

MATERIAL STORAGE

Kanban word came into existence using the flavors of “signboard,” “visual card,” or “billboard”, and “signaling system” to indicate a workflow that limits Work in Progress (WIP). Kanban has been used in Lean Production for over ` a half-century.

The core concept of Kanban includes:

- Visualise Workflow
- Limit WIP
- Measure the Lead Time

Kanban systems help to remove the Bottlenecks and to collaborate to optimise the whole value chain rather than just their part. The operations and support teams have a high rate of uncertainty and variability. Overproduction of inventory is avoided, thereby saving resources and time as well. This is termed as eliminating waste.



LEARNING OUTCOMES

After completing this lesson the Learner

- defines an Inventory Kanban;
- summarises Kanban as a Visual Tool;
- states Common Challenges in Inventory Management & Supply;
- follows Kanban Inventory Guidelines;
- states Good reasons to use Kanban Inventory Managements.

18.1 WHAT IS KANBAN

Kanban is an inventory management system used in just-in-time (JIT) production. It was developed by Taiichi Ohno, an industrial engineer at Toyota, and takes its name from the coloured cards that pathway production and demand new shipments of parts or materials as they run out. Kanban is the Japanese word for sign, so the Kanban system simply means to use visual cues to swift the action needed to keep a process flowing.

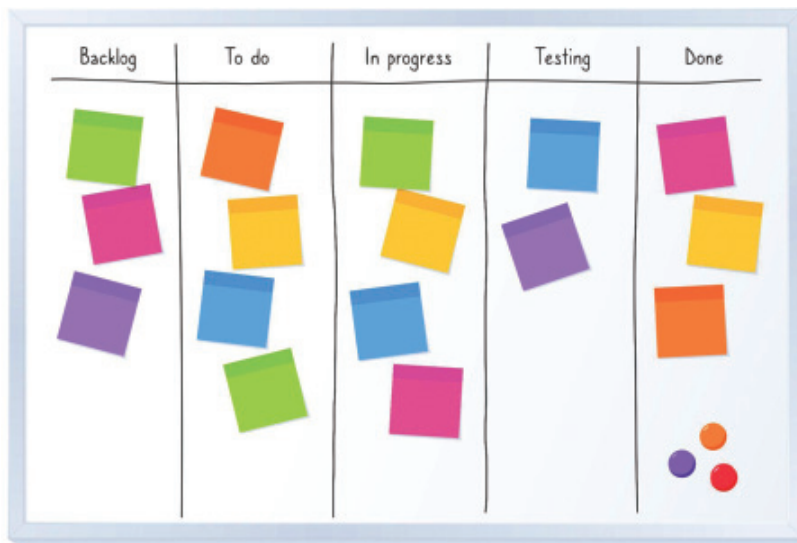

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Fig. 18.1: Kanban – Board

Kanban is a vital part of the lean manufacturing system, in the meantime it manages production through a pull system, somewhat than responding to predicted demand.

This is an essential shift from more traditional processes where demand is foreseen in advance and materials are bought in bulk to cut supply chain costs, such as transport.

The idea of Kanban in lean manufacturing is to cut wasted inventory by carrying only what you require in order to protect lead times, while at the same time cultivating communication on customer orders to certify everyone is aware of what's going on at all times.

Here's a concise version of what a Kanban process might look like in the production context:

- To each station in your production pipeline should be treated like its own mini-business, with 'customers' downstream and 'vendors' upstream. This will make sense in a moment.

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- When a customer request comes in at the bottom of the pipeline, this triggers a request for a finished product. The station near to the end customer (i.e., labelling) removes the materials it needs from their upstream ‘vendor’ (i.e. assembly), so they can achieve their task and hand the product to the customer – or ship it, as would normally be the case.
- Of course, by giving the assembled product to the labelling station, that assembly station now has no goods left in its own stock. This then triggers one more request to withdraw materials from the next station upstream (perhaps soldering), which then withdraws materials from the station prior, and so on and so forth back to the warehouse.
- Then, when the warehouse runs low in stock, it reorders from favored vendors.
- So that it identifies when to reorder, the warehouse may function on what’s known as a ‘two bin’ system. Fundamentally, the team holds all supplies and consumables in two different bins. Goods are only taken from one bin at a time, until it evacuates. When this occurs, inventory managers will reorder a bin’s worth of supplies from the company’s suppliers.
- At this point, downstream stations start taking from the second bin (which is now the primary bin). When this evacuates, the original bin should be filled again.

This pipeline system is measured by Kanban cards. The cards clutch all the data that the upstream partner requires to fulfil the order for their downstream partner. When a request is made, a card is passed from one station to the other – with right people notified, documents attached, and details noted.

Because everything is connected on cards, it’s all very transparent. When using a digital Kanban system, anybody can commonly see what’s going on in the wider pipeline at a given instant.

Within this system, it’s key that each station only produces what it requires to meet customer request. Naturally, nothing is made if there’s no demand.



