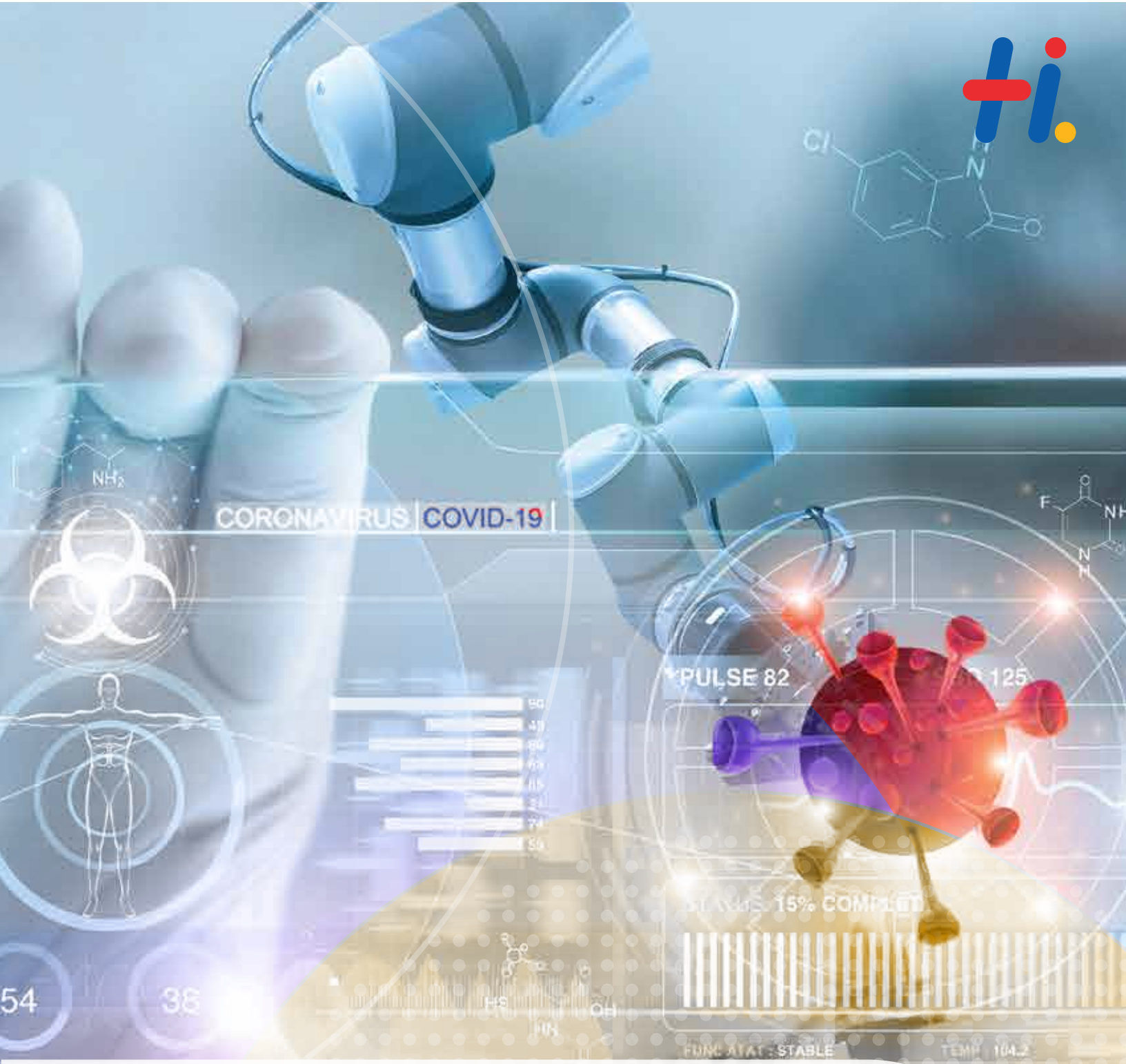

COVID-19 Action Guide

Leveraging SAP solutions to reduce supply chain disruptions with Demand Driven Replenishment

