

# Applying *New JIT*—Toyota’s global production strategy: Epoch-making innovation of the work environment

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## Abstract

In order to strengthen management technology strategy, the author has recently developed a new management technology principle, *New JIT*, based on TMS, TDS, TPS and TQM-S. In developing “Global Marketing” that can win the global competition for quality and cost, the key for domestic and foreign companies is to successfully achieve “Global Production” that enables simultaneous production start-up (the same quality and production at optimal locations) throughout the world. This paper analyzes and proves the significance of strategically applying *New JIT*—a global production strategy activity called *AWD6P/J*—for epoch-making innovation of the work environment, as verified at Toyota. While many vehicle assembly shops depend on a young, male workforce, innovation in optimizing an aging workforce is a necessary prerequisite of TPS—a production strategy of *New JIT*. Elements necessary for enhancing work value and motivation, and work energy, including working conditions and work environment (amenities and ergonomics), were investigated through objective survey and analyzed from labor science perspectives.

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## 1. Introduction

Today’s challenge for business management lies in providing customers with products of excellent quality, cost and delivery (QCD) performance in the pursuit of customer satisfaction (CS) and staying ahead of competitors through market creation activities. To do this, *New Just in Time (JIT)* was proposed as a new management technology principle for 21st century manufacturing [1]. This is configured with a hardware system that has three core elements: TMS (Toyota Marketing System), TDS (Toyota Development System) and TPS (Toyota Production System); and a software system of TQM-S [2] (Total Quality Management (TQM), utilizing *Science SQC* (Statistical Quality Control) [3]) that enables the application of scientific TQM. In previous studies, the effectiveness of *New JIT* was successfully proven through its application at Toyota Motor Corporation (Toyota) [4–6]. The important mission of *New JIT* is to achieve successful

global production and quality assurance. Production shops should be the focus of *New JIT* implementation among jobs that exist in manufacturing companies. The author believes that the key to a company’s prosperity is a global production strategy that enables supply of leading products with high quality assurance and simultaneous global production start-up (the same quality and production at optimal locations) in both developed and developing countries. Innovation for optimizing an aging workforce is a necessary prerequisite of TPS. It is essential to identify elements necessary for enhancing work value, motivation and work energy, as well as an optimum work environment (amenities and ergonomics), through objective survey and analysis from labor science perspectives.

This study, “Epoch-making Innovation of the Work Environment”, was carried out based on the concerns of automotive manufacturers. In the Japanese automobile industry, the aging society and expansion of overseas production is resulting in a decrease of new employment of young workers in automobile production shops. *Aging & Work Development 6 Project (AWD6P/J)* has been promoted in the areas of human resources, labor, and

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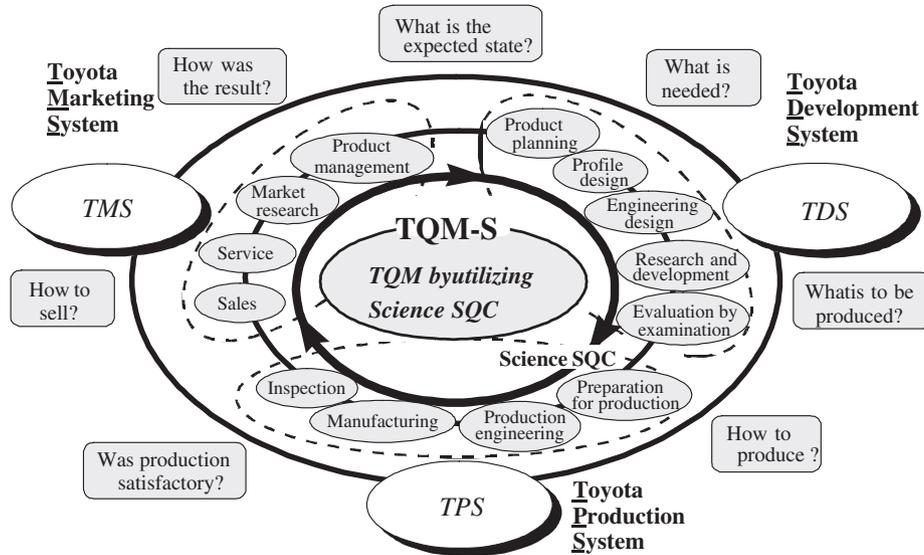


Fig. 1. *New JIT*, a management technology principle.

workplace environment to innovate the workplace to respond to an increasing number of older and female employees. Under *AWD6P/J*, the Total Task Management Team was formed mainly by members of the production engineering and plant divisions to promote scientific approaches to (1) motivation, (2) fatigue, (3) physical strength, (4) tools and equipment, (5) temperature conditions, and (6) disease prevention. This study selected final vehicle assembly lines as the model and investigated a production line, employing a comprehensive analysis that incorporated ergonomics, physiology, and psychology. Measures for an aging workplace developed by this activity yielded practical results and are being applied to both domestic and overseas operations to improve productivity.

## 2. Strategic application of next-generation management technology, *New JIT*

To win the global competition, big enterprises both in Japan and overseas are actively promoting global marketing that aims to achieve the same quality and production at optimal locations (simultaneous start-up) throughout the world. Manufacturing companies, in particular, are required to grasp customer needs and provide products responsibly to the market through global production without falling behind their competitors. Therefore, new strategic management technologies that drive a company to lead the competition have become increasingly essential on a global scale.

### 2.1. Establishment of next-generation management technology, *New JIT*

The mission of enterprises is to provide customers (consumers) with products that delight them. Fulfilling that mission is the key to the continuation of a corpora-

tion. To this end, the author has recently developed the *New JIT* a new management technology principle [1] as shown in Fig. 1 and has shown its validity as a new management technology strategy for 21st century manufacturing.

*New JIT* is a next generation management technology that innovates the business processes of each division, including sales, development and production. *New JIT* includes hardware and software systems developed according to new principles to link all activities throughout a company. The hardware system consists of three core elements: TMS, TDS and TPS. Collectively this system is called *New JIT*, with an excellent reputation worldwide as a *lean system*. The software system deploys TQM-S [2], which is a new principle for quality management, utilizing *Science SQC* [3] from a scientific viewpoint. An organizational way of proceeding with jobs under Japanese style management and strategic development was considered in this TQM-S. It has demonstrated enhanced effectiveness in the respective divisions of engineering design, production and business-sales and others) [4–6]. In this sense, the whole company consistently deploys total marketing [1,2].

### 2.2. TPS, the key to strategic application of *New JIT*

Observation of the automotive industry, which is showing an increase in global business expansion, suggests that it is representative of the general condition of various industries throughout the world. For example, while Japanese automotive companies expanded the application of digital engineering innovated manufacturing in their shops, the reduction of Quality Circle (QC) activities and increased overseas production resulted in a decline of technical skills, problem detection and problem solving capabilities in workshops. This ultimately has lowered the workshop's ability to build in quality during each process.

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