INTEXT QUESTIONS 18.1

1. Which is the inventory control system used in JIT manufacturing
 - (a) LIFO
 - (b) FIFO
 - (c) Kaizen
 - (d) Kanban



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2. Kanban plays a vital role in
 - (a) Production
 - (b) Lean manufacturing system
 - (c) Transportation
 - (d) Storage
3. What is measured by Kanban cards
 - (a) Pipeline system
 - (b) Inventory
 - (c) Sorting
 - (d) Storing
4. Since everything is connected on cards, it is all very
 - (a) Simple
 - (b) Clear
 - (c) Transparent
 - (d) Valid
5. Anyone can commonly see what is going on wider pipeline by using
 - (a) Kanban system
 - (b) Digital Kanban system
 - (c) Kaizen system
 - (d) None of the above

18.2 UNDERSTANDING KANBAN

The Kanban system can be understood of as a signal and response system. When an item is running low at an operational station, there will be a visual cue stipulating how much to order from the supply. The person using the parts makes the order for the quantity directed by the Kanban and the supplier offers the particular amount demanded.

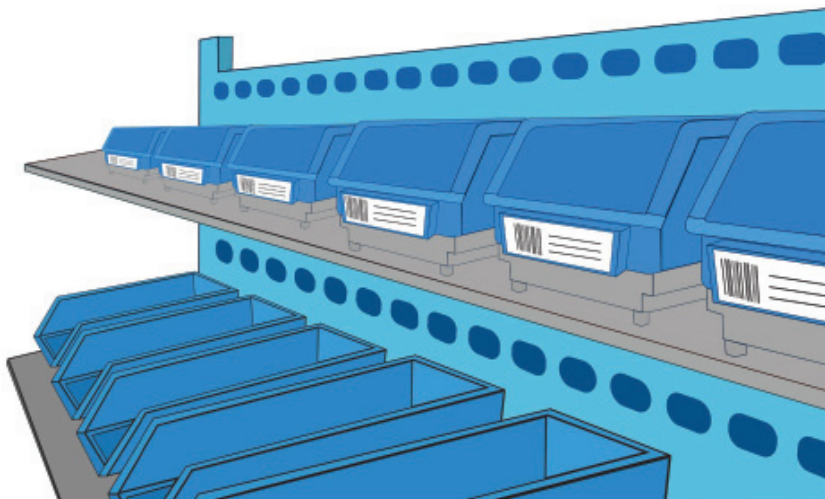


Fig. 18.2: Kanban Inventory Management System

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For example, if a worker is bagging product on a conveyor belt, a Kanban may be located in the stack above the last 10 bags. When the worker gets to the card, he gives the floor runner the card to bring extra bags. A station additional from the supply room might have the Kanban located at 15 bags and a closer one at five. The flow of bags and the placement of cards are accustomed to make sure no station is left bag-less while the belt is running.

The Kanban system can be used without difficulty within a factory, but it can also be applied to purchasing inventory from external suppliers. The Kanban system makes extraordinary visibility to both suppliers and buyers. One of its main goal lines is to limit the stockpile of surplus inventory at any point on the production line. Limits on the number of items coming up at supply points are recognized and then condensed as inefficiencies are identified and detached. Every time a limit of inventory is surpassed, it points to an incompetence that needs to be addressed.

As containers of parts or materials are emptied, cards appear, color-coded in order of priority, allowing the production and delivery of more before a hold-up or shortage develops. A two-card system is frequently used. T-Kanban transportation cards approve the movement of containers to the next workstation on the production line, while P-Kanban production cards authorize the workstation to yield a static number of products and order parts or materials once they have been traded or used.

**INTEXT QUESTIONS 18.2**

1. Kanban system is understood as
 - (a) Signal system
 - (b) Response system
 - (c) Signal and response system
 - (d) None of the above
2. Which approves the movement of container to the next workstation
 - (a) T Kanban
 - (b) L Kanban
 - (c) M Kanban
 - (d) N Kanban
3. Which approves production cards and authorize the workstation to yield a static number of productions
 - (a) L Kanban
 - (b) M Kanban
 - (c) N Kanban
 - (d) P Kanban

4. What is the main goal of Kanban
 - (a) To optimize storage
 - (b) To stock pile
 - (c) To set right racks
 - (d) None of the above
5. What makes extraordinary visibility to supplier and buyer
 - (a) Kanban system
 - (b) Kaizen system
 - (c) LIFO system
 - (d) FIFO system



18.3 KANBAN IN INVENTORY MANAGEMENT

Kanban is a visual tool that is perfect for managing inventory flow. It was developed about three-quarters of a century ago by Taiichi Ohno, an industrial engineer at Toyota. [HYPERLINK “https://www.projectmanager.com/software/kanban”](https://www.projectmanager.com/software/kanban) \hKanban boards facilitated the car company restock its inventory only when it was required, and it was the revolutionary approach that help out Toyota grow so rapidly.



