	0.05	1 ساعة
Employee turnover	0.5	2.94%
Percentage of lost workdays (work interruption) due to work injuries to the total number of days of the year	0.05	4/1 يوم
The extent to which an entity prepares sustainable development reports	2	100%
Percentage of investments in charities and community activities to total investments	5	33.3%
3. Total social performance	30	
Sustainable performance (total 3.2.1)	100	

## Result and Analysis

The performance for each measure is developed by the researcher in order to achieve the sustainable performance (economic, environmental and social performance) of the enterprise by aggregating the total  $\times$  achieved weight for each measure, as follows:

### *Economic Performance*

#### *Return on Equity*

Rate of return on equity (effective) by the Board of Directors' Report as at 2017/3/31 = 18%

Rate of return on equity (target) by the Board of Directors' Report as at 2017/3/31 = 17%

Result = Weight  $\times$  Completed Target = 11.5%  $\times$  18% / 17% = 12.1%

#### *Rate of Return on Investment*

Rate of return on investment (actual) by the Board of Directors' Report as at 2017/3/31 = 14%

Rate of Return on Investment (Targeted) by the Board of Directors' Report as at 2017/3/31 = 13%

Result = 12%  $\times$  14%  $\times$  13% = 12.9%

### ***Ratio of Cost of Waste to Sales Value***

Cost of raw materials used in 2017/3/31 and the actual sales in the same period. Table 3 shows the cost of raw materials and assistance in 2017/3/31.

**Table 3:** Cost of raw materials and assistance

Raw materials	Quantity	Value	Cost of tons
Main materials			
salt	82756.51	7789289.84	94.12
Electricity	81205800	15153008.09	0.1866
Citric acid concentrate	590.131	227534.45	385.57
Living lime for Hippo Sodium	2496.440	963314.04	385.88
A living lime for a minor colour	0.000	0.08	609.99
Water Raw Materials	1727951	3242856.18	1.876
Total raw materials		27376002.70	
Assistance raw materials			
Sodium carbonate light	508.550	967338.55	1902.15
Freon	2.000	23628.00	11813.69
Sodium methyl bisulphite	36.325	144453.02	3976.68
Natural gas for moulding	455041.000	207654.42	0.4563
Total assistance raw materials		1343074.00	
Total raw materials		28719076.7	

Percentage of loss to sales value (actual) =  $28719076.7 \times 0.4\% / 148217000 = 0.077\%$

Target = Total target material cost  $\times$  0.5% Total local target sales and export (from the report of the Board of Directors in the case study appendix)

=  $26520478 \times 0.5\% / 138501000$

= 0.095%

Result =  $0.5\% \times 0.077 / 0.095 = 0.4\%$

### ***Percentage of Sales Value of Environmentally Friendly Services to Total Sales***

Percentage of value of sales of environmentally friendly services to total sales = value of sales of environmentally friendly Services (sodium hypochlorite domestic and export) to total sales

Total sales of sodium hypochlorite =  $28833851 + 3983879 = 32817730$

Percentage of sales value of environmentally friendly services to total sales (actual) =  $32817730 / 148148217000$

= 22%

Percentage of sales value of environmentally friendly services to total sales target =  $31128000 + 3660000 / 13138501000$   
= 25%  
Result =  $14.5\% \times 22\% / 25\% = 12.7\%$

### ***Ratio of Cost of Production Incentives to Total Sales***

From the list of sustainable performance measures found in the pilot study, this study replaced the performance measure for the cost of the work injury to the sales value on the performance measure of the cost of the production incentives to the sales value. While the employees worked in 2017, the researcher tried to obtain the cost of the injury of thirteen workers, but it turned out that the establishment did not calculate the cost per worker. In contrast, the establishment only paid 4% of the total wages of workers for health insurance including 1%. The ratio of the cost of production incentives to the value of sales using the performance measure explains the incentives of production received by the employees. It also shows the extent of satisfaction of the workers about the establishment as a result of the performance of their tasks.

