TECHNICAL NOTE

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AUDIT AND DIAGNOSIS IN ASSET MANAGEMENT AND MAINTENANCE APPLIED IN THE ELECTRICAL INDUSTRY

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In the maintenance management framework, the effectiveness of an integrated process that manages reliability and maintenance should be adequately and timely evaluated based on an exhaustive analysis from a variety of contributing factors, which should integrally respond to the result of maintenance activities on the performance of the assets that form the production process. According to the above, a motivation arises for the design and application of tools that allow determining the effectiveness of these activities in asset management, understanding the latter as a holistic process that involves a diversity of functions and areas within the organization [2].

In this sense, the article “Audit models for the management of assets, maintenance and reliability processes. Case study: Electricity transmission sector” [3], presents the implementation of audit models for the measurement and control of the reliability and maintenance processes, namely, the AMORMS model (Asset Management Audit, Operational Reliability, and Maintenance), and the MSS (Maintenance Software Audit) tool, through a practical application within the electricity transmission industry. While the first audit model is based on a holistic approach in order to evaluate maintenance management, the MSS tool is used specifically to measure the effectiveness of CMMS-type software implementation. The contribution of the article is not limited to the simultaneous application of these tools and seeks to deepen into the comprehensive diagnosis for the development and presentation of recommendations for the industry under study.

The AMORMS model allows evaluating eight essential stages of the maintenance management process based on the model proposed in [1], whose implementation considers the application of the instrument from the supervisory staff to the managerial level. The diagnosis is carried out considering a questionnaire composed of 150 questions, where each participant evaluates the performance of the processes using a five-level Likert scale. Given the structure of the instrument, it can be represented using a radar graph, thus synthesizing the overall performance of the management from each of the stages as presented in Figure 1.

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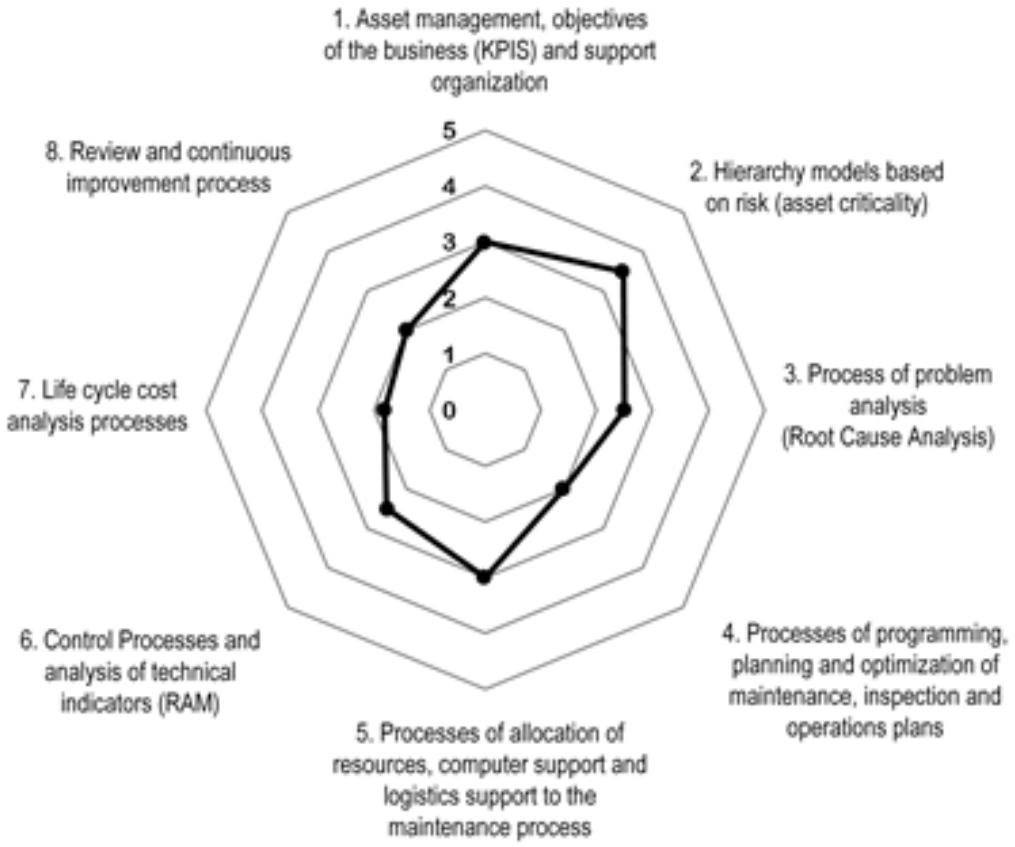

Figure 1. Example of audit results: AMORMS

The MSS tool considers the application of a questionnaire and the conducting of interviews with the staff in charge of the use and management of the maintenance software to be analyzed. The instrument covers 9 essential areas, establishing four levels and considering the same relevance for each area. A sample of fourteen workers was considered for the application of both instruments, involved in different tasks and areas within the organization.

An exhaustive analysis of the responses provided by the AMORMS model reveals a strong dissonance between maintenance planning, activity scheduling, and the organization's strategic objectives. Another relevant aspect is related to the deficit of monitoring on maintenance processes and the measurement of the economic impact of reliability in the life cycle of assets, thus revealing a lack of maintenance and reliability strategic alignment within the organization. The results are consistent with those obtained through the application of MSS, revealing a weak integration between the maintenance activities and strategic performance indicators, the latter directly related to the cost structure.

The results exposed in detail, as well as an extensive list of recommendations, are presented in the article with a more detailed overview of the context of the organization and the industry analyzed, contributing in this way to the state of the art, as well as the knowledge and consideration of maintenance and reliability activities in the asset management context. One of the lessons that emerge from this case study is related to the need of promoting the use and application of the elementary notions of reliability and maintenance, not only to the staff directly involved with the execution of said activities: the information obtained by the integrated

management of these processes must be disseminated at the organizational level due to their relevance and impact on the effectiveness of the asset management involved in the production process.

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