Fig. 18.3: Kanban Toyota Production System

In essence, Kanban inventory management is a technique to have only the minimum amount of stock on hand that is required at that time. This evades purchasing more than you require and having to allot space to warehouse that further inventory. More than that, [HYPERLINK “https://www.projectmanager.com/guides/kanban”](https://www.projectmanager.com/guides/kanban) \hKanban is a way to evade blocks in your workflow.

Customers expect quicker fulfillment than ever, particularly with mobile access, yet supply chains are increasingly complex and often dispersed across facilities. Having an effective inventory management system in place is a competitive edge



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that limited can afford to ignore, and a Kanban inventory system can shave costs off your bottom line and give you that edge.

Common Challenges in Inventory Management and Supply

There are numerous stress points that can root a supply chain to slow down. For example, if you're being supplied from numerous warehouses or, worse, multiple countries. Though, Kanban cards can denote each of these several links in your supply chain and make it easier to know where the whole thing is so you can coordinate delivery.

Inventory management can also grieve from imprecisely recognizing and assessing your business needs. It's vital to know the slits in your system, so you can line up filling those slits. A Kanban inventory system offers a clear visual map of what you want, when you require it and where. You can then make even that with your business plan to make sure both sides are accurate.

That said, if your inventory system is not enhanced, then you don't know what you require or when you want it, which makes forecasting future inventory needs impossible. The cards on a Kanban board are catching your inventory and recognizing where it is in the pipeline. This makes it easier for you to see chances, so you can act and enhance more efficacies to the supply chain.

Kanban Inventory Guidelines

According to how it was applied in the Toyota factory, there are six rules guiding for system:

- 1. Never Pass Defective Products:** Upstream processes must meet the level of quality and standards that are anticipated of them. Eradicate all defective products; they are dealt with outside the production line.
- 2. Take Only What's Needed:** Downstream processes only take what is required to avoid overproduction. This also lowers costs and brands operations reflect market demands.
- 3. Produce Exact Quantity:** Avoid overproduction, which leads to surplus inventory and more costs.
- 4. Level the Production:** Keep production to capacity to accomplish a stable flow of work.
- 5. Fine-Tune and Optimize Process:** After applying Kanban, continue to explore ways to add competences.
- 6. Stabilize the Process:** Maintain quality, level production and optimize processes to gain stability, so you can normalize.



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Why Use Kanban Inventory Management?

Monitoring and optimizing your inventory levels, while meeting customer requirements, is an equation for a fruitful business venture. For one thing, this cuts the level and charge of your inventory. You can evade needless storage fees by only stocking what is required, when it's required, and resupplying the stock in a timely style.

It's like the old cartoon of the steam engine moving crosswise a virgin landscape, with workman tearing up old pathway behind the train and laying it down before the train as it moves forward. It's a joke, but it also makes logic: use what you want, when you want it. That path miles ahead or behind is not doing anything for you right here and now. Imagine if you required to pay for storing those materials?

Meet Customer Demands

But Kanban does extra than maintain minimum inventory levels, it also answers to customer demands. By recognizing what products are selling and so must be restock before depleted, you have on hand only what is required. The customer is the one driving inventory, which is as it should be, for the customer is the one who is going to purchase that inventory.

Quick Status Reports

There is also the additional profit for managers of having easy admittance to progress reports. They can see what's been started, where it is in the production cycle and when it's been completed. This is all laid out in a modest and visual way on the Kanban board. Plus, with ProjectManager.com, your Kanban board can be uploaded into the real-time dashboard, which creates easy-to-read and share charts and graphs of various project metrics.



INTEXT QUESTIONS 18.3

1. Kanban is visual tool perfect for managing
 - (a) Transport Flow
 - (b) Inventory Flow
 - (c) Intralogistics Flow
 - (d) None of the above
2. What is the technique used to minimize the stock on hand
 - (a) Racking
 - (b) LIFO
 - (c) FIFO
 - (d) Kanban Inventory Management

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3. Kanban is the only way to avoid
 - (a) Block in overflow
 - (b) Over production
 - (c) Production defects
 - (d) None of the above
4. Which offers clear visual map of what you want
 - (a) LIFO
 - (b) FIFO
 - (c) Kanban Inventory system
 - (d) None of the above
5. Which tells about additional profit for manager of having admittance to progress report
 - (a) Status Report
 - (b) Quick status report
 - (c) Smart status report
 - (d) None of the above

18.4 ELECTRONIC KANBAN SYSTEMS

To permit real-time request signaling across the supply chain, electronic Kanban systems have become widespread. These e-Kanban systems can be unified into enterprise resource planning (ERP) systems.

Toyota, Ford Motor Company and Bombardier Aerospace are among the manufacturers that use e-Kanban systems. These electronic systems still afford visual signals, but the systems are also usually allowed to automate parts of the process, such as transport through the factory or even filing purchase orders.

