5
Proposed Demand Driven Supply Chain Model

5.1
Introduction

Based on the three demand driven components (e.g. demand management, supply and operations management and product lifecycle management) and the categories within each component, identified in the previous chapter, a 5 level maturity model was developed to be used as the basis to perform assessment of an organization current and desired future states.

It is proposed the following levels for the maturity model:

- **Level 1 – Basic Push operation**

  In this level, only some of the foundations of a good push operation are in place, but the organization does not have all of them well implemented or misses important ones.

- **Level 2 – Optimized Push operation**

  In this level, all foundations of a good push operation are in place and the organization captures benefits from the good execution of push principles.

- **Level 3 – Hybrid Push-Pull operation**

  In this level, the organization starts to move from a pure Push system to a hybrid Push-Pull system, through implementation of some of the demand driven concepts.

- **Level 4 – Advanced Demand driven (Pull) operation**

  In this level, the organization had already implemented most of the demand driven concepts and captures benefits from fulfilling customer demand in a cost effective way.

- **Level 5 – Optimized Demand Driven (Pull) operation**

  In this level, the organization has not only implemented the demand driven concepts internally, but also expands them to the whole supply chain where it operates, and experienced proven financial and service improvements.

5.2
Demand Driven Supply Chain Maturity Model

The detailed Demand Driven Maturity Model is presented below:

Component: Demand Management

Category: Statistical Forecast

Level 1:

- No statistical forecast methods or only very basic models (e.g. moving average) are used to plan business volume.
- Forecast is usually generated based on management experience and / or annual volume target growth.
- No formal demand planning organizational structure in place or planners are only part time assigned to the forecast function.
- Lack of right skill set for demand planners inside the organization.
- Demand planners and forecasts have low credibility from other functional areas inside the organization.
- Performance of demand planning and forecast are not tied to compensation and rewards.
- Low or no senior management support to demand planning function.
- No forecast tool is in place to automate statistical forecast process.
- No standard metrics are used to measure forecast accuracy, identify improvement opportunities and communicate performance to the entire organization.

Level 2:

- Statistical forecast methods (e.g. Exponential Smoothing, Box-Jenkins, Holt and Holt-Winters) are used to plan business volume for short term period (1 week to 4 months). Combined forecast methods are also used to improve forecast accuracy.
- Linear regression and econometric methods are used to plan business volume for long term forecast (12 months to 5 years).
- Forecasts are presented using prediction intervals and scenarios to cope with uncertainty.
- Formal planning organizational structure is in place with clear roles and responsibilities. There is updated job description for demand planners and managers.

- Demand planners have right skill set (quantitative, computer, interpersonal skills and process management).
- Planners and generated forecasts have high credibility inside the organization and are recognized as an added value function.
- Performance of planners and forecast are tied to compensation and rewards.
- Senior management understands, support and value demand planning function.
- Forecast tools are in place for both short and long term forecast, and are used to automate statistical forecast process, increasing planners capability to simulate different models.
- Standard key performance indicators (e.g. Forecast accuracy, forecast quality, MAPE, Mean Absolute Deviation - MAD, Mean Squared Deviation - MSE, etc.) are used to measure forecast results, identify improvement opportunities and communicate performance to the entire organization.

Level 3:

- Customers and channels are analyzed and clustered to identify and apply the best demand planning method for each cluster.
- Based on demand variability and sales volume, planners understand SKU profile and apply appropriate forecast methods (same as in level 2) for SKUs with low variability, and make to order strategy (pull system) for SKUs & customers with high variability (less than 50% of sales volume).
- For high variability customers, POS information is used to understand consumer profile and trigger replenishment process.
- Planners work closely with customers' demand planners to align weekly and monthly promotion calendar and market activities.
- Performance of planners is tied to compensation and rewards.
- Senior management understands, support and value demand planning function and use it to drive business results.
- Both statistical forecast tool and demand visibility in the supply chain are in place to generate forecast and define replenishment needs.
- Standard multidimensional metrics are used and cover forecast accuracy, customer service, inventory levels and costs, and are aligned with different echelons (e.g. customers) to share performance goals in the supply chain.

Level 4:

- Demand planners have all required information to sense actual demand and use it as an input to the planning process.
- More than 60% and less than 80% of the company sales volume is sold using a pull system.
- Management has a clear focus and goal to reduce demand variability due to end of the month loading process, price discount to high volume customers or special consumer promotions (actual performance shows less than 40% variation between high and low peak weeks during the month) .
- Sales target quota is set in a way to reduce demand variability and stimulate sell out volume (not sell in to other supply chain echelons).
- Organizational structure aims to synchronize all internal functional areas to become integrated and agile, providing a high customer service level (perfect order greater than 95%) on a monthly basis.
- Cross functional teams are developed to reduce silos and barriers between functional areas.
- Senior management creates a company culture centered in customer service and satisfaction, and market driven.
- Order process is based on service level agreements for demand driven replenishment. DD replenishment builds on the principles of lean manufacturing and pull based replenishment.
- Actual demand signals and forecasts are shared with suppliers and logistics providers on a daily basis. Alerts and exceptions are used to trigger supplier response to critical demand variations.
- Metrics:
    - Perfect order greater than 95% and profitability increase.

