

Classification scheme for lean manufacturing tools

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For the past few years almost every manufacturing industry has been trying to get 'lean'. A headlong rush to become lean also resulted in many misapplications of existing lean manufacturing tools often due to inadequate understanding of the purpose of tools. While tool descriptions abound, there is no way systematically to link a manufacturing organization to its problems and to the possible tools to eliminate these problems. The main purpose of this paper is to propose a classification scheme to serve as a link between manufacturing waste problems and lean manufacturing tools. A manufacturing organization can then match its manufacturing wastes with the appropriate lean manufacturing tools. The classification of existing knowledge is often the first step in moving from a practice to a science. This classification scheme systematically organizes lean manufacturing tools and metrics according to their level of abstraction, appropriate location of application of the tool in the organization, whether it addresses management waste or activity waste, the type of resource waste it addresses, and whether it identifies waste, measures waste, eliminates waste, or a combination of the three. We have organized 101 lean manufacturing tools and metrics using this classification scheme. We have also described some common manufacturing problems using this classification scheme and shown the problem-tool connection through examples. The classification scheme is not intended as a decision-making tool, i.e. it does not decide if something is a waste. However, the proposed scheme does an excellent job of classifying all well-known lean manufacturing tools and metrics and suggests lean manufacturing tools and metrics that will help to address manufacturing problems. This classification scheme will assist companies trying to become lean and can serve as a foundation for research into the science of lean.