Advantages of the e-KANBAN System

Web-based real-time system

All-important Kanban information is accessible online and in real-time

Economical

Easy to recognize and 100% fair license model, ROI < 6 Months

Relief of the IT department

Low effort for the IT department for software application and maintenance

E-Kanban Pilot Project

Use our IKS system in operation for a couple of months for a static price, inclusive all services

Easy connection of ALL ERP systems

High flexible interface to offer Kanban information for each ERP system on the market

Great price-performance-ratio

Professional and high-quality E-Kanban solution for a reasonable price

Easy and fast E-Kanban implementation

E-Kanban system can be implemented with a minimum of time and effort for your team

No risk and 100% satisfaction guarantee

Low-cost beginning and individual provision



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INTEXT QUESTIONS 18.4

1. What is unified into enterprise resource planning ERP system
 - (a) E-Kanban
 - (b) LIFO
 - (c) FIFO
 - (d) Kaizen
2. What still provide visual signals
 - (a) RFID
 - (b) Electronic system
 - (c) Tags
 - (d) Barcodes
3. All important Kanban information is accessible
 - (a) Online
 - (b) Realtime
 - (c) Online and Realtime
 - (d) None of the above
4. What is the advantage of e Kanban system
 - (a) Effective transportation
 - (b) Effective production
 - (c) Effective Stocking
 - (d) Economical
5. E-Kanban system can be implemented with
 - (a) Minimum time and effort
 - (b) Minimal time
 - (c) Minimal effort
 - (d) Minimal training

18.5 KANBAN AS A VISUAL TOOL

Kanban is a technique for managing the flow of any work. At the heart of the method is the pull model, whereby the flow of work is measured in a downstream to up-stream direction. This results in a just-in-time approach to making the inputs accessible to each phase of a value stream. The word “Kanban” in Japanese does indeed mean something like “sign post”. The Kanban technique does indeed



practice visual signals to trigger the resupply of input materials and the execution of tasks, at least in firm cases. But the visual form of that signalling will vary enormously, according to the nature of the work. In highly automated manufacturing, the signs controlling flow, being data in computer networks, are not obvious at all to humans. In processes operated by humans, Kanban may make usage of physical cards as visual control signals. In knowledge work, the value stream is preoccupied as a Kanban board and the Kanban cards are operated on that board, rather than with the materials being managed. That board and its cards may be abstracted once again, becoming data achieved by software and displayed on video screens. Accordingly, while visualization may play a vital role in many cases for apprehending the state of work, visualization is, at best, a practice that permits the core of flow management. It is not the main itself.

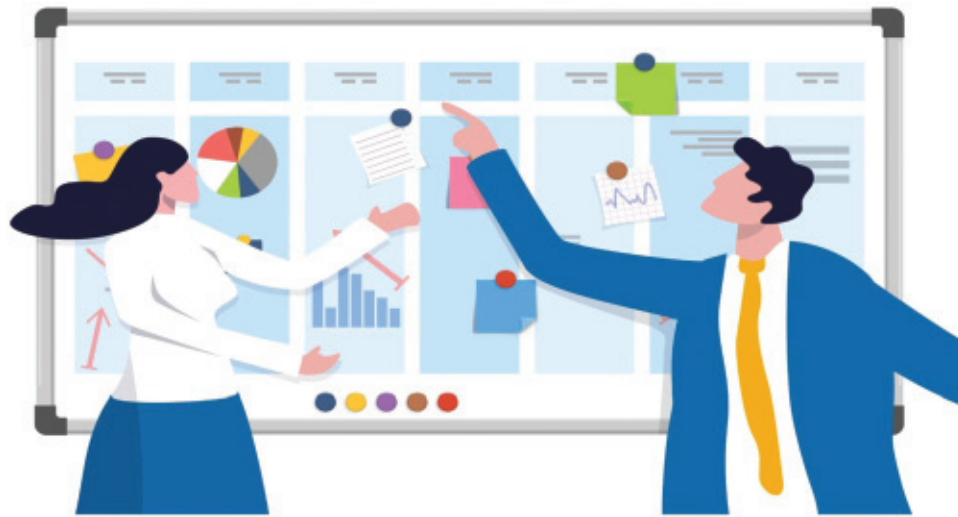


Fig. 18.4: Kanban board

For some people, the maturity level of their organization's use of Kanban gives the brand that Kanban is just a visual management method. For, in fact, most people first observe Kanban as the card board used to visualize their work.

True, this visualization greatly assists more organizations. You often hear remarks such as, "We have not ever really seen all the different types of work we do before using this card board!" Visualization assembles for us the data set equivalent to the work in the offing, in progress and completed. The more that data set is but a small selection of your tasks or subject to selection bias, the more your choices based on that data will be ill guided. The poorer will your system be for handling the flow of work. In fact, the visualization of your work in the form of a card board confirms in a very spontaneous way that you are truly make an effort to accomplish the flow of *all* your work.

Think of what happens in many by tradition managed projects. The project manager tries to generate a detailed plan of all the tasks essential to complete the project. But, when the project falls behind and the project manager tries to understand the causes of delay and blockage, he or she often discovers that people achieve many tasks for the project that were not planned at all. Or, it turns out that resources perform more work on non-project ac-ti-vi-ties than primarily planned.

So, it is vital to be mindful of all the work being done by a team. Visualization on a board is one method to support achieve this goal.

