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ENTERPRISE DIAGNOSTIC METHOD: A COMPUTER SYSTEM TO REDUCE ITS LEAD TIME

Sergio Hermenegildo^(*), Robisom Calado

Institute of Science and Technology, ICT, University Federal Fluminense, Rio das Ostras, Brasil

^(*)*Email: shermenegildo@gmail.com*

ABSTRACT

This work intends to propose a computer system in order to reduce the lead time of the Enterprise Diagnostic Method (EDM). This method diagnoses the maturity Lean level of companies, and the system analyzes if the evaluated companies are considered World Class Organizations (WCO), identifying its management strengths and weaknesses, to provide input for improvement opportunities in their companies. The value of this study lies in the ability of increasing the confidence and security of the collected data, the accuracy of mathematical calculations of Grey System, as well as in obtaining instant results, reducing significantly the time between the data collection and its results.

Keywords: LESAT, BALDRIGE, world class organizations, grey system, lead time.

INTRODUCTION

Lean is a management philosophy focused on waste reduction (Womack et al., 2004). The MDE is a way of measuring a company's Lean maturity level (Calado, Robisom, Batocchio and Calarge, 2014), and to that end it uses indicators such as LESAT and BALDRIEGE. Currently the MDE is carried out manually, where the questionnaire with more than 120 items is given so that each participant will report a note to each item. After all have responded, an average of the notes per item is performed. With these averages, a representative graph of indicators is generated.

An average is performed with the association of certain indicators, generating practice factors (processes already implemented in the company to improve business management) and performance (measurable results of the processes implemented in the organization). Given these factors, we can compare the company analyzed with its competitors thanks to the standardization of the LESAT and BALDRIEGE indicators. In this way, we then have a decision factor for new strategies of the company.

To obtain the processes that must be improved in the organization, we use the correlation gray method. It provides an alternative approach to identify correlations between factors and focuses on the object of the search (Zheng et al., 2010). It is used to describe strength and weakness, the size and shape of the relationship between factors.

This study was conducted in five companies, each one with a group of 5 employees per company responding to the questionnaire containing 121 questions, and a change index of 1% of the answers or forms. It was carried out in the first time manually and the second time with the use of the proposed system.

RESULTS AND CONCLUSIONS

Based on the observed aspects, it was developed a computer system that reduced the lead time for obtaining the processes to be improved and the company's position in WCO. This system has the possibility of decentralized data entry, security information, possibility of review of the items already answered, and after completed the entry of all questionnaires, the system instantly informs the results. Thus, we have reduced more than 65% of total Lead time, besides of all the benefits above, as it can be seen in Table 1.

Table 1 - Resultados Comparativos

Quesito	Manual	Using System
Availability of questions	8 hours	1 hour
Effectiveness of responses	101 hours	50,5 hours
Questionnaire inquiry	0,1 hour	0,01 hour
Calculation of the average of the indicators	8,4 hours	Instantly
Calculation of practice and performance percentages	0,1 hour	Instantly
Grey system calculation	15 hours	Instantly
Change in grades already awarded	0,1 hour	Instantly
Re-calculation of the average of the indicators	8,4 hours	Instantly
Re-calculation of practice and performance percentages	0,1 hour	Instantly
Re-calculation of the gray system	15 hours	Instantly
TOTAL	156,2 hours	51,5 hours

The study resulted in a new, fast and reliable way to measure a company's maturity level with the identification of a systematic way to guide new projects and initiatives, to support and develop strategic planning and to identify how organizations are establishing world class standards.

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