

# An Integrated Inventory Production System In A Three-Layer Supply Chain

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## Summary

With growing focus on supply chain management, firms realise that inventories across the entire supply chain can be more efficiently managed through greater co-operation and better co-ordination. This paper deals with inventory and production co-ordination in a three-layer supply chain involving suppliers, manufacturers and retailers. Each stage may have more than one firm. It is assumed that the cycle time at each stage is an integer multiple of the cycle time of the adjacent downstream stage. In addition, the produced lot at each stage is sent to the adjacent downstream stage in equal shipments. Shipments are sent as soon as they are produced and there is no need to wait until a whole lot is produced. A cost minimisation model and its solution procedure are derived. A numerical example is presented for illustrative purposes. This policy leads to considerable savings as compared to the scheme that allows shipments only after the whole lot is produced.

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