**Notes****INTEXT QUESTIONS 18.5**

1. What is the technique used for managing the flow of work
 - (a) LIFO
 - (b) Kanban
 - (c) FIFO
 - (d) Kaizen
2. In Japanese the word Kanban means
 - (a) Signal
 - (b) Sign
 - (c) Sign post
 - (d) Guide
3. The Kanban technique practices
 - (a) Graphical signals
 - (b) Pictorial signals
 - (c) Symbols
 - (d) Visual signals
4. Which method is used in Kanban
 - (a) Visual management
 - (b) Graphic management
 - (c) Symbol management
 - (d) None of the above

18.6 COMMON CHALLENGES IN INVENTORY MANAGEMENT AND SUPPLY**Inconsistent tracking**

Applying manual management following methods across numerous programming and accounting pages is dreary, repetitive, and helpless contrary to mistakes. Indeed, even autonomous ventures can revenue from a robust stock global positioning framework that integrates bookkeeping highlights.

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While we are concentrating on matters definite mainly to inventory management, the key takeaway here is “visibility”. Investing in upgrading your processes, software, and equipment as part of a warehouse modernization exertion to progress data capture and analytics helps resolve challenges in inventory and up and down your supply chain.

Not using good vendors – the most common challenges in inventory management

This may seem to be an easy decision; though, it is likewise a typical issue. Tracking down a decent merchant is a polished harmony between somebody reliable and somebody who does not again charge a bomb.

Fortuitously, there are a few survey sites today where you can determine absolute merchant audits before selecting to proceed with them. If a definite merchant does not meet your eminence or administration norms or defers shipments and effects your stock administration, drop them like a hot potato! If you sell a specialty item, consider total vertical mix, so you have expertise over assembling, requesting, and therefore your stock levels.

Not having performance measurement parameters in place

Measure physical assets just as intangibles to expect stock issues. Consumer loyalty evaluations, stock turnover, or even only your functioning capital are incredibly significant. Item chiefs should screen day by day fill-rates and stock turnover dependent on your business cycles.

Transparency

The best organizations will incorporate straightforwardness into their satisfaction to ensure representatives and clients realize what is befalling things. Indeed, even with the unique challenges in inventory management in internet purchasing, request problems can happen in any case. If your client knows about delays, they can change their assumptions and feel confident that their thing will, in any case, show up. Correspondence and straightforwardness are crucial for your prosperity. This incorporates telling the client the second something they are hanging tight for returns stock.

Poor process – the risky challenges in inventory management

Inventory management panels at the distribution center are activities escalated and comprise a few stages, together with getting and put away, picking, pressing, and transportation. The assessment is to play out every one of these errands in the most actual manner conceivable.

**Notes****Inadequate software**

To scale inventory management programming to help multifaceted coordination, it requires to integrate your current business ration stages. The challenges in inventory management and solutions responsibility are browsing many inventory management arrangements and controlling a large group of highlights demanding preparation and progress support.

Relatively than tallying the whole stock at one time, businesses count various things in the stockroom. Cycling calculating is a truthful examining procedure. The computing of precise items is applied as a kind of perspective for the remnants of the stockroom. If your stock is off in the cycle tallies, you will perhaps track down alike errors in diverse zones. In like manner, if the cycle checks show your store is exact, you are assured to have precise tallies all through the distribution center.

Managing warehouse space

Productively overseeing space is a scary undertaking. Positioning and planning stockroom spaces with inventory management stages supports you better regulate the situation of new stock conveyances. It can signify significant components, like accessible space. Examine more about the contrasts between stockroom executives and tasks in inventory management.

Manual documentation

Supervision management with desk work and manual cycles is repetitive and not secure. Also, it does not handily scope across several stockrooms with heaps of control.

Problem management

Transient and gentle stock need precise designs for care and capacity. What is more, it is that the high-esteem stock requirements explicit hard luck circumvention methodologies and inventory management.

Labour collaboration

Cooperation among labors is one of the rampant problems faced in inventory management. Communication and collaboration are keys to confirm that their warehouse process is applied successfully. It's far more interesting to spot inventory patterns and find approaches to progress when departments are indifferent about exchanging information. If the information flow is deliberate and disrupted, employees cannot know about tasks, requirements, progress and situation of works. As a result, businesses will get into trouble with warehouse matters.

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Production planning

Production planning is crucial for diminishing production delays and costs. In each month, businesses have to summary their production results, find out the tricky and solution and set targets for the following month. Their production plans are formed in detail, based on the solution and monthly KPI. If not done appropriately, it might affect sales estimates and project timing.