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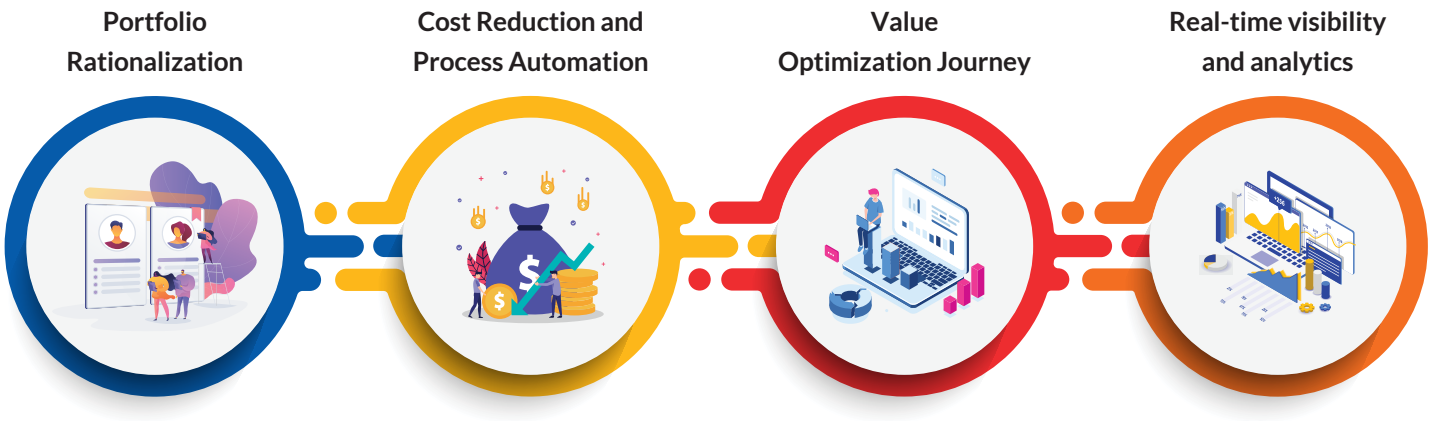
Introduction

COVID-19 has exposed the fragmentation of supply chain IT systems and processes. There is a higher dependency on manual operations in keeping planning and execution systems synchronized and taking business decisions based on limited constraints and profitability. This pandemic is spawning threads on supply chain planning and execution:

- How do we address issues arising due to the crisis with little or no cost impact on CAPEX?
- How do we prepare the organization for handling demand fluctuations and order cancellations or delays?
- How do we reduce the supply chain costs?
- How do we minimize supply chain disruption?
- How do we fulfill customer orders when there are frequent disruptions in production plan or material supplies?
- How do we continue engaging with suppliers and adhere to purchase commitments?
- How do we ensure supplier performance in terms of risks, reliability and quality while re-negotiating or rationalizing suppliers?

This paper focuses on leveraging SAP solutions by helping customers in addressing these concerns and optimizing Plan to Perform (Supply Chain Planning) process by Demand Driven Replenishment with the following initiatives



Demand Driven Replenishment (DDR) focuses on breaking functional silos of logistics, procurement and manufacturing by planning fulfillment based on prioritized demands. It covers the entire spectrum of demand sensing, shaping and response. We evaluate future-aligned SAP solution options for enabling demand replenishment using Integrated Business Planning (IBP).

Demand Driven Replenishment

Demand Driven Material Requirements Planning is a formal multi-echelon planning and execution method to protect and promote the flow of relevant information through the establishment and management of strategically placed decoupling point stock buffers. Demand Driven Material Requirements Planning (DDMRP) combines some relevant aspects of Material Requirements Planning (MRP) and Distribution Requirements Planning (DRP) with the pull, visibility and variability reduction focused on Lean, Theory of Constraints, and Six Sigma. These elements are successfully blended through key points of innovation in the DDMRP method.

The organizations working in manufacturing and consumer industry, supply chain management or logistics have been exposed to the growing buzz around DDMRP, as popularized by the Demand Driven Institute. SAP has the best of breed solution available in S/4HANA and IBP response and supply planning to provide advanced MRP solutions.

