ANALYSIS OF THE EXPORTS IN THE LIBYAN IRON AND STEEL COMPANY (LISCO)

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Abstract: There are common statistical methods which use to continues improvement such as control charts, histograms, scatter plots, sampling methods, inspection plans. These methods pioneered 70 years ago by Walter Shewhart and later promoted and enhanced by W. E. Deming, A. Wald, and K. Ishikawa, were targeted at an environment where measurements were taken manually and recorded on paper spreadsheets, and where calculations were done with slide rules. The production of these charts continues today as a result of customer mandates enforced by audits, but they play almost no role in problem solving, even where statistical methods are needed. [1].
In this paper was used some of statistical tools known in the analysis of exports in the Libyan Iron and Steel company, in order to reach an overview about the general trend of exports and determine the relative importance of each of them. In addition to knowledge of the relationship between those exports, and these analyzes we can get significant results help decision makers to focus on the strengths and weaknesses related to exports.
Keywords: Statistical methods, Exports, Iron and Steel, Analyzing .

INTRODUCTION

The Iron and steel industry is one of the industries that need large capital expenditure compared to other industries, most countries resorting to support such industries because they are strategic industries are essential for any country. Most countries establish factories for iron and steel to meet local needs and the rest is exported.
The Libyan Iron and Steel seeking since its creation to bring about a balance between domestic sales and exports for several reasons including: meet the needs of the domestic market of iron and steel products and then export the surplus in order to obtain foreign currency, which is used to buy iron ore and production requirements different.

OBJECTIVES OF PAPER

This paper aims to analyze the exports during the period from 2000 until 2010 by using some of statistical methods which used for continuous improvement. And to know the strengths and weaknesses of the company with regard to exports.

TOOLS AND TECHNIQUES FOR ANALYSIS AND IMPROVEMENT

Pareto analysis

If the symptoms or causes of defective output or some other 'effect' are identified and recorded, it will be possible to determine what percentage can be attributed to any cause, and the probable result will be that the bulk (typically 80 per cent) of the errors, waste, or 'effects', derive from a few of the causes (typically 20 per cent)[1].

Scatter diagram

This tool using to measure possible relationship or correlation between two factors or variables.

Application:

Provide data to confirm a hypothesis that two variables are related.
Evaluate the strength of a potential relationship.
Follow-up to cause-and-effect analysis.

Type of relationship:

No correlation.

Positive correlation.
Negative correlation.
Curvilinear correlation.

Steps to Draw a Scatter Diagram

Collect the data.
Draw the axes of the diagram.

Run Chart

Run chart is used to understand the trends and shifts in a process or variation over time, or to identify decline or improvement in a process over time. In a run chart, events, shown on the y-axis, are graphed against a time period on the x-axis. For example, a run chart in a restaurant might plot the number of customers served against the time of day or day of the week. The results might show that there are more customers at noon than at 3 p.m. and more during weekend than during weekday. Investigating this phenomenon could unearth potential for improvement as to how many waiters and waitresses should be employed during those time for better customer service.

A case study: Libyan Iron & Steel Company (LISCO)

The Company is one of the largest companies in the **Libya** with an annual designed capacity of 1,324,000 ton of liquid steel . The company is situated near the coastal city of Misurata , about 210km east of Tripoli on an area of 1,200 hectares .

The company comprises of the following production facilities and supporting facilities :

Direct Reduction Plant .
Steel Melt Shop No. 1 .
Steel Melt Shop No. 2 .
Bar and Rod Mills .
Light and Medium Section Mill .
Hot Strip Mill .
Cold Rolling Mill .
Galvanizing Line .
Continuous Coating Line .
Port & Pellet stock yard .
Power & Desalination plant .
Oxygen & Compressed air plant .
Sedada Quarry & Calcimine plant .
Training Center .
Quality Control Laboratories .

The company is committed to satisfying customer requirements and establishing itself as one of the major producers of iron and steel in the world by emphasizing quality as one of its paramount goals .
It has established quality council that aims at implementing the requirements of the international quality system (**ISO**) in all production facilities as one of its major goals .
Thus, The Libyan Iron and Steel Company has acquired the 12th European Award of quality for the year 1998, and it has been rewarded the International Quality Certificate(**ISO** 9001/2000) on 25/3/2002 . [2]

Exports

LISCO's products have in the last decade met most of domestic requirements for rolled steel. LISCO's products have also found their way into foreign markets world wide in the following main regions :

African and middle-east countries such as Egypt, Tunis, Morocco, Jordan, Qatar, etc. (1
European countries such as Italy, Spain, France, Greece, Turkey, etc . (2
South east Asian countries . (3

The yearly quantities sold by LISCO in the last ten years in international markets are as shown in the table1, as shown in Fig. 1.