INTEXT QUESTIONS 18.6

1. If the merchant does not meet your administration management if affects
 - (a) Finance
 - (b) Marketing
 - (c) Stock
 - (d) None of the above
2. Which is intangible to expect in stock issue
 - (a) Measuring liability
 - (b) Measuring asset
 - (c) Measuring deliverables
 - (d) Measuring physical asset
3. What depends on your business cycles
 - (a) Stock turnover
 - (b) Stocks
 - (c) Inventories
 - (d) None of the above
4. The challenges in Inventory Management is
 - (a) Funds
 - (b) Inadequate software
 - (c) Human Resource
 - (d) None of the above
5. Which is not secure in Inventory Management
 - (a) Digital documentation
 - (b) Automated records
 - (c) Manual documentation
 - (d) Nome of the above

18.7 KANBAN INVENTORY SYSTEM GUIDELINES

Factories are intricate and busy places – and making definite all work is done can be tough. That’s where the *Kanban*, or signboard system, fits into the Toyota Production system.

Kanban (English: Signboard): A system that sends information between processes and mechanically orders parts as they are used up. Each item or box of items that flows through the production process brings its own *Kanban*. *Kanban's* come off items that have been used or transported and go back to the previous processes as orders for additional items

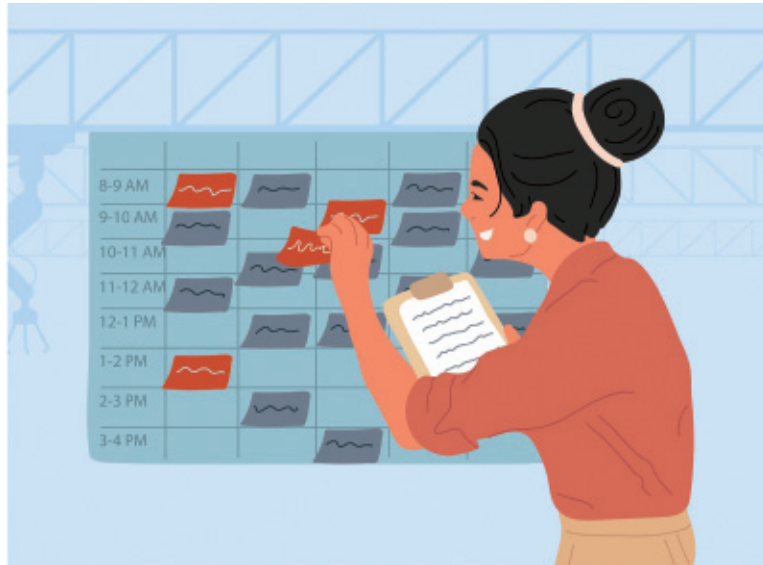


Fig. 18.5: Kanban method 4-steps inventory control system

Though literally translated as ‘signboard’, the Toyota-developed method has become known as a vibrant, sign-based scheduling system triggering the logistical chain of production and upholding it at an optimum level.

Kanban displays can broadcast loads of diverse types of information, from stock levels to production volumes. In its modest form a *Kanban* board will show goods in, goods in production, and goods out.

Over time, Toyota has changed this significantly.

Kanban is the quick-response system through which [HYPERLINK “https://mag.toyota.co.uk/just-in-time/”](https://mag.toyota.co.uk/just-in-time/) \h**Just-In-Time** production is attained, harmonizing inventory levels with definite consumption. Toyota has six rules for the effective application of *Kanban*:

1. Never pass on defective products
2. Take only what is required
3. Produce the exact quantity required
4. Level the production
5. Fine-tune production
6. Stabilize and rationalize the process.

The more traditional push system entails the capability to forecast the behaviours of customers to foresee how much to produce. With this method, large batches of



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materials will get hard-pressed into the system and a material necessity planning as well as a schedule will need to be technologically advanced to push these materials through the system. Just like the Waterfall method for project management, this push system is around big bang deployments, as an alternative of Agile methods that seek to deploy small iterative releases. This is vital to keep in mind as we discover Kanban systems without inventory.

The pull system used in Kanban, starts as an alternative from a real customer demand (not a prediction), that causes the system to answer by signalling through Kanban cards the want for the preceding process to pull in accurately what is required to respond to a customer's demand. Each process works with the preceding process to remain to request only what is required and nothing more. Please note that vendors interrelating directly with the customer will often set up "order points" to appeal small batches of products, in its place of a single product.

Now that we recognize that Kanban uses a pull system and that visual cards are used to trigger actions from precise processes, we can explore how Toyota has been perfecting it.



INTEXT QUESTIONS 18.7

- Which are intricate and busy place
 - Warehouse
 - Fulfillment centers
 - Retail counters
 - Factories
- Which is a system that sends information between processes and orders
 - Kanban
 - LIFO
 - FIFO
 - Kaizen
- Kanban is literally translated as
 - Simple
 - Clear
 - Signboard
 - None of the above
- How many rules Toyota follows for effective application of Kanban
 - 4
 - 6
 - 5
 - 3
- What are the systems used by the Kanban to trigger action from precise processes
 - Push System
 - Visual signs
 - Pull system and visual cards
 - None of the above

18.8 BENEFITS OF KANBAN INVENTORY MANAGEMENT SYSTEM

Kanban was established as a technique for controlling the flow of materials within a supply chain to diminish waste. Kanban simply means “billboard” or “visual signal.” Using visual signals (cards), Kanban controls inventory by pulling supplies to the making floor based on customer demand. So, Kanban, the pull inventory system, offers a number of profits for your production line.



