The Chartered Institute of Logistics and Transport

PD17

Supply Chain Network Planning

Standards

PD17

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PD17 Supply Chain Network Planning

Unit purpose and aim

The aim of this unit is to provide candidates with the knowledge to plan, implement and manage a supply chain network in which products flow from their source to the end user.

The unit deals with the complex issues of identifying the network requirements for different types of facilities based upon cost and service criteria. The key issues involved with locating facilities and then planning the resources required to operate them will also be addressed. Acquisition options are also explored with particular emphasis on selecting and managing third party contractors. A key element will be the creation of a management framework including information and measurement requirements to enable the network to be managed to achieve the performance objectives.

Elements

PD17-1	Identify Network Requirements
PD17-2	Plan the Network Structure
PD17-3	Resource the Network
PD17-4	Create the Network Controls
PD17-5	Cost Proposals

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Element PD17-1

Identify Network Requirements

Learning Outcomes The learner will:	Assessment Criteria The learner can:
1.1. Understand different types of network requirement and how they relate to supply chain strategy.	1.1.1. Identify network requirements from supply chain strategy.
1.2. Know the issues involved in forecasting network throughputs across time.	1.2.1. Forecast network throughputs across time.
1.3. Understand the process to interpret the findings from a supply chain audit.	1.3.1. Formulate objectives from a supply chain audit.
1.4. Understand the factors involved in recognising improvement signals that have network implications.	1.4.1. Implement network improvements as a result of signals received.
1.5. Understand the process of mapping an existing network.	1.5.1. Map an existing supply chain network.

Indicative Content	
The different types of network requirement and how they relate to supply chain strategy	Network requirements linked to service, quality, cost and time. Segmentation of the requirements by product/market supply chain combinations. Relationship between the requirements for supply chain strategies to support business leadership strategies.
The issues involved in forecasting network throughputs both currently and in the future	Forecasting of throughputs for existing and proposed markets and products. Analysis of throughput in volume and weight terms. Time based analysis of throughput fluctuations.
The process to interpret the findings from a supply chain audit	Interpretation of qualitative analysis from customers and internal sources. Interpretation of quantitative analysis on supply and demand of products. Assessment of fit to objectives by product/market supply chain combination for cost, service, time and quality.
The factors involved in recognising improvement signals that have network implications	Recognition of financial signals, such as increased costs and lost revenue. Recognition of service failures, such as late deliveries, incomplete orders or increased customer complaints. Recognition of capacity issues, such as increased use of external resources or idle capacity.
The process of mapping an existing network	Locate existing primary functions. Identify product flows. Determine type and function of facilities.

Element PD17-2

Plan the Network Structure

Learning Outcomes The learner will:	Assessment Criteria The learner can:
2.1. Understand the factors that determine a supply network structure.	2.1.1 Structure the future supply chain network.
2.2. Understand the features of facility location planning.	2.2.1. Plan the location of supply chain facilities.
2.3. Know the techniques for locating major supply chain facilities.	2.3.1. Select locations for supply chain facilities.
2.4. Understand the elements of planning to develop an existing network structure into a new one.	2.4.1. Develop a plan to migrate from an existing network to a new one.

Indicative Content	
The factors that determine a supply chain network structure	Demand measurement in volume, weight and unit. Analysis of demand volume, including seasonality and short term fluctuations. Service delivery considerations.
The features of facility location planning	Identification of customer locations. Identification of sources of supply for different types of products and consideration of whole supply network. Supply measurement in volume, weight and units. Analysis of seasonality and short term fluctuations in supply by time period.
The different techniques for locating major supply chain facilities	Consideration of demand and supply requirements. Centre of gravity, Graphical and Median methods. Use of simulation software. Appropriate analysis for different facilities such as factories and warehouses. Site selection criteria and other factors. Cost and availability of labour, land, energy and transportation.
The elements of planning to develop an existing network structure into a new one	Planning the use of support facilities to overcome cost and service level issues. Reviewing the role and location of existing facilities. Reviewing and locating staging post and cross-docking facilities. Reviewing and locating facilities to assist transport activities.