Percentage of the cost of production incentives to the value of sales (actual) = 8%  
Percentage of the cost of production incentives to the value of sales (target) = 6.25%  
Result =  $0.5\% \times 8\% / 6.25\% = 0.6\%$

### ***The Percentage of Fines paid for Violation of Environmental Legislation to the Value of Sales***

Percentage of fines paid for violation of environmental legislation to the value of sales (actual) = 0.045%

In the case of targeted fines for violation of environmental legislation, this study used the amount paid as the target amount due to the failure of the establishment of the target amount of fines likely to be paid for environmental affairs, assuming that it is equal to zero which happened to be true. It became clear from the reports of audit committees over the past five years that the facility was not liable for any fines in these years. The disposal of the hypo-calcium product, which is an environmental violation, has led to an increase in fines incurred by the facility this year. Therefore, this year can be considered an extraordinary year for outstanding legislative fines for the disposal of an environmentally friendly services.

Percentage of fines paid for violation of environmental legislation to the value of sales (target) = 0.048%  
Result =  $0.5\% \times 0.045\% / 0.048\% = 0.4\%$

### ***Ratio of Quality Costs to Sales Value***

This study found that most of the quality costs incurred by the establishment are the costs of prevention. The costs of prevention are the costs spent to prevent defects in the product while the cost of protection of an enterprise is the cost of the maintenance of the means of transport of services, costs of visits by ISO auditors, costs of training of quality personnel and the cost of preventive maintenance of machinery and equipment. Similarly, the cost of the internal failure is the cost of the loss while the facility does not incur any re-operation costs, vacation maintenance costs, costs for faulty units or employee injury costs. Due to the nature of the services produced by the establishment, the facility does not incur any evaluation costs since during operation they do not require tests, inspection costs and test equipment costs.

There is a defect in the production process due to the presence of the control room which signals the costs incurred for the handling of customer complaints, compensation, the cost of replacing defective or refundable products or the cost of paying guarantees or costs related to the cost of transferring the product. The customer is not borne by the enterprise because it is not responsible for the transfer of the services. The actual and target costs for the costs of quality in 31/03/2017 are presented in the following table:

**Table 4:** The quality of the establishment in 2017/3/31

Element	Actual cost	Target cost
Maintenance of machinery and equipment	114000	115000
Maintenance of means of transportation of services	67000	68000
Cost of training of quality workers	26000	26250
Visits of ISO 9001 auditors	8000	8000
Costs of loss	114876	132602
Total	329876	349852

Quality costs to total sales = total quality costs x value of sales

Actual = 0.0022

Target = 0.0025

The result =  $0.5 \times 0.0025 = 0.44$

### ***Environmental Performance***

#### ***Percentage of Investments in Environmentally Friendly Technology to Total Investments***

Percentage of investments in environmentally friendly technology to total actual investments = Implementation of the industrial wastewater treatment project in addition to the replacement of the hypocalcium unit in the hyposodium unit.



Total investments (Actual) = 2 5 5 = 40%

Target = 2 5 5 = 40%

Result = 10% x 40% /40% = 10%

***Percentage of Trained Workers on Rationalising the Use of Natural Resources to Total Employees***

Actual = 100 72 726 = 13.7%

Target = 105 770 770 = 13.6%

Result = 2% × 13.7% / 13.6% = 2.01%

***Percentage of Total Environmental and Industrial Losses to Resources Used***

Actual = 0.4%

Target = 0.5%

Result = 0.5% × 0.4% /0.5% = 0.4%

***The Company Obtained the ISO 14001 Certificate***

Actual = 100%

Target = 100%

Result = 08.5% × 100%/100% = 8.5%

***Proportion of Environmentally Friendly Services Created to Total Services***

Actual = 1 7 7 = 14%

Target = 1 7 7 = 14%

Result = 5% × 14% /14% = 5%

***Number of Awards Received This Year***

Actual = zero

Target = 2

Result = 4% × 0 2 2 = 0

***Social Performance***

The percentage of suppliers of raw materials and the most important parts of the establishment to the total number of suppliers:

Ratio = Number of suppliers of raw materials/ Total number of suppliers



Actual = 5 8 8 = 62.5%  
Target = 5 8 8 = 62.5%  
Result = 5% × 62.5% 62 62.5% = 5%