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Fig. 18.6: Kanban system both lean manufacturing agile sayeed afzal

Reduce Inventory and Product Obsolescence

Since module parts are not delivered until just before they are required, there is a condensed need for storage space. Should a product or module design be upgraded, that upgrade can be comprised in the final product ASAP. There is no inventory of products or components that become obsolete.

This fits well with the Kaizen system of repeated development. Product designs can be upgraded in minor increments on a repeated basis, and those upgrades are proximately incorporated into the product with no waste from obsolete mechanisms or parts.

Reduces Waste and Scrap

With Kanban, products and components are only manufactured when they are required. This eradicates overproduction. Raw materials are not carried until they are required, dropping waste and cutting storage costs.

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Provides Flexibility in Production

If there is an unexpected drop in request for a product, Kanban confirms you are not stuck with additional inventory. This gives you the flexibility to quickly answer to a changing demand.

Kanban also offers flexibility in how your production lines are used. Production areas are not sealed in by their supply chain. They can rapidly be switched to diverse products as demand for several products changes. Yes, there are still limits forced by the types of machines and equipment as well as employee skills. However, the supply of raw materials and components is eradicated as a bottleneck.

Increases Output

The flow of Kanban (cards, bins, pallets, etc.) will stopover if there is a production tricky. This makes complications visible swiftly, allowing them to be corrected ASAP.

Kanban cuts wait times by creating more reachable supplies and breaking down administrative barricades. This outcomes in growth in production using the same properties.

Reduces Total Cost

The Kanban system decreases your total costs by:

- Preventing overproduction
- Developing flexible workstations
- Reducing waste and scrap
- Minimizing wait times and logistics costs
- Reducing stock levels and overhead costs
- Saving resources by streamlining production
- Reducing inventory costs



INTEXT QUESTIONS 18.8

1. Kanban simply means or visual signal
 - (a) Cards
 - (b) Boards
 - (c) Bill board
 - (d) None of the above



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2. Which signal used by Kanban controls inventory by pulling supplies
 - (a) Graphics
 - (b) Visual Signals
 - (c) Photos
 - (d) None of the above
3. Which can be upgraded in minor increment on a repeated basis
 - (a) Product design
 - (b) Product design
 - (c) Packing design
 - (d) Layouts
4. With Kanban which is manufactured only when it is required
 - (a) Products
 - (b) Components
 - (c) Product and components
 - (d) None of the above
5. Kanban also offers
 - (a) Cost benefit
 - (b) Flexibility
 - (c) Rigidity
 - (d) None of the above

18.9 MAJOR CHALLENGES OF KANBAN INVENTORY MANAGEMENT

1. Kanban cannot be used as an independent tool. It is not a method that could be applied solely, rather it can be merged with other processes and systems of a company like JIT, make to command and scrum etc. making these systems more visible.



Fig. 18.7: Problems with kanban

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Notes

Material Storage

- As the tasks are endlessly shifted between the columns of Kanban board, the guess of definite timelines for completion of tasks or activities becomes hard. This is because Kanban acts only as a signaling port in a pull production system.
- Kanban is not appropriate for environments that are dynamic in nature. Because a Kanban system takes up the plans that are stable and consistent to a certain extent, it may become unsuccessful in industries where the activities are not inert.
- Kanban will become very problematic to apply if too many activities or tasks are interconnected in a system. This is because such systems improve the option of transfers of goods and knowledge amongst diverse tasks too often and raises difficulty to keep the step of all these activities.
- The application of the system may result in deprived quality outputs. Kanban acts like a monitoring structure that makes the flow of tasks even. If any work done is unsatisfactory for the customer or the company, it would need a revision that could get the situation worse as it will need more time and resources to get completed.



INTEXT QUESTIONS 18.9

- cannot be used as an independent tool.
(a) Kaizen (b) Kanban
(c) JIT (d) None of the above
- Kanban acts only as a
(a) Inventory monitor (b) Transport Support system
(c) Production support system (d) Signalling port
- Kanban is not appropriate for environment they are
(a) delicate (b) effete
(c) dynamic (d) infirm
- When Kanban will become problematic
(a) When more activities are interconnected
(b) when less activities are interconnected
(c) when activities are unrelated
(d) None of the above
- Kanban acts like a structure that makes the flow of task easier
(a) Checking (b) Monitoring
(c) Examining (d) Observing

18.10 GOOD REASONS TO USE KANBAN INVENTORY MANAGERMENTS

Kanban is one of the most logical choices for monitoring your level of inventory and meeting customer request for a successful business. Yet, that doesn't mean there is nothing you required to account for when you place a system into place. Having a knowledge of the profits of this system will give you a good idea if implementing it is right for you.

