

MRP - Solution or Problem

Traditional forecast push MRP models that companies operate around the world to manage their factories and supply chains are totally ineffective for business today and drive significant cost into the organization. All the time we hear of companies having high levels of inventory, yet the organization has poor customer service levels. Why is this?

Does your company suffer from any of the following issues?

- Poor inventory performance; stock-outs while carrying excess levels of inventory
- Unacceptable customer service levels
- High expedite expenses, such as and premium charges from suppliers and air freighting
- Constant changes to supplier and production schedules
- Reliance on Excel spreadsheets to establish, confirm and monitor supply chain requirements
- Stressed planners and buyers

Most manufacturing companies today use some form of MRP (Material Requirements Planning) to determine what to build, or purchase, in what quantities and when it is required. MRP was envisioned in the 50's, codified in the 60's and commercialized in the 70's, however, after over four decades the fundamental algorithms utilized by MRP have remained unchanged. New functionality and other planning tools have been developed as add-ons to enhance MRP, but the basic principle of how MRP works has remained unchanged. In its day, MRP provided the solution to be able to time-phase all procurement, manufacturing and distribution demand requirements. As forecast error and demand volatility increased, safety stock functionality was added in later years to mitigate against increasingly poor forecasts and demand variability

Demand Driven Material Requirements Planning (DDMRP) is the solution for supply chain planning in the 21st century. DDMRP provides companies with the operational planning and execution tools to revolutionize their supply chains, right-sizing inventory at each strategic location across the supply network. These strategic inventories decouple the entire supply network, absorbing inherent variabilities and volatilities enabling visibility, control, responsiveness and agility.

Achievable Benefits of DDMRP

65%

Inventory Reduction

90%

Obsolescence Reduction

80%

Lead Time Reduction

400%

Inventory Turns Improvement

100%

Customer Service Performance

25%

Increased Planner Availability

To understand the problem that we have with MRP today we need to understand the basic principles of how MRP determines the supply order requirements. First, we need demand of Finished Goods which is provided in the form of known sales and a forecast. This demand is exploded through the dependent Bill of Material (BOM) down to all purchased parts. At each level in the BOM, supply order requirements are determined taking account of on-hand inventories, lead time to supply (procure or manufacture) and expected receipts. Due to the Parent-to-Child dependency through the BOM, these supply order requirements are directly coupled to any change in demand or forecast for the Finished Goods. Any change in demand will drive an immediate change in the supply order requirements at each and every level of the BOM. As a result, planners and buyers spend their time planning, replanning, and replanning again, sometimes returning to their original plan. A part can go from being in excess to being a critical shortage, or vice versa, in the space of a day simply due to changes in demand or the difference between what was expected and what has sold. This system nervousness drives planners and buyers crazy.

Since the inception of MRP, supply chains have dramatically evolved from being simple linear based chains into more complex multi-node global supply networks. As network complexity has increased so too have the volatility levels in demand and supply. The synchronization of supply and demand is further complicated as customer tolerance times decrease, the number of parts with long lead times increase, product life-cycles become shorter and product complexity increases. This is the New Normal of today's business landscape.

Year	Demand Volatility	Forecast Accuracy	Supply Chain Complexity	Customer Tolerance Time	Long Lead Time Parts	Product Life Cycle	Product Variety	High Inventory Turns
60's & 70's	Low	High	Low	Long (Months)	Few	Long (Years / Decades)	Low	No Concern
2010 +	High	Low (Falling)	High	Short (Days)	Many	Short (Months / Years)	High	Business Priority

We expect MRP to work in this New Normal, and then we knowingly drive it with an inaccurate forecast. Best-in-class companies measure forecast accuracy at around 75%, yet we continue to plan and execute production environments and our global supply networks based on a level of accuracy that is just not acceptable. Why do we plan and execute the entire supply network to this level of accuracy? MRP is entirely dependent on an unreliable forecast so it's no wonder that MRP is unable to achieve the levels of inventory performance that we expect and require today.

The issues that the New Normal brings are further compounded by the fact that MRP's planning logic further amplifies volatility and system nervousness as demand and supply flow through the entire network driving higher levels of inventory, stock-outs and unacceptable customer service performance. MRP is a great application for transactional activity, but due to a combination of 1960's planning logic and working in the New Normal, MRP has become a major contributor to the Bullwhip Effect and it no longer has the capability to provide the right information to make the right decisions within today's global supply networks.

DDMRP is the world standard for Demand Driven for planning, scheduling and execution of the entire supply network; from end users and distribution centers to manufacturing and multi-tiered suppliers. DDMRP is a Multi-Echelon Material and Inventory Planning and Execution system that enables a company to become Demand Driven, dynamically sizing and adapting supply networks and production systems through sensing changes in demand patterns and the responsiveness of supply.