Definition

DDMRP is a new formal planning and execution technique first articulated in the third edition of Orlicky's Material Requirements Planning (Ptak and Smith, Mc-Graw-Hill, 2011). The entire foundation of DDMRP is based upon the connection between the creation, protection and acceleration of the flow of relevant materials and information and return on investment.

DDMRP Buffers

DDMRP revolves around the strategic stock positions called buffers. These buffers are placed at critical "decoupling points"

Shock absorption

Significantly reduce the variability of both supply and demand

Lead time compression

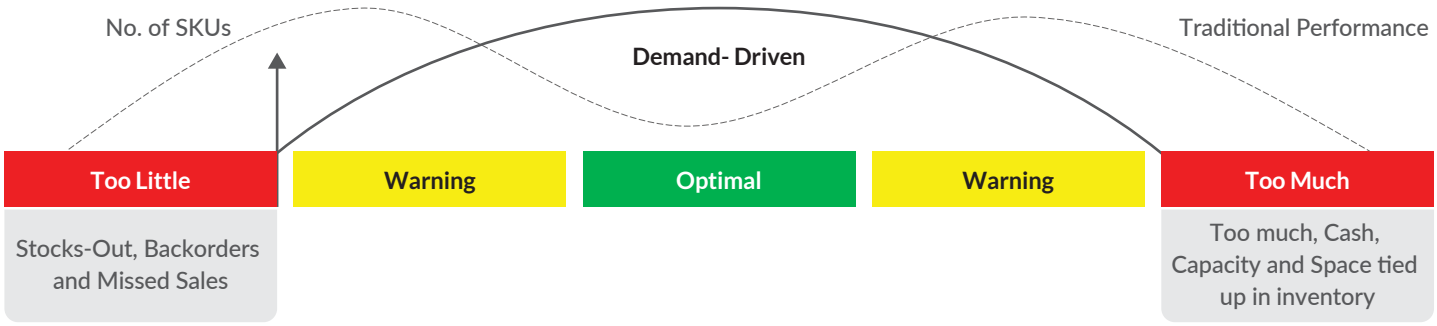
Lead times are instantly compressed by decoupling the lead times of the suppliers from the consumption side of the buffer

Supply order generation

All relevant demand + supply + on-hand are combined at the buffer to produce an "available stock" equation for supply order generation.

The buffers are the heart of the planning system in DDMRP

The primary objective is to enable the inventory flow in a way where rate of supply is aligned to rate of demand throughout the supply chain horizon. This inventory flow is impacted where demand is volatile and supply is constrained (long lead-times, large batches, capacity constraints, etc.) resulting in non-fulfillment of customer orders, higher inventory maintenance, and higher costs.



Traditional Planning

Forecast-driven MRP system produces a bi-directional inventory distribution resulting in:

- Unacceptable inventory performance
- Chronic and frequent shortages
- Excess inventory of low flow materials
- Higher inventory cost

Demand-driven planning

Demand-driven MRP system eliminates the shortcomings of traditional MRP:

- Fulfill customer service requirements through right sized inventories and flow
- Avoid constant firefighting & expediting
- Using inventory as an asset to generate returns

Strategies and Coverage

There are three strategies followed in DDR – position, protect and pull. These are further detailed out in five components of DDMRP. However, the coverage in SAP IBP and S/4HANA varies. The pictorial view of its coverage across components are given below.