***Percentage of Documents Handled with Suppliers through EDI to Total Documents Exchanged***

Actual = Zero  
Target = 25%  
Result = 1.35 × 0 25 25% = 0

***Number of Suggestions per Worker***

Actual = 15 Proposition 72 726 workers = 2%  
Target = 31 Proposition 770 770 workers = 4%  
Result = 2% × 2% 4 4% = 1%

***Percentage of Suppliers included in Quality Improvement Programs to total number of Suppliers***

Actual = zero  
Target = 1 8 8 = 12.5%  
Result = 1% × 0 12.5 12.5% = 0%

***The Percentage of Obtaining the ISO Certificate***

Actual = 100%  
Target = 100%  
Result = 9% × 100% 100 100% = 9%

***Proportion of Invoices Paid to Suppliers to Total Outstanding Invoices***

Actual = 7 8 8 = 87.5%  
Target = 7 8 8 = 87.5%  
Result = 4% × 87.5% 87 87.5% = 4%

***Percentage of Customer Complaints to the Number of Units Sold***

The number of units sold = 116228 + 14748 = 130976 tons  
Number of units likely to be sold = 122219 + 13328 = 135547 tons

Number of customer complaints to the number of units sold (Actual) =  $(100\% - 94.3\%) \frac{130}{130976} = 0.00004\%$

Number of customer complaints to the number of units sold (target) =  $(100\% - 90\%) \frac{13}{135547} = 0.00007\%$

Result =  $0.05\% \times 0.00004\% \div 0.00007\% = 0.028\%$

### ***The Percentage of the Delay Period to the Required Time for Ordering***

Actual = zero

Target = 1 hour

Result =  $0.05 \times 0 \div 1 = 0$

### ***Employee Turnover***

Employee turnover rate (number of employees in the current year - number of employees in the previous year) =  $\frac{\text{Number of employees in the previous year}}{\text{Number of employees in the previous year}}$

Actual =  $(726 - 748) \div 74 = 2.94\%$

Target: It was explained by the establishment that the target for the number of employees in the establishment is 770 workers in 2017/3/31; a net increase from the number of actual employees in 31/3/2016 equal to 22 workers. The net increase is due to the desire of the establishment to attract 44 new workers. Additionally, the decline in the number of workers was as a result of employees reaching retirement age. According to the report of the Audit Committee, the lack of recruitment of workers in this year shows that there is no need for additional employees at the present time due to over-employment. This reveals the willingness of the establishment not to accumulate labour especially if additional employees are not needed at the present time. The result is significantly higher than the one occurred in the previous year (2016/3/31) as shown below:

Targeted Employee Turnover Rate (Targeted Number of Employees - Number of Targeted Employees - Number of Employees in the Previous Year) =  $\frac{\text{Number of Employees in the Previous Year}}{\text{Number of Employees in the Previous Year}}$

Target =  $(770 - 44 - 748) \div 74 = 2.94\%$

Result =  $0.5\% \times 2.94 \div 2.94 = 0.5\%$

The number of days of work lost to the factory due to work injuries to the total number of days of the year

Actual = zero

Target = 4/1 day

$$\text{Result} = 0.05 \times 0.25 \times 0.25 = 0$$

***The Extent to which an Entity Prepares Sustainable Development Reports***

$$\text{Actual} = 0$$

$$\text{Target} = 100\%$$

$$\text{Result} = 2\% \times 0.100 \times 100\% = 0$$

***Percentage of Investments in Charities and Community Activities to Total Investments***

Total investments = investment in charitable societies, payment of expenses to those who cannot buy + cells + heat exchanger + updating of computer programs + implementation of industrial sewage treatment project + implementation of replacement project of hypo-calcium production unit in hypo-sodium production unit

$$\text{Actual} = 1.66 = 16.6\%$$

$$\text{Target} = 2.66 = 33.3\%$$

$$\text{Result} = 5\% \times 16.6 \div 33.3 = 2.5\%$$

From the data shown above, the sustainable performance of the establishment was clarified by the study.