“What if we don’t change at all ...
and something magical just happens?”

DDMRP and its Demand Driven Operating Model provide the methodology to decouple the entire supply network at strategic inventory locations creating independence between supply and demand. Through structured mathematical design, decoupled strategic Inventory buffers have the capability to absorb demand volatilities and supply disruption, fully dampening the Bullwhip Effect restricting its transfer through the supply network. Demand signals between consuming and producing nodes of the supply network are then stabilized with inventory availability being significantly improved. Even if a supplier is late or there is a demand

spike, the mathematical design of the buffer will enable these inherent supply chain variabilities to be absorbed without disruption to supply.

In DDMRP the forecast, which is still relevant for business planning and S&OP purposes, is not used for supply order generation where only true demand is utilized. The planning logic utilized by DDMRP still explodes demand through a BOM, however, the demand explosion will end at BOM levels that have been strategically decoupled by a DDMRP buffer. Further explosion of demand will only take place when the associated buffer has been depleted down to the replenishment level. Essentially, the DDMRP model works by balancing on-hand inventories, current open supply (anticipated receipts) and Qualified demand against a dynamically mathematically defined inventory Buffer system. Qualified demand is the demand that is currently due and known demand in the future that will spike above set thresholds during the planning time horizon associated with the supply lead time of the inventory item.

Volatility in demand is absorbed by the buffer as supply order generation only takes place when the buffer inventory ($\text{On-Hand Inventory} + \text{Open Supply} - \text{Qualified Demand}$) drops below the defined replenishment threshold. DDMRP further restricts transference of the demand volatility by always ensuring that the associated due date for supply is based on the actual lead time of the part and not the point in time when MRP anticipates a need for inventory to maintain safety stock levels. The need to expedite and constant changes in supply schedules will be all but eliminated providing greater order stability to the supplier enabling a direct improvement in overall supply performance.

As a complex adaptive system, the DDMRP model adjusts its behavior in response to its environment on a daily basis with the strategic inventory buffers dynamically resizing as they take account of demand patterns and supply performance. As a result, the strategic inventory buffers are always fully synchronized and balanced to the exact needs of the marketplace and the performance of the supply network.

With strategic buffers in place, DDMRP ensures material availability and provides stability in upstream demand signalling. The flow of relevant information enables correct decisions to be made at the right time reducing variability, improving supply chain visibility and control across the entire network. Lead times will be compressed, inventory right-sized driving an overall inventory reduction, and the improvement of customer service levels. Bottom line, DDMRP provides a return on investment.

Global organizations such as Unilever, Michelin, Coca-Cola, Louis Vuitton, BT (British Telecom) and others small to large have already adopted DDMRP enabling improved market responsiveness, reduction in lead times, elimination of variability and volatility throughout their entire supply networks.

High Impact Coaching & Strategies are Demand Driven industry specialists in the area of speed, response and continuous improvement throughout the entire supply chain. We diagnose before we prescribe, providing you with a basis for true Demand Driven transformation that is specific to the needs of your business. Through our service provision of Consulting, Education and Software related to Demand Flow Technology (DFT) and Demand Driven MRP (DDMRP) we cover all the strategic, tactical and operational aspects that any manufacturing and supply chain company would require to become a world-class Demand Driven organization.

We have a long and respected heritage working with clients around the world implementing Demand Driven transformations within factories and global supply networks. Over the years we have been forced to define specific attributes, parameters and processes within our supply network designs to “trick” the likes of Oracle, SAP, Infor, and Epicor etc. into becoming Demand Driven. After years of constantly fighting these MRP systems to do the right thing, we are now able to by-pass the MRP planning process utilizing our software TheONE DDMRP to drive significant increased financial performance for our clients around the world.

TheONE DDMRP is fully compliant software that enhances existing MRP systems by replacing traditional planning logic with a series of Demand Driven planning and execution tools that promote increased visibility, responsiveness and agility through the entire supply network. Average inventory levels will be reduced while customer service levels are increased, lead times will compress and supply chain variabilities will be absorbed. The age-old problems characteristic of MRP across today’s global supply networks will become a thing of the past.

For over 15 years, High Impact Coaching & Strategies has made the “impossible” a reality for over 500 clients across 20 different countries. Our consulting and software group has decades of combined experience in supply chain and manufacturing transformations, and our thought leaders have held senior leadership and executive level positions in leading companies around the world.

Are you looking to drive significant bottom line growth for your business, improve customer service levels in addition to improving your working capital position? Yes? Well, we are ready to help you to become Demand Driven, contact us today and speak with one of our industry experts.



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