Orientation Training Program

What is "Kanban ?

"A system to achieve "Just In Time" Production"

Kanban (in kanji 看板 also in katakana カンバン, where kan, 看 / カン, means "visual," and ban, 板 / バン, means "card" or "board") is a concept related to lean and just-in-time (JIT) production. The Japanese word kanban (pronounced [kamba$_N$]) is a common everyday term meaning "signboard" or "billboard" and utterly lacks the specialized meaning that this loanword has acquired in English. According to Taiichi Ohno, the man credited with developing JIT, kanban is a means through which JIT is achieved.

Kanban is a signaling system to trigger action. As its name suggests, kanban historically uses cards to signal the need for an item. However, other devices such as plastic markers (kanban squares) or balls (often golf balls) or an empty part-transport trolley or floor location can also be used to trigger the movement, production, or supply of a unit in a factory.

It was out of a need to maintain the level of improvements that the kanban system was devised by Toyota. Kanban became an effective tool to support the running of the production system as a whole. In addition, it proved to be an excellent way for promoting improvements because reducing the number of kanban in circulation highlighted problem areas.
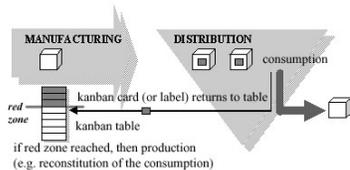
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Jean-Baptiste Waldner, John Wiley & Sons, 1992. Reproduced with author's authorization

Origins

The term kanban describes an embellished wooden or metal sign which has often been reduced to become a trade mark or seal. Since the 17th century, this expression in the Japanese mercantile system has been as important to the merchants of Japan as military banners have been to the samurai. Visual puns, calligraphy and ingenious shapes — or kanban — define the trade and class of a business or tradesman. Often produced within rigid Confucian restrictions on size and color, the signs and seals are masterpieces of logo and symbol design.

In the late 1940s, Toyota was studying supermarkets with a view to applying some of their management techniques to their work. This interest came about because in a supermarket the customer can get what is needed at the time needed in the amount needed. The supermarket only stocks what it believes it will sell and the customer only takes what they need because future supply is assured. This led Toyota to view earlier processes, to that in focus, as a kind of store. The process goes to this store to get its needed components and the store then replenishes those components. It is the rate of this replenishment, which is controlled by kanban that gives the permission to produce. In 1953, Toyota applied this logic in their main plant machine shop.

Operation

An important determinant of the success of "push" production scheduling is the quality of the demand forecast which provides the "push". Kanban, by contrast, is part of a pull system that determines the supply, or production, according to the actual demand of the customers. In contexts where supply time is lengthy and demand is difficult to forecast, the best one can do is to respond quickly to observed demand. This is exactly what a kanban system can help: it is used as a demand signal which immediately propagates through the supply chain. This can be used to ensure that intermediate stocks held in the supply chain are better managed, usually smaller. Where the supply response cannot be quick enough to meet actual demand fluctuations, causing significant lost sales, then stock building may be deemed as appropriate which can be achieved by issuing more kanban. Taiichi Ohno states that in order to be effective kanban must follow strict rules of use (Toyota, for example, has six simple rules) and that close monitoring of these rules is a never-ending problem to ensure that kanban does what is required.

A simple example of the kanban system implementation might be a "three-bin system" for the supplied parts (where there is no in-house manufacturing) — one bin on the factory floor, one bin in the factory store and one bin at the suppliers' store. The bins usually have a removable card that contains the product details and other relevant information — the kanban card. When the bin on the factory floor is empty, the bin and kanban card are returned to the factory store. The factory store then replaces the bin on the factory floor with a full bin, which also contains a kanban card. The factory store then contacts the supplier's store and returns the now empty bin with its kanban card. The supplier's inbound product bin with its kanban card is then delivered into the factory store completing the final step to the system. Thus the process will never run out of product and could be described as a loop, providing the exact amount required, with only one spare so there will never be an issue of over-supply. This 'spare' bin allows for the uncertainty in supply, use and transport that are inherent in the system.