The Chartered Institute of Logistics and Transport

PD16

Supply Chain Flow Planning

Standards

PD16

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PD16 Supply Chain Flow Planning

Unit purpose and aim

The aim of this optional unit is to cover the main principles, concepts and practices of planning supply chain material flows. The unit deals with the issues of identifying the demand for products and then balancing this with the appropriate supply. The key issues involved with determining the level of demand are addressed. Aspects of supply planning are then explored highlighting the need for different strategies for different products. The use of inventory to balance the flows between supply and demand is then covered, together with the management issues surrounding the attainment of a consensus supply chain plan. A key element throughout is the development of repeatable, cross-functional processes. Finally, the opportunities of collaboration are covered.

Elements

PD16-1	Demand Planning
PD16-2	Supply Planning
PD16-3	Inventory Planning
PD16-4	Supply Chain Planning
PD16-5	Collaboration

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Element PD16-1

Demand Planning

Learning Outcomes The learner will:	Assessment Criteria The learner can:
1.1. Know how to calculate a consensus forecast with cross-functional components.	1.1.1. Use a repeatable cross-functional process to obtain a consensus forecast.
1.2. Understand the different demand forecasting techniques.	1.2.1. Apply different forecasting techniques to obtain baseline forecasts for different demand patterns.
1.3. Understand the impact of different demand features on a forecast.	1.3.1. Evaluate the impact of demand management techniques for creating and shifting demand.
1.4. Understand the way in which different policies and actions shift demand.	1.4.1. Analyse the effect on demand of proposed policy changes.
1.5. Understand the process of monitoring forecast performance and know how to take corrective action.	1.5.1. Monitor forecast performance and take corrective action when appropriate.

Indicative Content	
The calculation of a consensus forecast with cross-functional components	Why forecasts are needed. Impact of the supply chain decoupling point on the forecasting process. Determination of appropriate data to input into the forecasting process including data cleaning to remove unusual effects. Use of a statistical forecast to provide a baseline for forward projection. Awareness of the impact of business plans and the influence of external events on future demand Influence on future demand. Advantages and disadvantages of processes that can be used for demand management.
The different forecasting techniques	Applicability and use of forecast methods such as; time series, causal models, simulation and qualitative methods. Impact of using aggregation techniques for demand at product and geographical levels. Use of profiles to forecast events such as seasonality and promotional activity. Use of product life cycle curves for new product forecasting.
The impact of different demand features on a forecast	The impact of trends in demand on forecasts. The impact of seasonality and cycles on forecasts. Forecasting issues surrounding fast and slow moving items.
The way in which different policies and actions shift demand	Impact of trade terms such as credit periods; company policies such as incentive schemes, minimum order quantities; pricing and promotional activity; positioning within supply chain relating to demand amplification; collaborative techniques such as CPFR.
The process of monitoring forecast performance and taking corrective action	Clarity over the objective of forecasting. Determination and reduction in forecast error. Recognition that average demand is being forecasted. Determination of forecast error. Use of bias as a control. Use of standard error or mean absolute error as a control. Use of MAPE as a control. Use of tracking signals. Monitoring forecast consumption and using available to promise and forecast rollover. Handling abnormal demand.

Element PD16-2

Supply Planning

Learning Outcomes The learner will:	Assessment Criteria The learner can:
2.1. Understand the segmentation factors that determine supply chain combinations.	2.1.1 Evaluate customer requirements. 2.1.2 Segment customers into different supply chain combinations.
2.2. Understand the strategic requirements of the supply chain.	2.2.1. Evaluate supply chain strategic requirements to determine cost to serve objectives.
2.3. Understand the configurations of supply chains to achieve strategic fit.	2.3.1. Configure a supply chain to achieve strategic fit between the supply chain and customer requirements.
2.4. Understand the different definitions of time that impact on supply chain activity.	2.4.1. Identify opportunities and implement actions to compress time within a supply chain.
2.5. Understand the scope and value of cross-functional processes that determine supply requirements.	2.5.1. Use a repeatable cross-functional process to determine supply requirements.

Indicative Content	
The segmentation factors determining supply chain combinations	Factors based upon product volumes, demand, customer characteristics, product handling requirements and technology and information. Factors to segment customers into viable supply chain and allow assessment of implied uncertainty.
The supply chain strategic requirements and their evaluation	Understanding of business objectives related to different strategic options eg: cost, product and service leadership. Determination of cost to serve for product /market combinations. Methods to assess supply chain responsiveness.
The configuration of supply chains to obtain strategic fit	Combining of customer segmentation analysis with cost to serve analysis to offer strategic fit. Applicability of techniques related to agile and lean supply chains. Ensuring fit between supply chain objectives and corporate strategic objectives. Impact of product life cycles on strategic fit. Identification of obstacles which hinder strategic fit; factors that pull the decoupling point downstream towards the customer; factors that push the decoupling point upstream towards the suppliers. Performing trade-off analysis to determine desired decoupling point position.
The different definitions of time that impact supply chain activity	Defining and measuring customer order cycle and supply chain flow (response) times. The relationship between order cycle time and flow time. Setting time fences and planning horizons. Defining and measuring process cycle times and supply chain acceleration and deceleration time.
The use of cross-functional processes to determine supply requirements	Preparation of assumptions and determination of appropriate data to input into the supply planning process. Determination of demonstrated product and material capacity and linking resources together in the supply plan. The use of what-if analysis. Advantages and disadvantages of supply management planning and scheduling processes. Measuring supply planning performance.