1 Position

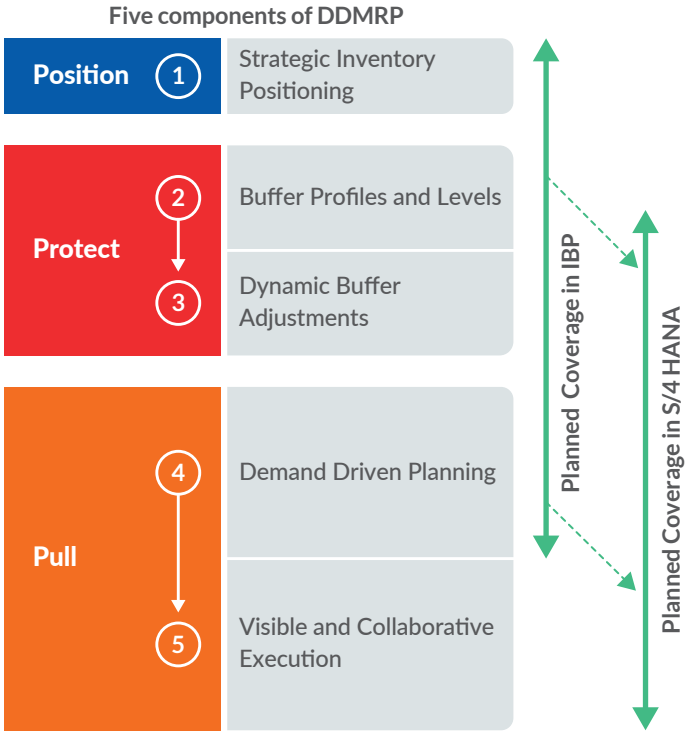
- Determine where in supply network to place buffers

2 Protect

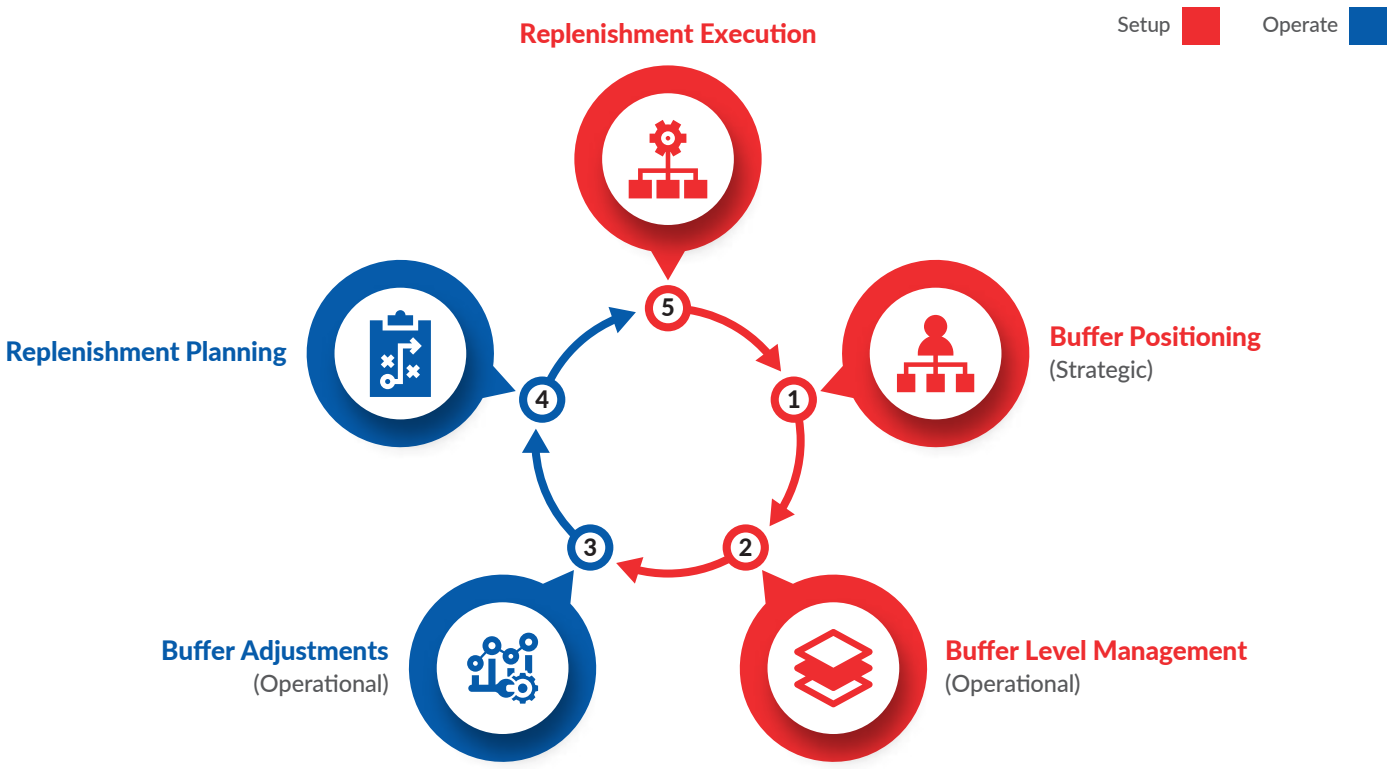
- Set up Buffer Profiles (master data) and determine sizing of each buffer according to lead times, demand and supply variability
- Adjust buffer sizes based on actual lead times, actual and projected demand

