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1987

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ABSTRACT

Post-sale maintenance is already an important part of the competitive strategy of some firms, and will become increasingly important to many others in the future. The maintenance "problem" can be converted into an opportunity for additional revenue, for the sale of add-on products and services and for improved customer relationships. Information technology (IT) can play a significant role in leveraging a firm's investments in maintenance, and indeed in directing its overall approach to the maintenance issue.

This paper first presents a conceptual framework for understanding the maintenance process. There are three generic approaches: design, risk reduction, and service support. Examples from a variety of industries are used to illustrate each approach and to indicate the role that IT can play in its successful implementation.

Next the paper turns to the question of *searching* for potential applications. The traditional input-process-output analysis framework, enhanced through the addition of the "trigger" concept, is suggested as a method of finding competitively important applications of IT to the maintenance *process*. Here the *inputs* include a broken product, spare parts, and tools, while the *outputs* include the repaired product, removed parts, used/returned tools, and such "by products" as sales leads, product history, and learning for the maintenance staff. Among the *triggers* are a broken product, inspections, indicators, and simply elapsed time. Numerous examples suggest ways in which IT can be used to augment the triggers, inputs, and outputs of the maintenance process.

Finally, the paper notes that the search method used is a specific case of the application of the trigger-input-process-output framework to a single stage of Ives and Learmonth "customer resource life cycle." This model suggests looking at a product from the customer's perspective, focusing on ways that IT might be used to assist the customer in specifying, acquiring, owning, or disposing of the product or of other resources used in conjunction with the product. This search process will be most fruitful in an information-intensive environment and requires for its success the active involvement of functional and general managers. We believe that a thoughtful selection of examples, combined with consideration of the firm's competitive strategy and distinctive competencies, will produce both potential applications of IT and the starting point for discussions concerning the overall role of IT in a firm.