Level 5:

- Same as in level 4, but in addition more than 80% of the company sales volume is sold using a pull system and only 20% remains using statistical forecast (mainly low variability SKUs).
- When used, statistical forecast shows high accuracy performance (greater than 90% on a SKU, week and plant level).
- Customer service mindset is full embedded in the company's culture and values.

- Marketing and Sales areas have a clear understanding about customers' needs and work closely with them to develop products and services that fit their needs.
- All new hired employees go through an orientation program in the first month to understand company's values, culture and behaviors as a demand driven organization.
- Actual demand information is available to all other functional areas (production, logistics, finance, procurement, etc.) through an IT tool and is used to make operational decisions that drives clear and proven bottom line results (reduction of inventory levels, unnecessary price reduction, reduction of product write off, etc.).
- Metrics:
    - Perfect order greater than 99%
    - Profitability increase
    - Supply chain cost as a percentage of net revenue shows clear downward trend in the last 3 years.

Component: Demand Management

Category: Sales and Operations Planning (S&OP)

Level 1:

- No formal S&OP process is in place.
- There are sporadic and informal meetings without formal agenda and participants.
- No integrated tool to support S&OP process.
- S&OP does not show clear bottom line results and improvements.
- Senior management does not understand, support or value S&OP as a management tool towards supply chain operational excellence.
- No standard or multifunctional metrics are revised and discussed during the meetings.

Level 2:

- There is a formal monthly Sales & Operations Planning (S&OP) process that covers: 1) Data gathering, 2) Unconstraint statistical forecast, 3) Demand Planning, 4) S&OP analysis, 5) Pre-S&OP meeting, 6) Executive S&OP meeting.

- There is a formal weekly Sales & Operations Execution (S&OE) meeting to review operational plans against actual performance, and manage demand and supply variability.
- All functional areas actively and regularly participate in the meeting (finance, logistics, manufacturing, sales, marketing, procurement, IT, quality, etc.).
- Supply and demand plans are reconciled to generate one integrated operational plan, but the focus is still on pushing volume in the end of the month.
- Senior management supports and value S&OP process.
- S&OP tool interfaces with supply and demand systems to collect data and present both plans and KPIs results.
- Standard metrics are reviewed, discussed and cover Order Fill Rate, Forecast Accuracy, Inventory Turns (volume and dollar), Functional costs vs. budget.

Level 3:

- Same as in level 2, but in addition monthly meetings discuss and revise separate plans for push and pull volumes and integrate them into one final plan.
- Demand signals are shared and aligned during the meeting across all functional areas.
- Standard metrics are reviewed, discussed and cover customer service, forecast accuracy (for push volume), demand error (for pull volume), working capital, total supply chain costs.

Level 4:

- S&OP is embedded in the organizational culture & processes and is seen as a value added process towards high customer service and lower supply chain costs by all functional areas.
- Beyond monthly meetings, there are also adhoc meetings whenever there is a demand signal captured in the market that deserves attention or requires specific action plan.
- S&OP team has a proven track record of inventory reduction, customer service increase and higher profitability.
- Ownership of meetings is held by all functional areas.
- There is some external collaboration both with customers and suppliers to bring extra market information and demand alignment to the supply chain.

- Analyze lift for demand shaping, includes promotion planning, price management, and contract compliance with key customers. Evaluate the "what if" demand shaping based on profitability, revenue, customer service, and working capital.
- Identify constraints, and demand shortfalls.

Level 5:

- Demand plans are aligned with customers and supply plans are aligned with key suppliers to ensure product availability and reduce variability through information sharing.
- An advanced S&OP tool integrates information of company demand & supply plans with both customers and suppliers IT systems.
- Event driven meetings are scheduled whenever there is a change in the plan or a supply-demand imbalance or specific market opportunities.
- Senior management understands and uses S&OP as a key weapon to drive alignment in the supply chain with customers and suppliers.
- The timing and rollout plans for new product introductions are an active process inside S&OP meetings.

Component: Demand Management

Category: Collaborative Planning and Forecast Replenishment (CPFR)

Level 1:

- No CPFR is in place with customers or suppliers.
- There are basic and completely independent transactional systems for the company and its customers and suppliers.
- Limited or no access to demand data from customers, and company does not provide demand data to its suppliers.
- Demand signals are not considered in the forecast process, and forecasts are not communicated to other supply chain partners.

Level 2:

- CPFR is piloted only in a very limited number of key customers (e.g. larger national accounts) or critical suppliers (e.g. top 5 suppliers), but it is not considered a key strategy for improving customer service and reducing supply chain costs.
- There are limited internal customer POS data available from key customers through EDI (Electronic Data Interchange), but the information

is not formally integrated with the demand planning process. (POS information is only used for other activities like category management).

