

KANBAN QUESTIONS & ANSWERS

Questions to Kanban Author Raymond S. Louis, President of RTG, Inc.

Q: I have been directed to implement Kanban within a short period of time. Where do I begin?

A: The process can seem challenging, but we are confident the following steps will serve you well:

Step 1: Learn how Kanban functions and the various options that can be employed. These options are exceptionally important as they create the “Best Fit” for your specific overall business.

Step 2: Assess your operations and supply base to determine the appropriate Kanban options. The design aspect is all-important, as Kanban not only affects manufacturing but also purchasing, stockroom, shipping and receiving, transportation and accounts payable. Diligence in fully designing your Kanban system prior to implementation will save you hundreds of hours of wasted time, effort, and money. A well thought out selection of Kanban options will enable rapid response to projected shifts in demand when implemented. The objective of your design is to obtain what is needed, when needed, in the quantity needed, while eliminating the non-value-added activities associated with recalculation and perpetuation.

Step 3: After designing your Kanban system, construct an implementation milestone chart with all team members. Bear in mind that the actual implementation begins with the finished goods level and ends with your supply base. It is key to have a linear demand. This is why you begin at the finished goods level wherever possible.

Step 4: Define and implement baseline measurements. Baseline measurements for parameters such as inventory levels are important as they are used to make adjustments to your Kanban settings, including degree of safety stock, minimums, and multiples, and are required to substantiate the effectiveness of your company’s Kanban system.

Kanban can be implemented rapidly and effectively with outstanding results. Design and implementation planning can be accomplished within a matter of weeks and significantly improves the likelihood of a successful implementation.

Q: Can you explain further what is meant by Kanban options?

A: Kanban options are the choices you have during design of your Kanban system. The options you select will determine how effective your Kanban system is in dealing with the unique challenges of your environment. Options are targeted to deliver the optimal quantities of the correct material at the right time while eliminating the non-value-added activities associated with replenishment systems. To help clarify, we will begin with a definition, cover the impact of cost and time from not eliminating the non-value-added activities, and then, finally, discuss a few of the key Kanban options to consider in your design.

Definition - Replenishment System Non-Value-Added Activities: All activities associated with any replenishment system are non-value-added because they do not physically transform, convert, or change the shape of a product for customer use. This holds true for a push system as well as a pull system.

The impact in cost and time from non-elimination of non-value-added activities is directly proportional to:

- 1) The level of manual effort designed into the perpetuation and execution of the current replenishment system.
- 2) The quantity of active part numbers.
- 3) The degree of deviation of actual demand versus forecast demand within the specified planning period.
- 4) The amount of change in projected demand from planning period to planning period.

Key options to consider in your Kanban design:

1) *Automated Kanban System versus Manual Kanban System*

Imagine that the projected demand of your final product is now projected to shift. With a Kanban system you must:

- Recalculate Kanban lot sizes for all the part numbers that are on Kanban with your suppliers, plus physically add and subtract the number of Supplier Kanban Cards for each part number.
- Recalculate Kanban lot sizes for all the part numbers that are manufactured in house (except flexible work cell part numbers), plus physically add and subtract the number of Production Ordering Cards & Withdrawal Kanban Cards to the new Kanban calculations.
- Calculate flexible work cell staffing levels.
- Inform the supply base via a one-line-per-item projection of anticipated needs for capacity planning purposes only (material is only brought in when consumption triggers replenishment).

Automated Kanban Option:

For companies with hundreds or even thousands of part numbers, where the projected demand shifts up and down from planning period to planning period, will derive the greatest benefit from an automated Kanban system. Why? Because by the time you hand calculate Kanban lot sizes and physically add and subtract the number of Kanban cards, you would be experiencing shortages equal to the degree of shift of demand less safety stock. In other words, your Kanban system will be compromised on an on-going basis either through shortages or by having to carry exceptionally high inventory levels to provide for safety stock.

Automated Kanban is highly effective in minimizing inventory levels, shortages, and satisfying customer demand in these environments as it would automatically: a) recalculate the Kanban lot sizes, b) adjust the number of Kanban cards in the system, c) calculate the flexible work cell staffing levels, and d) provide each supplier with a single-line-per-item forward projection for capacity planning purposes. The principles of manual Kanban methodology remain intact. The only difference is that the process is fully automated, permitting an immediate response to shifts in demand.

Manual Kanban Option:

Companies with smaller quantities of part numbers, or that do not experience significantly varying levels of demand, are better suited to employ Manual Kanban. In these environments, Manual Kanban systems are effective in minimizing inventory levels and satisfying customer demand.

2) Kanban Simulation Option

Heijunka is typically applied to the finished goods production schedule, which involves load smoothing and sequencing. This technique minimizes batch building and provides a linear demand at the component level. Most companies, for a variety of reasons, cannot control the volume of orders, as Toyota is able to do with their dealerships. The end result is that non-linear

demand patterns (spikes in demand) create stockouts. The only way to avert these stockouts is to have forward projection capability (MRP) to calculate Kanban lot sizes and then apply a simulation on the newly calculated Kanban lot sizes.

The simulation applies the current on-hand, current triggered orders, and replenishment lead times. If a particular part number is projected to stockout (zero on-hand with an unsatisfied demand) due to a spike in demand, the calculation module can either elevate the newly calculated Kanban lot sizes or flag the user for intervention.

As an example, a \$10 billion a year manufacturing client was experiencing a 35.0% shortage rate due to spike demands. RTG implemented a Kanban Simulation Option, driving shortage levels down to 0.25%. Applying this simulation by hand would take 45 minutes per part number to do it correctly.

Some environments do not require the Kanban Simulation Option, as their demand patterns are exceptionally linear.

