**Consolidation answers**

# True or false?

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| **Question** | **True or false?** |
| JIT aims to minimise inventory levels by producing goods only when needed. | True |
| MTO involves producing goods in anticipation of customer demand. | False |
| MTS is suitable for products with high demand variability. | False |
| Lean manufacturing is often associated with JIT. | True |

# Case study analysis

1. **A company is considering switching from MTS to JIT for its product line.**
   1. **What are the potential benefits and risks of this transition?**

Switching from made-to-stock (MTS) to just-in-time (JIT) manufacturing can bring significant changes to a company’s operations.

Potential benefits:

* Reduced inventory costs: JIT aims to minimise inventory levels, leading to lower storage costs, reduced risk of obsolescence and less capital tied up in stock.
* Improved efficiency: JIT streamlines production processes, reducing waste, improving resource utilisation and potentially shortening lead times.
* Increased responsiveness: With lower inventory levels, companies can be more agile and responsive to changes in demand, allowing for faster adaptation to market trends.
* Better supplier relationships: JIT requires close collaboration with suppliers, fostering stronger relationships and potentially leading to better pricing and more reliable deliveries.

Potential risks:

* Supply chain disruptions: JIT relies on timely deliveries from suppliers. Any disruptions in the supply chain, such as delays or shortages, can quickly halt production.
* Implementation costs: Transitioning to JIT can involve significant upfront costs, including investments in new systems, training and process redesign.
* Increased coordination complexity: JIT requires meticulous coordination between different parts of the production process and with suppliers. This can be complex and challenging to manage.
  1. **What factors should be considered when making this decision?**

Demand predictability: JIT works best for products with stable and predictable demand. If demand fluctuates significantly, it can be challenging to maintain the smooth flow of materials and production required for JIT.

Product variety: High product variety can make JIT more challenging, as each product may have different material requirements and production processes.

Supply chain factors:

* Supplier reliability: JIT relies on timely deliveries from suppliers. It’s crucial to have reliable suppliers who can consistently meet quality and delivery requirements.
* Supplier relationships: Strong relationships with suppliers are essential for JIT success. Collaborative partnerships can ensure smooth communication and coordination.

Internal capabilities:

* Production process: JIT requires a highly efficient and flexible production process. Companies need to assess their current production capabilities and identify areas for improvement.
* Employee skills: JIT requires a skilled workforce that can adapt to changing demands and work collaboratively. Companies may need to provide training to employees on JIT principles and practices.

Market conditions:

* Competitive landscape: Adopting JIT can give companies a competitive advantage by enabling them to offer lower prices, higher quality or faster delivery.
  1. **How can the company mitigate the challenges associated with JIT implementation?**

Supply chain disruptions:

* Diversify suppliers: Do not rely on a single supplier. Having multiple sources for key components reduces the impact of disruptions from one source.
* Build strong supplier relationships: Collaborate closely with suppliers, sharing forecasts and working together to improve quality and delivery reliability. Consider long-term contracts.
* Develop contingency plans: Have back-up plans in place for potential disruptions, such as alternative transport routes or temporary storage facilities.

Demand forecasting challenges:

* Invest in forecasting tools: Utilise sophisticated forecasting software and techniques to improve demand prediction accuracy.
* Collaborate with customers: work closely with customers to understand their future needs and incorporate that information into forecasts.
* Flexible production: design production processes that can be easily adjusted to accommodate changes in demand.

Implementation costs:

* Phased approach: Implement JIT gradually, starting with a pilot programme in a specific area of the business. This allows for learning and adjustments before a full-scale rollout.
* Cost-benefit analysis: Conduct a thorough cost-benefit analysis to ensure that the potential benefits of JIT outweigh the implementation costs.
* Prioritize investments: Focus on the most critical investments first, such as upgrading systems or training employees.

Increased coordination complexity:

* Cross-functional teams: Establish cross-functional teams to manage the transition and ensure that all departments are aligned.
* Clear communication: Implement clear communication channels and protocols to facilitate information sharing between departments and with suppliers.

1. **A company is experiencing high inventory costs and frequent stockouts.**
   1. **Which production system might be more suitable for this company?**

Lean manufacturing: Focuses on eliminating waste in all aspects of the production process. This includes reducing inventory, but also streamlining processes, improving quality, and optimising resource utilisation. Lean principles can be applied even before fully transitioning to a JIT system. By identifying and eliminating waste, they can start to reduce inventory costs and improve their ability to respond to demand, thus reducing stockouts. Lean is a good stepping stone towards JIT or a valuable system in its own right.

Made-to-order (MTO): If the products are customisable or have highly variable demand, MTO could be considered. In MTO, products are only made after a customer order is received. This eliminates the risk of producing goods that don’t sell, thus addressing high inventory costs. It also ensures that products are made to meet specific customer needs, which can indirectly help with stockouts of the wrong product. However, MTO can lead to longer lead times, which might not be acceptable for all customers.

* 1. **What changes would need to be made to implement this system?**

The company should likely adopt a hybrid approach, incorporating elements of lean and potentially working towards JIT.

Focus on forecasting: Invest in better forecasting tools and techniques. Analyse historical data, market trends and customer feedback to improve demand predictions.

Implement lean principles: Start by identifying and eliminating waste in their current processes. This will help reduce inventory costs and improve efficiency.

Consider a pilot programme: If considering JIT, start with a pilot programme in a specific area of the business. This will allow testing and refining JIT implementation before a full-scale rollout.

* 1. **How can the company measure the effectiveness of the new system?**

The effectiveness of the new system can be measured by checking customer satisfaction and comparing manufacturing data with the before and after to determine if improvements have been made.

# Knowledge check

**1. What are the key principles of JIT?**

* Continuous improvement: a process of identifying and eliminating waste, and encouraging employees to learn and develop;
* on-demand production: producing goods when they are needed, rather than stockpiling them;
* inventory minimisation: keeping inventory levels low to reduce storage and management costs;
* supplier management: building long-term relationships with suppliers to ensure a reliable supply of defect-free components.

**2. How does MTO differ from MTS?**

* MTO (made-to-order) means production only begins after a customer places an order, while MTS (made-to-stock) means products are manufactured in advance based on anticipated demand and kept in inventory ready for sale; the key difference is when production starts relative to receiving a customer order.
* MTO is more suited for customised products with variable demand, while MTS is better for predictable demand with standardised products.

**3. What are the potential challenges of implementing JIT in a traditional manufacturing environment?**

* reliance on accurate demand forecasting;
* supplier dependency;
* potential for production disruptions due to delivery delays;
* resistance to change from employees;
* lack of flexibility to handle sudden demand fluctuations;
* the need for significant process improvement;
* potential quality control issues due to minimal inventory buffers.

All require a high level of coordination and commitment from both management and suppliers to be successful.

**4. How are rolling averages used in stock control?**

Rolling averages, also known as moving averages, can be used in stock control to smooth out volatile sales data and help identify trends. By constantly recalculating the average demand over a specific period (e.g. 30 days), businesses can better forecast future demand and make more informed decisions about when to order new stock.