Level 3:

- CPFR is implemented in different customers and suppliers that use a pull system , and there is a formal written business agreement between company and each of the trade partners to collaborate in a CPFR effort.
- Retailer POS data, causal information and planned events are used to create a sales forecast that support the joint business plan. The exception items that fall outside the threshold jointly defined by manufacturer and customer are discussed and resolved through email or formal meetings defined in the business agreement.
- An integrated decision support system exist and provide customer and market data between company and its trade partners (e.g. customers and suppliers).
- The demand signal is based on warehouse withdrawals and inventory levels for manufacturing companies and on POS information for customers.
- Results show clear reduction of cost and demand variability, as well as improved service.

Level 4:

- CPFR provides full visibility of customer forecasts, warehouse withdrawals and inventory levels, and POS data is used to adjust short term demand signal.
- Joint sales and orders forecasts are created and internally integrated into production and replenishment planning systems.

Level 5:

- A collaborative, integrated and automated communication process exists, and actual POS customer data is used to generate the short-term demand signal and long-term forecast.
- Advanced technologies (e.g. web based application) provide information seamlessly between trading partners to enable collaborative planning, evaluation, and execution.
- Full access to and use of individual trading partner information (e.g. POS data and shopper research) drives joint business planning and measures.

Component: Demand Management

Category: Vendor Managed Inventory (VMI)

Level 1:

- No VMI is in place with customers or suppliers.
- There is no demand and inventory visibility across different stakeholders in the supply chain.

Level 2:

- VMI is piloted only in a few customers or suppliers, but it is not considered as a key strategy for improving demand visibility and reducing inventory carrying costs.

Level 3:

- VMI is implemented and fully operational in customers with pull system like MEPs (Market Execution Partners), Authorized distributors, etc.
- There is a VMI tool that receives the daily demand and inventory volume by SKU, and based on internal replenishment algorithm, proposes the right volume quantities to replenish for each SKU location.
- VMI implementation shows clear reduction of inventory levels, smooth sales volume and better integration between company and customers or suppliers.

Level 4:

- Same as in level 3, but in addition VMI is implemented in all customers and suppliers that use pull system.
- VMI parameters are aligned and regularly reviewed by company and the supply chain partner to ensure suggested order meets business requirements.
- Master data (inventory and sales volume) is regularly updated and well maintained.
- Relationship between partners is well established and there is a clear understanding about VMI importance, operational model implemented and benefits generated.
- Trust between supply chain partners is clearly in place, reducing the requirement for order confirmation by customers.

Level 5:

- Same as in level 4, but in addition VMI tool is integrated with production planning tool and demand planning tool.

- Replenishment volume proposed by VMI automatically feeds the production planning process, reducing emergency production orders and unnecessary changeovers.
- There is proven operational improvement in other functional areas like production, transportation and distribution out of the VMI implementation.

Component: Supply and Operations Management

Category: Procurement

Level 1:

- There is no formal Procurement area in place or only a Purchase department with a pure transactional focus.
- Lack of procurement skills and capability inside the organization.

Level 2:

- There is a Procurement area who works very close and aligned with all functional areas (e.g. Supply chain, Marketing, Sales, etc.) to provide solutions to the business.
- Top critical suppliers are identified, mapped and carefully managed in terms of annual and monthly operational capacity, quality, cost and financial healthy.
- Service level agreements (SLAs) with critical suppliers are in place and define operational goals, penalties, contingency plans, etc.

Level 3:

- Procurement has a strategic role to develop and manage the supplier base to meet company's short and long term objectives in terms of capacity, quality and cost.
- Forecasted volumes are shared and aligned with suppliers with monthly meetings, where it is also reviewed supplier scorecard and discussed / aligned action plans to be implemented to improve performance.
- Volume from Pull ("make to order") system is also discussed and aligned with suppliers to meet right delivery lead time and quality.
- Critical Procurement skills and competencies like SRM (Supplier Relationship Management), Negotiation, Communication, Collaboration is in place.

Level 4:

- As part of the SRM (Supplier Relationship Management) company and top strategic suppliers work together to fulfill actual demand through a true demand driven process.
- Companies collaborate on having an aligned business plan, where they agreed on common objectives and goals, like:
    - Reduce order lead times of critical ingredients and / or raw materials
    - Share actual demand information with suppliers to reduce volatility and variability
    - Suppliers share inventory "on hand" information and also production master plan with the company
    - Implement a lean process, reducing waste and inefficiencies in the purchase / production process for both companies
    - Use supplier expertise to support innovation and new product introduction.
- There is low finish goods and raw material write off in the supplier operation and there is a clear inventory reduction without lost of sales.

Level 5:

- Same as in level 4, but in addition IT systems from both company and suppliers are integrated to share accurate and seamless information.
- Top suppliers have integration and collaboration with its own suppliers, optimizing the whole supplier chain.