3) Other types of Kanban options from which to choose

- Determining the type of container options you wish to employ may include: Single, Dual, Triple, and Multiple containers. Each is designed to handle specific situations. For example, the triple container is designed for long distance suppliers. Another option may include the Broadcast methodology, which is designed to handle expensive or extremely large items.
- What if the supplier's lead times are too long? You may want the supplier to carry what is called the Lead Time Quantity. This methodology does not increase the inventory the supplier is currently carrying on the shelf; however, it dramatically reduces your lead-time to obtain replenishment. Some OEMS do not have a lead-time issue with their suppliers and therefore will not elect to utilize this option.
- In contracting with the supplier, what requirements should be included in the contract? Download capability? Response time? Type of transportation? There are many options depending upon your unique circumstances.
- How will you trigger requirements internally and externally? Manual or Automatic?
- What option will you select for common components used in different parts of the manufacturing facility? Will you centralize or decentralize the storage of Kanban containers? Common Kanban components can present a challenge if not handled correctly.
- Are you planning to use factory work orders and key in what is pulled from the stockroom or are you going to position the material on the production line and employ deduct point's and backflushing capability?
- When items are triggered for internal production, will you employ Visual Kanban boards at each cell? Or will you employ a manufacturing screen at each cell that reflects triggered orders, load hours, and part availability simulation prior to initiating replenishment?

There are many other options that may be listed, from transportation to packaging. As a whole, this is what defines your Kanban system and enables it to meet the specific needs of your company. The design aspect is vital versus the act of just jumping in and implementing something.

Q: What benefits may be achieved by implementing a Manual Kanban System?

A: Most companies reduce inventory levels 30% - 45% and reduction of part shortages of up to 30%.

Q: What benefits may be achieved by implementing an Automated Kanban System?

A: Most companies reduce inventory levels 30% - 65% and experience reductions in part shortages of up to 80%. In addition, these companies typically reduce the typical order/receipt/inspect/issue time by over 85% and significantly lower the overhead expenditures of operations. This is accomplished by the total elimination of non-value-added activities associated with the replenishment system. Those areas where they cannot be eliminated are greatly minimized, enabling immediate response to demand.

Q: Can all of the part numbers of a company go on Kanban?

A: Typically not. What determines if a part is a candidate for Kanban includes the following:

- 1) The part has a robust, linear demand. There is a test that can be performed to determine if the part should be on Kanban or remain on its current method, which is covered in our seminars.
- 2) The part has a history of outstanding quality.
- 3) The part is not being phased out.
- 4) The lead-time for the item is realistic.

The usual reason a part is not selected for Kanban is its demand pattern. The more erratic the demand, the higher the Kanban lot size must be to avert a stockout – thus hitting an inventory point where it would be better suited for MRP. Most companies that implement Kanban correctly reduce inventory by 30% - 65%. Choosing the incorrect parts can prevent achievement of maximum inventory reduction.

Q: How do you handle non-Kanban items in a predominately Kanban environment?

A: The key to this form of integration is the due date. Kanban, when triggered, would automatically be given a due date based upon the replenishment lead-time. MRP work orders are also given due dates. This is the common denominator when MRP and Kanban items meet in a shared cell responsible for replenishment.

Q: How important is Kanban to the success of a Supply Chain?

A: Supply Chains are reliant upon a pull-based system. Kanban is a pull-based system. The Supply Chain in the ideal profile would obtain point-of-sale information (consumption), which triggers replenishment of the final product. Producing the final product consumes lower level components, triggering replenishment signals internally and externally to the supply base. This Supply Chain is often fully automated and can literally respond immediately.

Q: Is software available to calculate Kanban lot sizes and flexible work cell staffing levels?

A: Yes, from several sources. In your selection, ensure that the calculation process deals with spike demand and does not contain a high degree of non-value-added activities. The cost of these packages run between \$100,000 to \$300,000. We offer KanFlow™ software – a PC-based package that accepts a flat file from your current MRPII / ERP system, It calculates Kanban lot

sizes and flexible work cell staffing levels, and creates an export file to give the calculations back to your MRPII / ERP package, while taking into consideration non-linear demand patterns. It provides exception reporting where user intervention is required and provides inventory level projections.

Q: Am I forced to automate the Kanban process since it appears that it is superior to manual?

A: Absolutely not. Manual Kanban can be highly effective in the right environments.

Q: Can I use historical demand in the determination of Kanban lot sizes?

A: Yes. There are numerous environments where it is literally impossible to forecast anything but the expected dollar value of sales on a month-to-month basis. This can be due to the complexity of the Bill of Material structure or overwhelming options within the product offering. What is required in these environments is to apply what we call a “Times Factor” to the historical usage that is in proportion to the anticipated sales level. This must be complemented with an evaluation of demand patterns to ascertain the required safety stock level settings.

Q: Is it possible that my inventory will increase if I go on Kanban?

A: Yes. The more non-linear the demand patterns are, the higher your safety stock settings will have to be to avert a stockout. Prior to implementing Kanban at any company, we assess the degree of non-linearity with our software. We can usually predict the percent of increase and indicate specifically which part numbers should not be on Kanban. We offer this as an on-line service by analyzing a requested flat file containing data used by our software.

Q: What does your company specialize in?

A: We specialize in Replenishment Systems, both MRP and Kanban. We consult in the design and implementation of Kanban systems and redesign existing systems, tailoring them to your specific business while vastly eliminating their non-value-added activities. We offer on-line Web Conferencing and In-House Seminars on Kanban with Raymond Louis as your instructor. We also offer Kanban calculation software and Demand Pattern Assessments™ by processing your flat file with our Demand Pattern Software.