3 Pull

- Generate replenishment orders at decoupling points based on actual demand (consumption-based)
- Generate orders between decoupling points using classic MRP dependent demand logic
- Prioritize orders in real-time according to actual buffer penetration
- Leverage order priorities in executing replenishments (distribution, production, procurement)



The end-to-end process flow for SAP Demand Driven Replenishment is outlined below.



The strategic tool to protect the flow in any given environment is buffer management. The system gains the ability to compress the lead time quickly by decoupling at critical points and isolates from being transferred at those points. Utilizing the buffering method of DDMRP at decoupling points creates an effective and intuitive planning mechanism. The dynamic buffer management and adjustments have been effective functionalities available in SAP planning solutions.

Median Best in class

Parameters/ Industry	Overall		Life Sciences		Chemicals		Consumer Packaged Goods		Industrial Manufacturing	
Inventory reduction (%)	-31	-60	-30	-49	-32	-52	-36	-60	-26	-54
Service level increase (pts)	11	45	8	16	1	7	2	38	17	45
Lead time reduction (%)	-22	-85	-25	-65	-12	-40	-7	-85	-60	-85

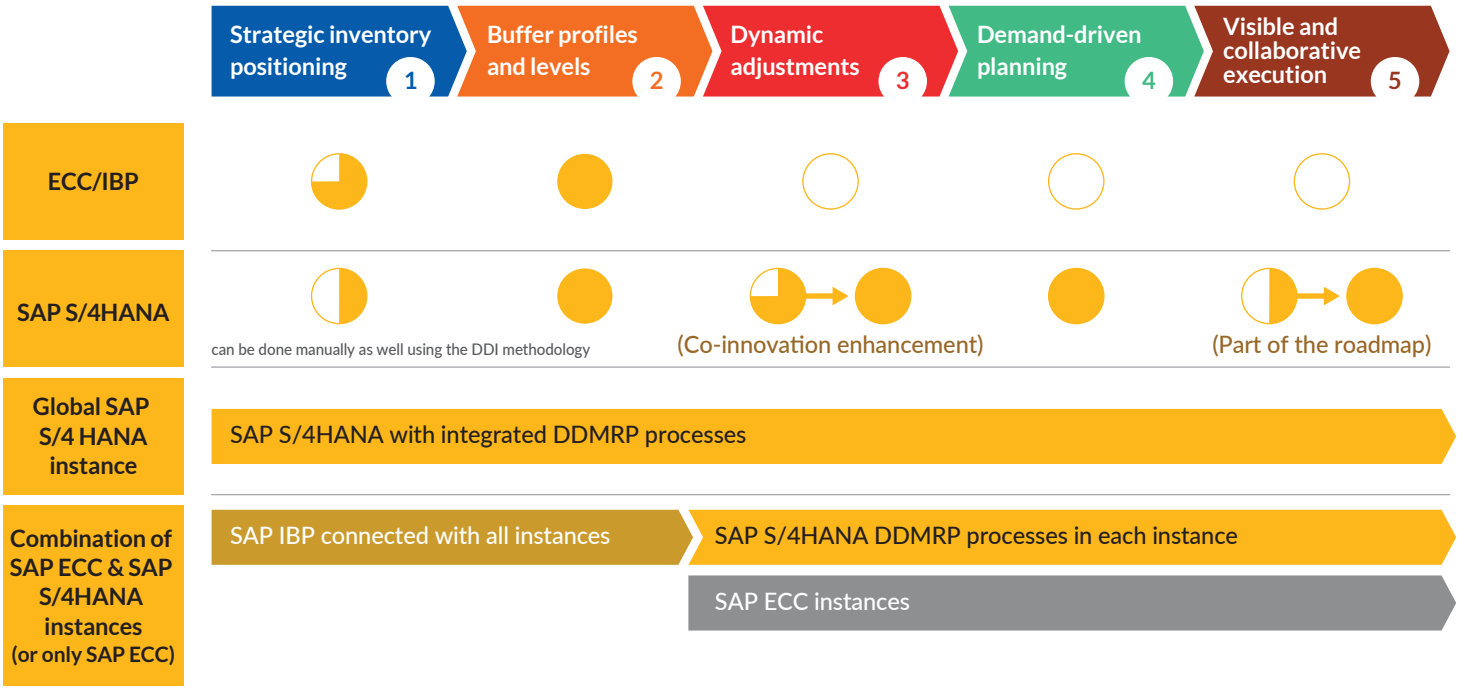
The Demand Driven Institute has also published DDMRP implementation benefits based on case studies across multiple industries that show potential gains.