Component: Supply and Operations Management

Category: Manufacturing

Level 1:

- There is no formal process for continuous improvement or formal Root Cause Analysis (RCA).
- Some asset assessments have occurred, but no action plans have been developed / implemented from the studies.
- Some informal communication is maintained, sharing out performance information, but organized review meetings within teams are not regularly conducted.

- Quality inspections and maintenance have started to be performed by operators.
- Some housekeeping initiatives are in place, but there are still some areas below minimum standards.

Level 2:

- There are shift and function handover reviews in place and Plant and Line Performance KPIs are visually displayed to all associates. Line performance reviews occur at a minimum 2 times per week.
- Discussions center on key issues and there is a formal improvement process in place with input from associates. Communication expands to cover Quality, Safety and Environment.
- KAIZEN, which refers to the philosophy or practices that focus upon continuous improvement of processes in manufacturing, engineering, supporting business processes, and RCA are the formal processes for continuous improvement and failure analysis. A formal team is in place to manage this process. All events are documented and available for review. (Minimum of 25% of the plant population has participated in a KAIZEN event).
- 5S initiatives have been piloted in the operations, and time lines exist to expand to the entire facility.
- Execution is occurring on critical asset utilization standard operating procedures including setup reduction efforts, Start up, and Shut down, BEC (Basic Equipment Care), Lubrication, etc, for all lines and an extensive amount of support equipment.
- SLE (Unconstraint line efficiency) is analyzed daily, weekly and monthly to determine critical issues; action plans are developed and implemented. Unconstrained SLE is at or above 55% (plant)

Level 3:

- Same as in level 2, but in addition there is a shift from a pure manufacturing Push Process to a hybrid Push-Pull system.
- Products are categorized into a push or a pull manufacturing strategy (make to stock or make to order, respectively) based on demand variability and production efficiency.
- 50% of the plant has participated of a KAIZEN event. There is a formal process to share KAIZEN learning with other plants.

- 5S is fully implemented reducing safety risks and providing better operation conditions for workers.
- Line operators are responsible for all troubleshooting, maintenance and quality checks in the production lines.
- There is a production planning & scheduling optimization tool in place to minimize changeover time, increasing production throughput.
- Make to order products are produced in an efficient way, and shows clear reduction of inventory levels and product / raw material write offs over time.
- SLE (Unconstraint line efficiency) shows clear upward trend to or above of 65%.

Level 4:

- Same as in level 3, but in addition Lean manufacturing is the key strategic foundation to become an agile production process. Organization has implemented and captured real benefits from the following efforts for example:
    - **Setup reduction achieved through the SMED approach** (Single Minute Exchange of Die). There are advanced preparation of equipment needed for production allowing for a fast changeover from one operation to another. (This is the foundation to move from a batch mentality).
    - **Cells with improved layouts**:
      Cells are implemented as a building block to become an agile and high-speed supply chain. Machines of different types required to produce a product are located together. The focus shifts from the production to the product. Cells enable products to be produced in small lot or single-lot quantities.
    - **Front line supervisor leadership**:
      Supervisors are empowered to lead, coach and provide feedback for their teams towards a continuous improvement performance through KPI management, shift log meeting, weekly trend analysis and monthly meeting to review performance.
    - **Flexible workers and Multifunctional teams**:
      Workers can operate several types of machines and are cross-trained in different operations in the production process.

Multifunctional workers also enable the operation to be executed with fewer employees.

- **Kanban systems to pull product through the plant and the supply chain**. This system creates links between operations, notifying upstream operations when to move and make production nits.

- Manufacturing is a key enabler to fulfill customer requirements towards product customization and innovation, keeping at the same time high operational efficiency and low production cost.

Level 5:

- Same as in level 4, but in addition Postponement is in place and is incorporated into the manufacturing strategic foundation to increase flexibility and agility and allowing producing increased number of innovative SKUs that will fulfill market demand.
- Postponement relies on modular design, common components, quickly deployment of manufacturing resources and cost-effective customization that occurs as late in the production cycle as possible.

Component: Supply and Operations Management

Category: Logistics (Warehouse and Distribution)

Level 1:

Warehouse:

- Warehouse is not oriented towards customer service. There is no service level KPIs (e.g. fill rate, perfect order) measurement in place based on original customer order.
- There is no automatic product priorization implemented in the order processing system or is not aligned with route to market strategy.
- Basic or no storage rack structures in place to maximize warehouse density (cases per m2). Density is not prioritized to increase asset utilization.
- Warehouse layout is not formally reviewed on a regular basis to increase warehouse productivity and reduce safety risks.
- Single forklifts are used most of the time (greater than 50%) to perform product put-away, retrieval and truck loading.
- No 5S and basic housekeeping initiatives implemented.