Table 1. The yearly quantities in the last ten years in international markets [2].

year	HBI	DRI	Bars & Rods	Sections
2000	375,798	–	161,520	12,006
2001	325,933	–	150,815	11,306
2002	369,711	–	119,854	9,985
2003	339,434	–	71,804	10,428
2004	476,675	–	19,935	20,437
2005	427,785	–	–	10,542
2006	384,435	86,117	–	25,301
2007	426,210	139,510	–	35,619
2008	279,654	47,748	–	8,009
2009	161,474	96,913	–	11,135
2010	479,816	92,384	–	–
2000	174,440	6,593	4,981	5,695
2001	270,744	18,857	2,569	2,177
2002	350,395	4,704	–	1,848
2003	286,048	1,294	1,706	7,387
2004	257,123	2,570	271	2,778
2005	337,464	–	124	772
2006	438,831	1,214	–	–
2007	377,566	605	–	757
2008	319,858	2,099	4,415	1,380
2009	190,096	2,843	6,817	2,840
2010	1,148	2,099	–	–

Figure 1. The yearly quantities in the last ten years in international markets

This figure shows that the company's exports began to rise until it reached the highest value in the year 2007, and then began to decline until it reached its lowest value during the year 2009, which coincided with the global financial crisis and then began to rise again in 2010 after the global economic recovery. also be attributed to significant decline in exports due to the company stopped exporting rebar, and this is due to the Libyan government to take the decision to stop exporting steel because the domestic market need to these quantities.

Pareto Analysis for Exports :

Pareto analysis is one of the most important tools used in the statistical analysis and draw conclusions, and I have been using this analysis in this study in order to know the most important exports, which constitute 80% of the total Exports during the study period, as shown in Fig. 2.

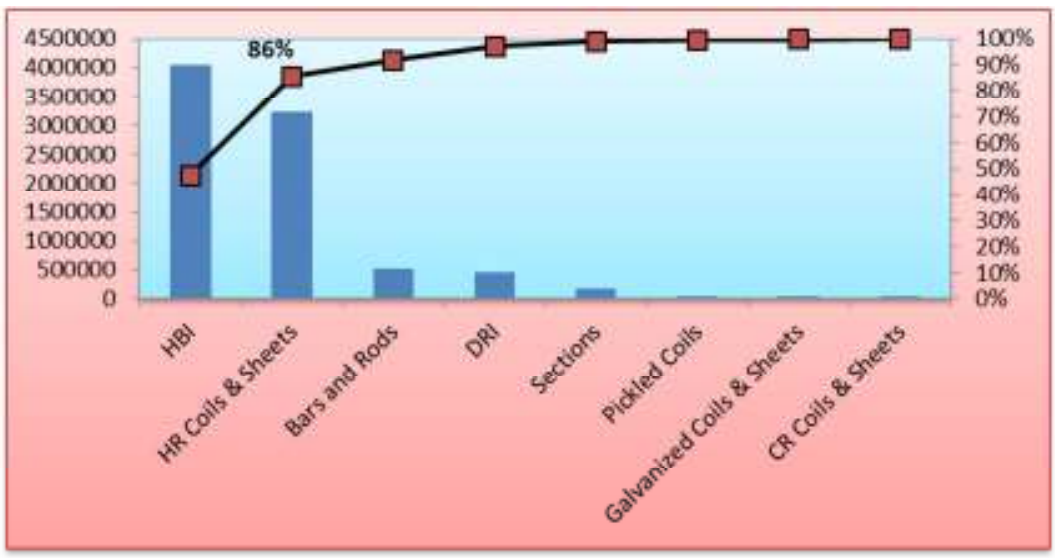

Figure 2. The results of Pareto analysis for Exports during the study period

According to Fig. 2 , we can note that there are two types of exports accounted for 80%, the HBI and cold rolled coils. Therefore the focus must be on these two types in the future.

The Relationship between HBI and Total Exports

The relationship between exports of HBI and total exports can be found by finding the correlation coefficient. Fig. 3 shows the relationship between HBI and the total exports, as shown in Fig. 3.

