

(An ISO 3297: 2007 Certified Organization) Vol. 4, Issue 7, July 2015

Development of Key Performance Indicators and Impact Assessment for a Garment Company

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ABSTRACT: Key Performance Indicators form an important element of the Management Information System of an organization and should be calculated in a weekly basis [7]. The KPIs report acts as a health check on the performance of the company by providing results in different areas, which in turn leads to a diagnosis of what action need to be taken to achieve improvements. The definition of what they are and how they are measured does not change often, but Key Performance Indicators may change as the company's goals change [6]. In this paper is presented the explanation of 9 Key Performance Indicators including their calculation and their impact assessment in a garment company in Albania.

KEYWORDS: Key Performance Indicators, productivity, performance improvement

I. INTRODUCTION

This paper is part of a broader project whose final goal is advancing sustained, broad-based economic growth in Albania. It helps garment companies become more competitive, increase sales, expand trade and investment, increasing productivity and improving country's workforce. This paper presents the methodology used for the companies for measuring productivity by the help of Key Performance Indicators.

The calculation of KPIs in a weekly basis, reflects differences of company performance compared to the week before. This reflection provides indicators towards the improvement or further performance perfection [1], [3], [5]. The KPIs report is considered as a health check of a company [1],[2], which diagnoses the needed actions to undertake for a better performance, in different fields, such as: productivity (operators efficiency), company structure (link and relation between administration and operators), human resources (level of absenteeism), quality (level of defect per 100 units)[1]. The reasons why the company should measure its performance include: estimation of how well the company performs, planning the budget, showing how the managers should control the operators work, motivating, promoting, improving [4].

II. MATERIALS AND METHODOLOGY

For the purpose of the paper, are collected data on Key Performance Indicators for a company producing work wear. The company is located in Tirana, with 12 years of experience in facon sector and the main destination of its finished products is German client. The data on KPIs are collected, measured and analysed for 40 weeks during the period April – December 2012. Also are given some suggestions for a better performance of the company.

The collection and measurement of KPIs was based on a number of useful sheets including Operator Performance, Attendance Record, Skills Inventory [1].



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The main principles of performance measurement include: The whole work should be measured. The non measured work can not be managed because there is no information to evaluate its value. Non measured work should be kept in minimal level or avoided. Regular reporting ensures that correcting actions are undertaken in proper time [6].

III. TERMINOLOGY EXPLANATION

Effective hours of production = total effective minutes from direct operators /60

The correct effective minutes are nedeed to ensure real figures. If the values of effective minutes are too high, then the number of effective hours of producton would be too high and the efficiency will not reflect the real level of performance. If the values of effective mnutes are too low the reported figures are not accurate. Effective hours of production are measured against International Standards. This indicator is used for the calculation of direct operators efficiency.

Total hours of production= Total number of working hours including the extra work hours from direct operators This is the total number of hours including overtime that all direct operators are at work in the company. This indicator is used for measuring the efficiency of direct operators.

Number of direct operators = Total number of employees involved in the production process.

This indicator includes sewing machine operators, cleaning operators, cutting sector operators.

Efficiency of direct operators = Effective hours of production/Total hours of production X 100%

Its accuracy depends on the value of effective minutes of production. This is one of the most important KPIs and should be subject to continous scrutiny by managers to understand what has contributed to the percentage reported and how different aspects can be improved.

Level of absence = total number of the absent hours from direct operators during the week/total direct operators x total working hours in a week (%)

According to the standards, this figure should not exceed 5%. It is management responsibility to check the absenteeism level.

Number of styles produced in a week

This indicator affects effective hours of production and the eficiency of direct operators.

Average quantity of order = Total number of units in each order being produced during the week/ number of styles being produced

The trend of the garment sector in Albania is for an increasing number of order with smaller quantities. This indicator affects effective hours of production and the efficiency of direct operators.

Average minutes per style= effective minutes produced in a week/number of styles produced This KPI indicates the complexity of the style.

Average defects per 100 unit at the end of line = number of garmets with faults needing repair/number of checked garments (%)

"End of line" refers to a control point that is set up to monitor the quality of the garment after manufacturing is complete.



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IV. RESULTS AND DISCUSSION



Graph. 1. "Effective hours of production" during the period of study

From the graph 1 it is obvious that the indicator 1 "Effective hours of production" is increasing after the 10-th week of the study. This came as a result of the intervention and improvement of the data system used by the company, by applying "Operator Performance sheet".



Graph. 2. Total hours of production during the period of study

Graph 2 shows the increase tendency of indicator 2"Total hours of production", after the 9-th week of the study. This is generated from the increase of quantity of order, mixture of production lines, increase of defects number that resulted at the end of line.



Graph. 3. Number of direct operators during the period of study



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The graph 3 shows the increase tendency of indicator 3 "Number of direct operators", nearly 66%, especially after the 11-th week of the study, after applying "Attendance Record sheet".



Graph. 4. Efficiency of direct operators during the period of study

Graph 4 shows the increase of nearly 10% of the indicator 4 "Efficiency of direct operators" that is coherent with indicator 2.



Graph. 5. Level of Absenteeism during the period of study

Graph 5 shows a high level of Absenteeism, especially during the period of July - September that is the period of summer holidays.



Graph. 6. Number of styles produced in a week during the period of study



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Graph 6 shows the tendency of increase of indicator 6 "Number of styles produced in a week", which coincides with the tendency of this sector: "low quantity of order – different styles".



Graph. 7. Average quantity of order during the period of study

Graph 7 shows that after 13-th week of the study indicator 7 "Average quantity of order" began to decrease. This is related to the indicator 6, and also coincides with the tendency: "low quantity of order – different styles".



Graph. 8. Average minutes per style during the period of study

Graph 8 shows many fluctuations of the indicator 8 "Average minutes per style", which coincides with the entrance in the production line of new styles or with inadequate qualification of operator in new processes. Typical, here is the qualification of operators only for one process.



Graph. 9. Average defects for 100 units at the end of line during the period of study

Graph 9 shows that in every case, indicator 9 "Average defects for 100 units at the end of line" is above the standard, where it is obvious the need for machinery maintenance.



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Extra time required for defects repair lead to extra costs for the company.

Suggestions for a better performance of the company are as follows:

- Analysis of the KPI reports
- Operator training program
- Improvement of the individual operator performance
- Review of the production targets against International Standards
- Improvement of quality control procedures and reducing the defects, by creating a system to identify possible defects of machine, especially on sewing machines.
- Application of defects control in the middle of the production line
- Review of the planning procedures

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