Distribution:

- Distribution operation is not oriented towards customer service (e.g. On time and In full delivery).
- There is no distribution fleet policy or it is not fully executed to keep fleet average age aligned with planned targets.
- Sales and delivery territories are not balanced through a strategic route planning tool.
- Routing optimization tool is implemented and shows reduction of number of trucks required, total Km driven and distribution cost per case.
- There is no track and trace solution to manage the distribution operation during the day.

Level 2:

Warehouse:

- Warehouse operation is well executed with good operational performance (e.g. increased total warehouse productivity, low safety incidents - less than 0,5% lost time incident rate - LTIR, good inventory accuracy - greater than 99%, and downward trend on total warehouse costs over time).
- Racking structures are implemented and increased warehouse density (e.g. more than 10%), maximizing asset utilization.
- Double forklifts are used most of the time (greater than 50% of the time) to perform product put-away, retrieval and truck loading.
- There is a performance management execution process implemented that increased productivity over 20% and developed front line supervisor leadership to lead, coach and feedback the warehouse team towards a continuous improvement process. There are shift log meetings performed in the beginning of each shift to discuss safety, KPI performance and allow two way communications with all warehouse employees.
- Full housekeeping in place, but no 5S fully implemented.

Distribution:

- Distribution operation is well executed with daily dynamic dispatching based on customer orders received.
- There is a performance management execution process implemented that developed front line supervisor leadership to lead, coach and feedback delivery teams towards a continuous improvement process. There are weekly meetings performed to discuss safety, KPI performance and allow two way communications with all delivery employees.

- There is a fleet renew policy in place that defines best mix of truck types, right number of trucks and target average age. Fleet policy is executed as planned on a yearly basis.
- There is no track and trace solution to manage the distribution operation during the day.
- There is a basic return management process in place to track percentage of volume returned by reason code. Return levels are greater than 2% and less than 3,5%

Level 3:

Warehouse:

- Same as in level 2, but in addition 5S is implemented in a sustainable way and it is fully owned by warehouse employees (e.g. supervisors, forklift operators, pickers, etc.).
- Warehouse employees are well trained with all skills required to excel in the job and deliver the expected customer service, keep good product integrity, high picking accuracy, low cycle time and low operational costs.
- Succession plan is tied to performance management, training curriculum on different logistics functions (e.g. distribution, transportation, etc.) and leadership capability.
- Warehouse operation provides flexibility and speed for pull customers to delivery expected orders on time and in full.

Distribution:

- Same as in level 2, but in addition there is a manual tracking tool to compare actual vs. planned route both for Km and hours driven on a daily basis after the route.
- Information from the tool is used to identify variances and root causes and define action plans to adjust plan or execution, depending on the root cause.
- Return management is in place with a formal process to measure, track and correct all important reason codes. Both sales and distribution functions share responsibility for overall performance and returns are under control with less than 2% of volume dispatched.

Level 4:

Warehouse:

- Warehouse is fully oriented towards customer service, meeting expected perfect order goals (greater than 99%) based on original orders.

- Warehouse layout is designed to provide flexibility, high density and speed to cope with customer demand. Simulation tool is regularly used to review layout and labor requirements aligned with sales demand.
- Triples or Quad forklifts are used most of the time (greater than 50%) to perform product put-away, retrieval and truck loading.
- Warehouse is a key enabler to customization and innovation through skilled workforce, standard operating procedures and multifunctional teams.

Distribution:

- Distribution operation is fully oriented towards customer service with right truck types that maximize legal load limit, and meet customer requirements.
- There is a proof of delivery signed by each customer after receiving the products, using a handheld or smart phone. Information is sent to the company's control center after delivery and is used to validate deliver operation.
- Real time track and trace tool is implemented and allows managing and acting to solve distribution problems during the delivery route. There is a closed loop process that feedback actual information to the route optimization planning tool to improve compliance to plan of the distribution route.
- Estimated time of arrival (ETA) is provided to all customers in the beginning of the day.

Level 5:

Warehouse:

- Same as in level 4, but in addition warehouse performance metrics are included in the customer service level agreement (SLA) signed with customers.
- There is a monthly report delivered to each customer, showing all transactions performed, final service level delivered by the company, main reasons for failure and action plan implemented to increase service.
- Product Out-Of-Stock in the market (not OOS in the warehouse) is a key performance indicator in the warehouse metrics.

Distribution:

- Same as in level 4, but in addition Estimated Time of Arrival (ETA) is dynamically updated as the route is executed during the day and is sent to customers to ensure right deliver.

Component: Supply and Operations Management

Category: Customer Service

Level 1:

- Customer service is not a strategic priority and is not defined as a critical operational capability.
- There is no formalized customer service policy and there is no dedicated customer service structure in place.
- Customer segmentation is not performed or is only defined based on company's sales volume (internal view).
- There is no regular customer service market research like Customer Value Driver to identify which services customers value more or Every Dealer survey, which aims to identify the true customer base.
- There is little o none formal collaboration between company and customers.