**Table 5:** Sustainable performance of the entity in 2017/3/31

Sustainable performance	weight %	Target	Completed	Result %
Economic performance				
Rate of return on equity	11.5	17%	18%	12.1
Rate of return on investment	12	13%	14%	12.9
Ratio of loss to sales value	0.5	0.095%	0.077%	0.4
Percentage of sales value of environmentally friendly services to total sales	14.5	25%	22%	12.7
Ratio of the cost of production incentives to the value of sales	0.5	6.25%	8%	0.6
Percentage of fines paid for violation of legislation to the value of sales	0.5	0.048%	0.045%	0.4
Ratio of quality costs to sales value	0.5	0.0025	0.0022	0.44
4. Total economic performance	40			39.54
Environmental performance				
Percentage of investments in environmentally friendly technology to total investments	10	40%	40%	10

Percentage of trained workers in rationalising the use of natural resources to total employees	2	13.6%	13.7%	2.01
Percentage of total environmental and industrial losses to resources used	0.5	0.5%	0.4%	0.4
The company obtained the ISO 14001 certificate	8.5	100%	100%	8.5
Percentage of environmentally friendly services created to total services	5	14%	14%	5
Number of awards received by the establishment in the field of environmental protection	4	2	0	0
5. Total environmental performance	30			25.91
Social performance				
The percentage of suppliers of raw materials and the most important parts of the establishment to the total number of suppliers	5	62.5%	62.5%	5
Percentage of documents exchanged with suppliers through the EDI network to total exchanged documents	1.35	25%	0	0
Percentage of proposals submitted / per worker	2	31 suggestions	15 suggestions	1
Percentage of suppliers included in quality improvement programs to total number of suppliers	1	12.5%	0	0
Percentage of the company having obtained the OASAS 18001 certificate	9	100%	100%	9
Proportion of invoices paid to suppliers to total outstanding invoices	4	87.5%	87.5%	4
Percentage of customer complaints to the number of units sold	0.05	0.00007%	0.00004%	0.028
The percentage of delay to the time required to supply the order	0.05	1hour	0	0
Employee turnover	0.5	2.94%	2.94%	0.5
Percentage of lost workdays due to work injuries to the total number of days of the year	0.05	4/1day	0	0
The extent to which an entity prepares sustainable development reports	2	100%	0	0
Percentage of investments in charities and community activities to total investments	5	33.3%	16.6%	2.5
6. Total social performance	30			22.028
Sustainable performance (total 3.2.1)	100			87.478

Due to the company's concern for improving environmental and social performance, in addition to its interest in improving financial performance, the company has achieved a sustainable performance of 87.478% as presented in Table 5. This is as a result of the establishment's concern to meet the customers' wishes and constantly reduce losses. The interest of the company is to enable the employees to perform the work. In addition to its interest in the surrounding community through investing in community activities, the company is also interested in investments in environment-friendly activities, thus increasing its financial performance.

The researcher was unable to compare the sustainable performance of the enterprise with the sustainable performance of the best facilities in the industry although the researcher was able to achieve the sustainable performance of the plant in question. Therefore, the performance of the enterprise is assessed which is considered as the competitive gap to improve sustainable performance in subsequent periods.

## **Conclusions and Recommendations**

### ***Conclusion***

The following points were concluded after analysing the results of this study:

1. A lean production environment is a key objective in ensuring that risk management is minimised to help the organisation achieve sustainable development.
2. Due to the current global developments, accounting work has become the cornerstone of organisations. The scope of accounting work has expanded to include the construction of relevant standards in the rationalisation of decisions and matters related to sustainable development.
3. Organisations are interested in the design and production of environmentally friendly services so as to achieve competitive advantages, reduce cost and waste and improve environmental performance.
4. The sustainable performance of an organisation is compared with the sustainable performance of the best companies in the industry in order to properly assess its performance. The objective is to reach the competitive gap which helps enterprises to continuously improve their performance.
5. In detecting environmental, social and financial performance, the proposed model for measuring sustainable performance under lean production has been shown to be efficient and effective.
6. Since most of the employees of the companies are medical and engineering staff and understand the environmental risks associated with the waste from pharmaceutical services,



there is an interest by the company (selected population) in sustainable development and environmental conservation.

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