Chapter XIX

Modern Maintenance Management for Enhancing Organizational Efficiency

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ABSTRACT

In this chapter, we explore the impact of modern maintenance management on the global organizational efficiency of an intelligent enterprise. In order to do so, we first define the concept of maintenance management, its scope, and complexity. We also define the company's organizational efficiency as a suitable balance of each of these competencies: product, process and relationship. The chapter describes how this function may impact a company's competencies in product and processes. To be effective, maintenance function requires the proper development of relationship competencies with technological partners, suppliers and the end customers. Therefore, this chapter proposes a comprehensive maintenance management framework that integrates various existing approaches to maintenance management. We also discuss useful practices to reach the competencies needed to be effective in the maintenance function of intelligent enterprises.

INTRODUCTION

In the European standard for maintenance terminology (EN 13306, 2001), mainte-
nance is defined as the combination of all technical, administrative and managerial
actions during the life cycle of an item intended to retain it in, or restore it to, a state in
which it can perform the required function. In the same standard, maintenance manage-
ment is defined as all the activities of the management that determine the maintenance
objectives or priorities, strategies, and responsibilities. Maintenance management is
implemented by such means us maintenance planning, control, and supervision.

The above definition of maintenance management resonates with those found in
Steven (2001), Campbell (1995), and Shenoy and Bhadury (1998). Wireman (1998)
considers maintenance management as the management of all assets owned by a
company, based on maximizing the return on investment. He believes that maintenance
management includes, but is not be limited to, the following: preventive maintenance,
inventory and procurement, work order system, computer maintenance management
systems (CMMS), technical and interpersonal training, operational involvement, proac-
tive maintenance, reliability centred maintenance (RCM), total productive maintenance
(TPM), statistical financial optimization, and continuous improvement. Each of these
initiatives is a building block of the maintenance management process.

Duffuaa et al. (2000) view a maintenance system as a simple input-output system.
The inputs are the manpower, management, tools, equipment, etc., and the output is the
equipment working reliably and well configured to achieve the planned operational goals.
They show that the required activities for this system to be functional are maintenance
planning (philosophy, maintenance workload forecast, capacity, scheduling), mainte-
nance organization (work design, standards, work measurement, project administration)
and maintenance control (of works, materials, inventories, costs, quality oriented
management).

Maintaining the reliability and availability of various resources (machines and
humans) is essential to create and manage intelligent enterprises. Therefore, mainte-
nance management is a critical function in maintaining the global effectiveness of any
organization. In this chapter, we discuss the complexity of maintenance management,
available approaches to maintenance management and the steps needed to use the
concept of maintenance management for enhancing global effectiveness of intelligent
enterprises. With this purpose, we propose an integrated maintenance management
framework and suggest some practices that lead to desired results.

COMPLEXITY OF
MAINTENANCE MANAGEMENT

Maintenance management is a complex function. Since maintenance is composed
of a wide set of activities, it is very difficult to find procedures and information support
systems for simplifying and improving the maintenance processes (Vagliasindi, 1989).
Because maintenance deals with highly diverse problems even in firms within the same
productive sector, it is very difficult to design an operating methodology of general
applicability. Jonsson (2000) points to the lack of maintenance management configura-

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