Level 2:

- A formal customer service policy exists, and customers have been segmented along specific groups based on sales volume, market channel or local market criteria, but no process is used to build a fact-driven, customer-focused solution.
- There is no dedicated customer service structure in place. Commercial area is perceived as the mainly function responsible to deliver the customer service goals.
- There is little or none formal collaboration between company and customers in multifunctional areas like Marketing, Supply Chain, etc.
- No relation exists between execution and compensation or metrics.

Level 3:

- Customer service policy is in place and fully executed.
- Formal market research approaches like Customer Value Driver and Every Dealer Survey are performed on an annual basis to review and design the customer service policy.

- Customer service policy also differentiates when using a pull or push supply chain approaches.
- There is no formalized customer service structure in place, but there are formal people from different areas of Marketing, Sales, Supply Chain, etc. assigned to support the development of solutions to customer requests.
- Market execution of the service policy is measured and is tied to compensation for the sales department.
- There is a deep understanding of value chain economics and cost-to-serve by various segments and / or customers.

Level 4:

- Company has a formal and robust framework for developing a customer service policy (CSP) that drives capability and flexibility to profitably access all points of interaction with shoppers / consumers.
- CSP exists and is a dynamic, live document that defines roles, responsibilities, services to be delivered to each business segment / channel, special projects and initiatives to be implemented (e.g. Electronic Data Interchange, CPFR, VMI, etc.).
- There is a formal and dedicated customer service organization structure that reports to the company's CEO and is responsible to be the single point of contact to each segment, develop and implement customized solutions with multifunctional areas, and solve daily operational problems.
- Process and analytic capability is in place to dynamically optimize distribution to improve efficiency and maintain appropriate effectiveness / service levels through different service options.

Level 5:

- Same as in level 4, but in addition customer service structure is organized on cells that have representatives from different functional areas like Sales, Marketing, Supply Chain, Finance, etc. and each cell is responsible to manage a single or a group of customer segments.
- This structure provides quick, robust and customized solutions to customers, generating high product availability in the market, high customer satisfaction measured based on annual formal research performed with each customer segment and high level of collaboration across different functional areas.

Component: Supply and Operations Management

Category: Senior Management Support

Level 1:

- Senior management does not understand or support Supply and Operations Management.

Level 2:

- Senior Management understands Push Supply & Operations Management and uses it to meet business plan goals.

Level 3:

- Senior management clearly understands the difference between Push and Pull strategies and its impact into supply & operations management and performance. They provide strong support to implement a hybrid Push and Pull.

Level 4:

- Senior management understands the benefits of becoming a demand driven supply and operations management and uses it to improve customer service, reduce supply chain costs and meet business plan goals.

Level 5:

- Senior management understands and supports the implementation of Pull strategy across the supply chain, and also fosters the collaboration in supply and operations management from suppliers to customers.

Component: Product Lifecycle Management

Category: New Product Forecast Models

Level 1:

- Forecast for new products is generated based on management target volume or basic models like market coverage or market share. This forecast is the input for raw material planning and financial planning.
- Limited amount of data available for analysis or to be used in the forecast process.
- Operational problems usually increase forecast error (e.g. raw material availability, Out-of-Stock, low inventory accuracy, etc.)
- Organization does not have capability to quickly adjust and react to demand signals when launching new products.
- Low forecast accuracy (e.g. less than 50% FA at SKU level) with high demand variability.

- High percentage of product write off (> 5%) and Out-of-Stock in the market for new products (> 5%).

Level 2:

- Forecast for new products is generated taking into consideration both the demand that is just for Pipeline fill (loading of inventory into channel member distribution centers and retail store locations) and the demand that is for Consumer demand (true consumer demand after the product is stable in the market).
- The forecast is the input for raw material planning and financial planning.
- Forecast is generated consider either quantitative models (e.g. Trend analysis, Exponential Smooth technique and Looks Like analysis, etc.) or qualitative models (e.g. Sales Force Composite, Assumption Based Model, etc.).
- Organization is still not able to quickly react to demand signals and suffers from Out-of-Stock when launching new products.
- Forecast accuracy is between 50% and 60% at SKU level.
- Product writes off is still high (> 3% and less than 5%) and Out-of-Stock is greater than 3%.

Level 3:

- Forecast for new products is generated only for customers under the Push system. For the remaining part of the business, under the Pull system, the demand visibility allows the organization to sense demand signals and adjust based on actual demand and not on forecast.
- When forecast is used, planners apply the models described in level 2, but in addition, they can also combine both qualitative and quantitative models to improve accuracy.
- Forecast accuracy for new products is between 60% and 70% at SKU level and product write off is between 2% and 3% and OOS is in the range of 2% to 3%.

Level 4:

- Forecast is generated primarily only for raw material planning due to lead time from suppliers.
- For finish goods, the organization is structured to sense the demand and produce based on the true market demand, dramatically reducing OOS in the market to less than 2% and also product write off to less than 2%.