- **Reduction of Inventory Costs and Levels:** If you don't have a ton of further inventory, you are going to have extra space to in which to work. That isn't all that Kanban can offer, in any case. When your routine up only on the materials that you want, you also save money. There's no purpose to dip into business funds to purchase a cluster of products or parts that are going to sit down there and may at no time be used.
- **Need Determined by Customer Demand:** With Kanban, you can discover out what items are selling much informal since those are the things that you will be restocking as you run low on them. If your discovery that a certain part very hardly needs to be ordered, that means that there undoubtedly isn't a substantial demand for it. There's no need to dig into data or information to find that out. You already have it by using Kanban.
- **Managers Receive Progress Reports:** When using Kanban software, there are many analytics that can display you accurately how long it takes to produce a product and how much of it is being used at one time. Inventory software using Kanban will permit you to run many diverse reports so managers can plan, improve, and organize their workflows.
- **Removes Need for Storage in Production Area:** When you are using Kanban inventory storage methods, parts only end up on the production line when they are going to be used. That means you have additional space near the production line so the workers can more effortlessly assemble the products your customers need.
- **Reduction of Obsolete Inventory:** If a business makes too much inventory, it is frequently going to end up sitting in a stockroom anywhere for who knows how long up until it is discarded, sold, or given away. When stock isn't used because it is not affecting swiftly, it can also make it hard to control if any units are damaged. This isn't something you want to discovery out six months later when there's tiny you can do about it.



Notes

MODULE – 4

FMCG and Automotive
Goods Handling



Notes

Material Storage

- **Overproduction is Prevented:** If you only pull components as you required them driven by customer demand, that also means that additional products aren't working to be made that need to sit somewhere until they are purchased. Kanban makes it less possible that you will end up with additional products that are not selling.



INTEXT QUESTIONS 18.10

1. Kanban is one of the most choice for monitoring your level of inventory
(a) Logic (b) raw
(c) numeric (d) symbolic
2. What is prevented in Kanban system
(a) LIFO (b) Overproduction
(c) FIFO (d) None of the above
3. When using Kanban Inventory storage method, the additional space is near
(a) Transport line (b) Inventory line
(c) Storage line (d) Production line
4. permits you to run many diverse reports
(a) Inventory software (b) Inventory system
(c) FIFO system (d) LIFO system



WHAT HAVE YOU LEARNT

- Kanban in inventory management
- Electronic Kanban Systems
- Kanban as a Visual Tool
- Common Challenges in Inventory Management and Supply
- Kanban Inventory System Guidelines
- Benefits of Kanban Inventory Management System
- Major Challenges of Kanban Inventory Management
- Good reasons to use Kanban Inventory Managements



TERMINAL EXERCISE

1. What is Kanban?
2. Explain Electronic Kanban System.
3. What is your understanding on Kanban as a Visual Tool?
4. What are the common challenges in Inventory Management?
5. Explain – Kanban Inventory System Guidelines.
6. List out the benefits of Kanban Inventory Management.
7. What are the major challenges of Kanban Inventory Management?
8. Give good reasons to use Kanban Inventory Management.



ANSWER TO INTEXT QUESTIONS

18.1

1. (d) Kanban
2. (b) Lean manufacturing system
3. (a) Pipeline system
4. (c) Transparent
5. (b) Digital Kanban system

18.2

1. (c) Signal and Response system
2. (a) T-Kanban
3. (d) P-Kanban
4. (b) To stock pile
5. (a) Kanban system

18.3

1. (b) Inventory flow
2. (d) Kanban Inventory Management
3. (a) Block in overflow
4. (c) Kanban Inventory system
5. (b) Quick status report



Notes

MODULE – 4

FMCG and Automotive
Goods Handling



Notes

18.4

1. (a) E-Kanban
2. (b) Electronic system
3. (c) Online and in Realtime
4. (d) Economical
5. (e) Minimum time and Effort

18.5

1. (b) Kanban
2. (c) Sign post
3. (d) Visual signals
4. (a) Visual Management

18.6

1. (c) Stock
2. (d) Measuring physical Asset
3. (a) Stock Turnover
4. (b) Inadequate software
5. (c) Manual Documentation

18.7

1. (d) Factories
2. (a) Kanban
3. (c) Signboard
4. (b) 6
5. (c) Pull system and Visual cards

18.8

1. (c) Bill Board
2. (b) Visual signals
3. (a) Product Designs
4. (c) Products and Components
5. (b) Flexibility

18.9

1. (b) Kanban
2. (d) Signalling Port
3. (c) Dynamic
4. (a) When more activities are interconnected
5. (b) Monitoring

18.10

- 1. (a) Logic
- 2. (b) Overproduction
- 3. (d) Production line
- 4. (a) Inventory Software

GLOSSARY

LIFO	The Last-In, First-Out (LIFO) method assumes that the last unit to arrive in inventory or more recently is sold first.
FIFO	The First-In, First-Out (FIFO) method assumes that the oldest unit of inventory is the first sold.
E-KANBAN	Electronic Kanban allows users to track the history of a project and make changes without losing any data.



ACTIVITY

Imagine you are an Inventory Manager. How do you plan the Kanban system? Give a detailed activity plan.

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Notes