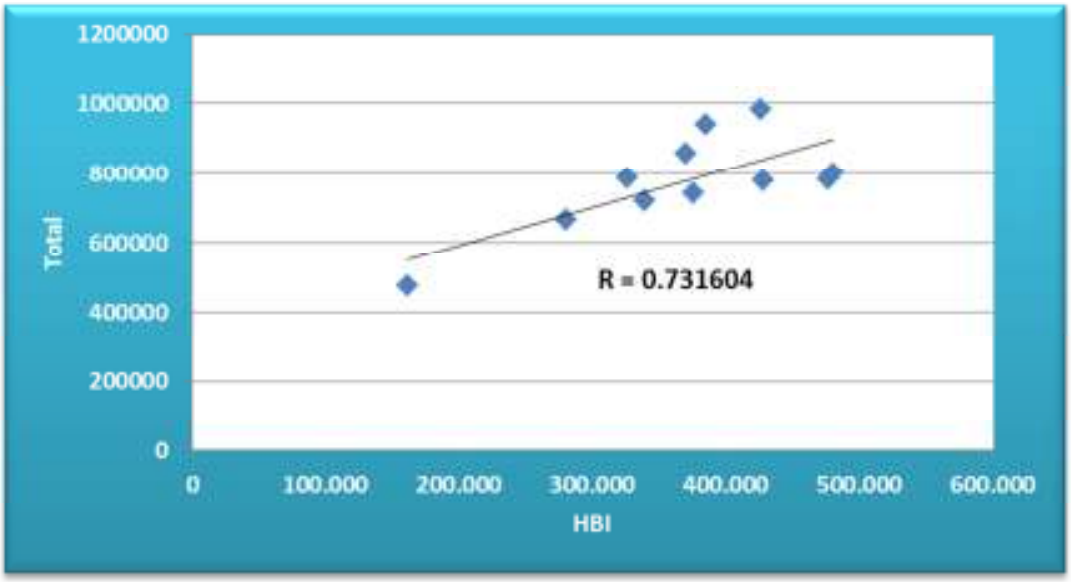

Figure 3. The relationship between HBI and Total Exports

From the previous Figure, it can be observed that the relationship between HBI and total exports were strong through the correlation coefficient, which is equal to 0.731. Therefore, exports of HBI a positive impact in the increase in total exports.

The impact of the global financial crisis on the company's exports

The company's exports affected by the global financial crisis, and this is evident through lower exports during the year 2009, as shown in Fig. 4.

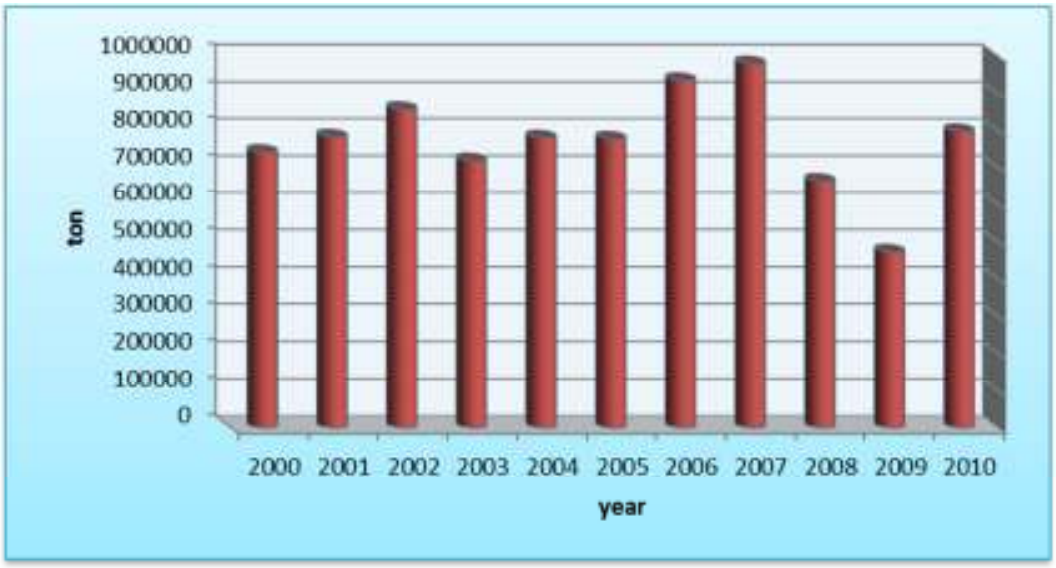

Figure 4. The company's exports during the study period

Fig. 4 shows that the global financial crisis has had a clear impact on the company's exports, as the figure indicates that the company was able to increase exports in the year 2010.

CONCLUSIONS

The results showed that the general trend of exports is declining, and this is due to the following reasons:

(1 The Libyan Iron and Steel Company is a government Co. its policies stem from country policies in directing the company's products to the local market as a first step and export the surplus.

(2 Pareto analysis results showed that the highest amount of exports during the study period were products of HBI, and this shows that this product is very important for the company as well as for the global market.

(3 The study results show that the global financial crisis contributed to reducing the amount of exports, particularly in the years 2009 and 2010.

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