Element PD17-3

Resource the Network

Learning Outcomes The learner will:	Assessment Criteria The learner can:
3.1. Understand the factors that must be considered when specifying resource requirements.	3.1.1 Specify resource requirements for a given network.
3.2. Understand the available sources of resources.	3.2.1. Identify sources of supply for network resources.
3.3. Understand the factors that must be considered when selecting sources of supply for resources.	3.3.1. Select appropriate sources of supply for network resources.

Indicative Content	
The factors that need to be considered when specifying resource requirements	Nature of resources required such as storage, consolidation or material processing facilities and associated operational requirements. Nature of resources required for transhipment activities such as break-bulk, switching and transportation staging. Nature of resources required in order to conduct primary, secondary and inter-modal transport activities.
The different sources of resource supply available	Use of owned own managed resources. Use of bought-in and third party managed resources. Integrating owned and bought-in resources to best effect.
The factors to consider when selecting sources of resource supply	Evaluation of alternatives. Cost benefit analysis and asset/cost efficiency. Past experience of the effectiveness and efficiency of a particular source. Opportunity to establish service level agreements. Availability of different contract formats; open book, cost plus, fixed rate.

Element PD17-4

Create the Network Controls

Learning Outcomes The learner will:	Assessment Criteria The learner can:
4.1. Understand the scope of information required to support a network.	4.1.1 Specify the scope of the information needed to support a network.
4.2. Understand the process of identifying information needed to support a network.	4.2.1. Identify the specific information needed to support a network.
4.3. Know the criteria influencing the selection of different measurement and improvement frameworks.	4.3.1. Specify the measurements needed to monitor the network's performance.
4.4. Understand the components of a service level agreement (SLA).	4.4.1. Establish service level agreements between supply chain players to support the network.

Indicative Content	
The scope of information to support the network	Uses of information and the difference between data and information. Use of process description. Identifying boundaries, problems, objectives and constraints.
The process of identifying information to support the network	Building a data model. Use of data flow diagrams. Interpreting statistics. Data dictionaries. Creating files and checking for completeness, accuracy, availability and volatility.
The criteria influencing selection of different measurement and improvement frameworks	Recognition of inter-relationship between performance measurements that support reliability, flexibility, responsiveness, cost and asset utilisation. Linking measurements to corporate financial performance and cost, service and product leadership strategies. Applicability of business excellence models and process improvement frameworks such as six sigma and critical to quality trees. Use of the balanced scorecard to provide financial, customer, internal process, learning and growth perspectives.
The components of a service level agreement	Identification of risk points in the supply chain. Identifying suppliers and customers and preparing a vision for the relationship. Techniques for identifying and agreeing requirements between customers and suppliers and arrangements for policing them. Communicating the “spirit” of the relationship and specifying what each party must do and how they will behave. Presentation of information.

Element PD17-5

Cost Proposals

Learning Outcomes The learner will:	Assessment Criteria The learner can:
5.1. Understand the factors for identifying network costs and service benefits.	5.1.1. Evaluate proposed network options on the basis of cost and service.
5.2. Understand the process for preparing financial appraisals and testing their robustness.	5.2.1. Prepare financial evaluations for the justification of expenditure with appropriate levels of sensitivity.
5.3. Know the key steps in the process of preparing and presenting proposals.	5.3.1. Develop and present proposals and gain support for them.

Indicative Content	
The factors to be considered when identifying network costs and service benefits	Identification of operational costs. Identification of capital costs. Evaluation of the impact of inventory. Evaluation of service benefits on revenue. Identification of intangible benefits. Calculation of cost to serve for different channels and products.
The process of preparing and testing the robustness of financial appraisals	Preparation of financial documents. Income and expenditure statements. Business rules for investment appraisal. Investment appraisal analysis. Evaluation of sensitivities to volume and mix changes.
The key steps in the process of preparing and presenting proposals	Identification of stakeholder requirements for incorporation into the presentation. Anticipation of objections and problem areas and the preparation of contingency answers. Presentation techniques; written and verbal.