- Demand information feedback Marketing and Product Development departments to make "real time" adjustments to fully capture market opportunities.

Level 5:

- Demand signal is shared across the supply chain where the organization operates, providing actual demand information to all echelons that sense the demand and produce based on the true market demand, increasing speed and flexibility in the supply chain (e.g. manufacturers, suppliers, etc.).
- OOS and product write off metrics are a common measure across all the members of the supply chain and all of them share their performance and rewards.

Component: Product Lifecycle Management

Category: Supply Chain Approach for Innovative Products

Level 1:

- There is no formal product classification to apply different SC approaches. (There is only an "A, B, C classification" based on volume or revenue).
- It is applied the same supply chain strategic approach for new products or regular products.
- The major focus in the supply chain is to increase operational efficiency in each functional process, but not in an integrated way. (E.g. functional optimization instead of supply chain optimization).
- The operation shows inventory level unbalance, low customer service level and over reliance on price promotions to meet monthly sales targets.
- Total supply chain cost is not clear measured and tracked, only functional costs.

Level 2:

- Same as in level 1, but in addition there is an attempt to increase overall supply chain efficiency through integration of different functional areas, in order to minimize total supply chain cost, instead of isolated functional area optimization.
- Supply chain cost is measured and tracked, but still does not reflect a consistent downward trend over time.

Level 3:

- Products are classified to use a Push or a Pull system based on demand and / or supply variability or maturity in a product lifecycle curve.
- Product classification is reviewed on a regular basis (every 6 months) or whenever needed to ensure the right supply chain strategy is in place.
- Products under the Push system are produced using a "make to stock" or "make to forecast" strategy. On the other hand, products under the Pull system are produced using a "make to order" strategy.

Level 4:

- Each product is categorized either as an innovative product (e.g. great variety, short life cycles, high potential growth, volatile demand, etc.) or as a functional (regular) product (e.g. stable and predictable demand, long life cycles, lower growth rate, product does not change much over time).
- There is a clear understanding of 2 key supply chain functions - physical (focus on efficiency - maximize performance and minimize cost) and market (focus on responsiveness - product availability).
- Supply chain strategy is defined aligning product categories and supply chain functions as follow: Physical (efficient process) for functional products and Market (responsiveness) for innovative products.

Level 5:

- Same as in level 4, but in addition there are specific operational actions fully implemented for each product category:
- **Functional products:**
    - High forecast accuracy for existing products with Push system;
    - Inventory is well managed with high accuracy, reducing working capital;
    - Reduced setups and emergency changeovers, increasing manufacturing capacity;
- **Innovative products:**
    - Supplier agility and flexibility to quickly adjust and respond to demand variability;
    - Inventory buffers are placed in the first echelons closed to actual demand to cope with uncertainty;
    - There is inventory visibility in the supply chain.

Component: Product Lifecycle Management

Category: Risk Assessment & Management for New Product Introduction

Level 1:

- There are no risk assessment process and tool in place.
- New products are launched, but there is no formal process to gather and document practical learning and experience to be applied in new launches.

Level 2:

- No risk management process and tool in place. However, after the introduction of each new product, the project team formally meets and reviews the process, learning, failures and successes, and document and stores them in a knowledge repository to be considered when launching other new products.

Level 3:

- There is a basic and informally risk assessment process that is applied for all new products launched under the Push strategy.
- Based on assessment results, project team defines actions to be implemented during the project to reduce critical risks identified during the assessment.

Level 4:

- There is a formal risk assessment process in place that is performed before the introduction of each new product, in order to reduce the risk associated with sales fluctuation and / or operational processes capabilities.
- There are several different risk factors included in the assessment like:
    - Level of innovation, time to market, product shelf life, manufacturing complexity, raw material characteristics, distribution complexity, expected profitability, etc.
- Based on risk assessment results, project team identify the most critical potential risks and develop mitigating actions to reduce exposure.
- After the introduction of each new product, the project team formally meets and reviews the process, learning, failures and successes and documents them and stores in a knowledge repository to be considered when launching other new products.

Level 5:

- Same as in level 4, but in addition when starting a new project, there is a formal review of knowledge and learning from previous similar product launched in the past to ensure that previous mistakes and problems do not happen again.
- FMEA (Failure Mode and Effect Analysis) is applied to systematically examine each important aspect of the product launch to identify, prioritize and set mitigation strategies for potential gaps / weaknesses in new product introduction.

Component: Product Lifecycle Management

Category: Product Tracking & Visibility

Level 1:

- There is no formal process to track product performance in the early phases of product launch in the market.
- There is no formal process to manage and track product retirement (SKU rationalization).

Level 2:

- There is a formal tracking process for all new products introduced in the market that evaluates several different measures like:
    - Total volume evolution
    - Volume mix by market channel
    - Repeat purchase frequency evolution
    - Repeat purchase frequency by market channel
    - Price compliance
- Internal sales volume information is also evaluated and compared against sales target for new products. Whenever there is a gap, marketing and sales area defines and executes an action plan to improve product performance.
- There is a basic process to track volume of products to be discontinued (retired) from the portfolio, but there are frequently write offs for raw materials and finish goods.