Business Cases and Benefits

Applicability	ECC Customers	S/4HANA Customers
Business cases	• ECC Environment: Improved competitive edge and business performance (lead times, on-time delivery, order fill rates) • Lean Manufacturing: Chronic shortages and Improved material synchronization • Multi-level Bill of Material (BoM): Chronic shortages, constant expediting, and rescheduling	• Prioritized view on material flow issues • Real-time alerts based on current stock requirements • System generated solution proposal • MRP can run frequently as demands arise • Demand information is propagated faster through the supply chain
Benefits	• Collaborative execution support • DDMRP will become the key difference between success and failure of the Lean effort • DDMRP helps in providing stability, reduces technical nervousness and the ongoing flood of MRP reschedules, provides high parts, and handles material availability and shortages	• Clear material visibility increases user acceptance and efficiency • Proactive decision making in response to fluctuating demands • Flexible tailoring of available capacities and receipts • Real-time inventory monitoring & automating procurement proposals
Potential Value	• Faster realization of goals due to cloud solutions • Improvement of business KPIs • Enable easy and real-time synchronization of data for business users • Reduce inventory costs	• Reduce customer service & support cost • Increase annual procurement savings • Improve on-time delivery performance • Reduce revenue loss due to stock-outs • Improve inventory accuracy

Conclusion

SAP IBP is a key enabler to reduce the supply chain costs by implementing the DDMRP function and consolidating the supply chain IT footprint to SAP ECC. This gives the ability to handle demand fluctuations in real-time and re-plan inventory allocations after order delays and cancellations with minimum impact on costs and efforts. It can help in lifting the sales as well as operational efficiency. Response and supply planning can further manage allocations smartly. It can help plan demand prioritization intelligently to reduce frequent disruptions in production plan. Supplier collaboration can ensure constant communication on projections and demand confirmations in real-time. It builds a long-term relationship with key suppliers and helps drive working capital optimization and contract revisions.



Key Takeaways

Agile Supply Chain helps to leverage operational efficiency by ensuring optimal responsiveness, competency, flexibility and quick turnaround in the daily supply chain model

DDR helps to handle demand fluctuations by focusing on avoiding potential shortfalls and eliminating excessive stocking of inventory

DDR leverages real-time data against demand forecast to improve the overall efficiency and productivity. SAP S4H achieves the same with embedded solutions of demand forecast

Connected supply chain powered by SAP IBP brings more of the next-gen technology in the form of AI, ML and IoT and DDMRP that helps planning demand prioritization intelligently to reduce frequent disruptions in supply chain

Customers can start prototyping the IBP solution with selective BU or process area. Though it may require investments, but it is worth considering the overall benefits. There is a pre-configured solution available to reduce overall timelines and associated risks. This can complement other supply chain solutions and address the process gaps in the interim period. It is really an opportunity to reduce the dependencies on multiple supply chain systems and reduce TCO

Customers using limited capabilities of IBP solution i.e. Demand or Inventory Optimization or Sales and Operations Planning (S&OP) can leverage its full potential by extending it to advanced replenishment solution. It can ideally be configured/re-configured in a very short span of time with minor involvement from IT. This gives an opportunity to remove dependency on varied solutions from multiple vendors

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