Element PD16-3

Inventory Planning

Learning Outcomes The learner will:	Assessment Criteria The learner can:
3.1. Understand the factors that affect the positioning of inventory within the supply chain.	3.1.1 Determine appropriate points to position inventory within a given supply chain.
3.2. Understand the development of business rules to manage inventory at each stock point.	3.2.1. Specify and monitor target stock levels throughout the supply chain.
3.3. Understand the parameters involved in the calculation of safety stock levels.	3.3.1. Analyse the risk of stock-outs due to inherent uncertainties. 3.3.2. Calculate safety stocks, taking account of inherent uncertainties.
3.4. Understand the range of different systems used to manage inventory.	3.4.1. Use appropriate inventory management systems to control inventory levels.

Indicative Content	
The factors affecting the positioning of inventory within the supply chain	Identification of formats of inventory within the supply chain; demand side requirements for availability level, batch size and lead times. Calculation of the impact of different availability levels, batch sizes and lead times on inventory levels. Identification of supply side requirements for lead times and production batch sizes. Calculation of lead times and production batch sizes on inventory levels. Understanding how inventory moves between supply chain echelons and the impact of tax points. Balancing of demand and supply side constraints to determine an affordable inventory policy.
The development of business rules to manage inventory at each stock point	Use of fixed order cycle and fixed order quantity policies. Determination of time fences and planning horizons.
The parameters involved in the calculation of safety stock levels	Identification of demand side risks, supply side risks and the risk multipliers. Calculating safety stocks in conditions of reliable and unreliable lead times. Recognition of different definitions of service level on safety stock. Use of the square root law for planning multi-site safety stock levels.
The range of different systems for managing inventory levels	Use of fixed order quantity (continuous review) systems. Use of fixed order cycle (periodic review) systems. Use of requirements planning systems.

Element PD16-4

Supply Chain Planning

Learning Outcomes The learner will:	Assessment Criteria The learner can:
4.1. Understand the factors involved in sales and operations planning.	4.1.1 Use a repeatable cross-functional process to balance supply and demand.
4.2. Understand the need to aggregate demand to assess supply requirements by location.	4.2.1. Implement an aggregated demand plan to determine supply requirements by location.
4.3. Understand the need to conduct a “What if?” analysis to develop plan sensitivities.	4.3.1. Perform “What if?” analyses to determine plan sensitivities.

Indicative Content	
The factors involved in sales and operations planning to balance supply and demand	Characteristics of an integrated sales and operations planning process. Impact of make to order and make to stock policies. Incorporation of product plans into the process. Understanding the relationship between the process steps of demand, supply and product planning. Reconciliation review to include vulnerabilities and opportunities, issue resolution, major changes.
The determination of aggregated demand to assess supply requirements by location	Recognition of different types of demand. Reconciling top-down and bottom-up demand plans.
The process of conducting “what-if” analysis to develop plan sensitivities	Doing financial gap analysis. Documenting changes and assumptions, vulnerabilities and opportunities. Interpretation of key performance indicators. Review of business trends. Aligning tactical and strategic plans.

Element PD16-5

Collaboration

Learning Outcomes The learner will:	Assessment Criteria The learner can:
5.1. Know how to select appropriate partners for supply chain collaboration.	5.1.1. Identify potential partners within the supply chain with whom to collaborate.
5.2. Know how to quantify the benefits accruing from collaborative relationships.	5.2.1. Quantify the benefits that accrue from a given collaborative relationship.
5.3. Understand the use of cross-functional processes to progress collaborative relationships.	5.3.1. Establish and implement a cross-functional process for developing collaborative relationships.

Indicative Content	
The selection of appropriate partners for supply chain collaboration	Identification of reasons for supply chain collaboration and factors that support such collaboration. Recognition of supply chain maturity on the collaboration decision. Identification of the features of productive collaboration and the key processes involved.
The quantification of benefits accruing from collaborative relationships	Quantification of benefits in areas such as; forecast accuracy, service levels and sales growth.
The use of cross-functional processes to progress collaborative relationships	Understanding of process steps such as; developing collaborative arrangements, creating joint business plans, creating sales and order forecasts, identifying and resolving exceptions to forecasts, generating orders and executing delivery.