Level 3:

- There are different processes to track new product introduction for Push and Pull customers:

    - Pull customers: Actual daily demand information received from Pull customers are used to track new product performance in the early phases of the launch.
    - Push customers: There is a comparison between planned parameters used to forecast demand like product coverage, price to retail and to consumers, market share, inventory turns, etc. vs. actual performance in the market.
- There is a formal process to track volume and inventory for all products to be retired. Exceptions are identified and there are clear actions implemented to reduce product or raw material write offs, which shows a downward trend in the last 2 years.

Level 4:

- Demand driven tools like CPFR, VMI, and Inventory visibility provide actual demand and inventory information between customers and the manufacturing company increasing agility and flexibility to adjust production and distribution based on real demand signals.
- Product retirement strategy is communicated and aligned between customers and manufacturing company. Both companies share demand and inventory information for each product to be retired, clearly reducing product and raw materials write offs and need to large price discounts.

Level 5:

- New product launched information is shared across the supply chain, starting from POS (customer sell out) information all way through the suppliers, reducing bullwhip effect and OOS in the market place.
- Regarding product retirement, inventory and demand information is shared across the supply chain to provide visibility to all echelons and reduce write offs in the different partners in the chain. (There is a clear trend of write offs reduction in all the echelons of the supply chain).

Component: Product Lifecycle Management

Category: Portfolio Optimization

Level 1:

- There is no formal portfolio optimization process in place. Emphasis is only on new product introduction without formal review and identification of products to be retired. (Discontinued from the product portfolio).

Level 2:

- There are some attempts to take out products with low performance (e.g. declined sales or market share volume, products without clear strategy, etc.) from the company's portfolio. However, this process is not integrated with all critical functional areas (e.g. Marketing, Sales, Supply Chain, and Finance) and is not effective in discontinuing low performance products from the portfolio.
- There is no clear increase in supply chain efficiency and better commercial execution in the market.

Level 3:

- There is a basic portfolio optimization process in place and performed on a regular basis, but the main criteria to retire a product is only on sales and market performance.
- Information from Pull customers are also gathered and considered as input to understand product performance and its strategic role in the total portfolio.
- There is a proven number of SKUs retired from the portfolio based on the set of criteria defined inside the organization.

Level 4:

- There is a formal portfolio optimization process in place and executed on a regular basis (e.g. 2 times a year) to evaluate product portfolio and identify SKUs with underperform sales, lack of clear market strategy or low margin contribution to the company, etc.
- All SKUs identified are evaluated through different areas like Marketing, Sales and Supply chain, and information from Pull customers is essential to understand fit of product to strategic role in the portfolio.
- A final list is sent to a portfolio committee group that considers senior management participants from all critical areas of Marketing, Sales, Supply Chain, Strategic Planning, and Finance. The committee reviews the proposed list of SKUs to be retired and make decision of keeping or retiring each product.
- There is a formal and updated RACI matrix (Responsible, Accountable, Consulted and Informed) that states clear roles and responsibilities for each participant in the process.
- Portfolio optimization process is effective in keeping a healthy and balance product portfolio over time.

Level 5:

- Same as in level 4, but in addition, there is a portfolio optimization tool that support the execution of the entire process, manage exceptions and project timeline for SKU retirement across the supply chain (from customers to suppliers).

Component: Product Lifecycle Management
Category: Senior Management Support & Organizational Culture

Level 1:

- Senior management does not understand or support the Product Lifecycle Management Process.
- Organization culture does not foster an innovative environment to bring new products in a faster and successful way, and does not motivate to review the product portfolio.

Level 2:

- Senior Management has limited understanding of Product Lifecycle Management Process, but does not actually support the full implementation of PLM concepts inside the organization.
- Organization culture still does not provide the open environment for innovation and creative thinking. Functional silos and departmentalization is clearly perceived.

Level 3:

- Senior management clearly understands and provides strong support to implement a robust PLM process that covers both new product introduction and portfolio optimization approaches.
- Organization culture provides open environment for discussion and people are not afraid to propose and implement innovative ideas.

Level 4:

- Senior management uses PLM process as part of the annual business planning cycle to ensure alignment of the product portfolio with the overall company business plan strategy.
- Organization culture clearly foster an innovative thinking supported by annual objectives, rewards and recognitions programs aligned with annual performance management process.

Level 5:

- Senior management supports PLM process aligned across the entire supply chain (from suppliers to customers) and not only inside the organization.
- Suppliers and customers are formally involved in the process and provide critical inputs for new product introduction and product retirement.
- Organization culture foster a customer driven mindset throughout the company and a supply chain focus on working collaboratively with different suppliers and customers towards a total supply chain optimization solution.