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Preface

On behalf of the Members of the General Assembly and the Board of the European Certification Board for Logistics (ECBL) we are delighted to present to all interested parties the revision of the Standards of Competence that lead to the European Logistics Association Certificate (ELA Certificates)

We call on the National Certification Bodies to implement the new Standards in their assessment procedures as they will contribute positively to the objectivity, validity and reliability of ECBL Certification grading system.

We address our warmest thanks to the members of the ECBL Scientific Committee who conducted the multinational research and dialogue within member countries concerning the company profile of Logisticians. The Standards provide us with an excellent structure for assessing the competence of logisticians.

As a modern, forward-looking, non-profit organisation, ECBL, provides the opportunity for logistics professionals to gain recognised European and International qualifications.

Join us in the implementation of the new ELA Certification standards and in their continuous development and evolution.

Prof. Yiannis Konetas

President of the European Certification Board for Logistics

And chairman of the Scientific Committee

1 Introduction

The European Logistics Association (ELA) introduced a set of Standards in Supply Chain / Logistics Management, which form the foundation for the European Certification Board for Logistics (ECBL) to certify individuals who meet these Standards.

ECBL is an independent body consisting of member countries who voluntarily agree to share the Standards of Competence for Logistics and adhere to common levels of quality assurance procedures.

The European Certification Board for Logistics (ECBL) is the custodian of the Standards, and is responsible for updating the Standards as and when required.

The Board (ECBL) will be the sole authority for approving the award of a qualification, and no awards under this programme will be allowed without such approval. The Board will set up a system to monitor the performance of National Certification Centres to be established in each country, and will ensure that the Standards operating in each country are in line with the European directive. In this way, candidates for the qualifications from every country in the programme can be sure of the commonality of the Standards.

To provide a common understanding of the concepts of Supply Chain Management and Logistics which are essential for this document, we give the definitions by ELA:

Supply Chain Management:

Organisation, planning, control and execution of the products flow from development and purchasing, through production and distribution, to the final customer in order to satisfy the requirements of the market cost-effectively.

Logistics:

Planning, execution and control of the movement and placement of people and/or goods and of the supporting activities related to such movement and placement, within a system organized to achieve specific objectives.

Note: Logistics is used as a noun; logistic is used as an adjective; a logistician is a person involved in logistics as a whole.

1.1 Rationale for the ELA Standards

- A shared wish by countries to achieve a common level of Standard for logisticians for mutual benefit;
- Portability of logistics skills and competences within Europe (and the world);
- Mutual recognition within Europe;
- Establishing a common profile for logistics managers.

2 Characteristics of the ELA Standards

The general characteristics of the ELA Standards can be summarised as follows:

Nature	Competence-based model used for certifying individuals in logistics management positions
Levels	Standards at three management levels
Structure	Modular structure
Assessment Criteria	Assessing the outcome of knowledge, skills and experience

These elements are described in more detail in the following sections.

2.1 Nature

The competence system – adopted by ECBL – reflects the expectations of workplace performance. The Standards of Competence have been developed with and agreed by industry. The Standards are outcome-based and form the basis of assessment. Assessment is independent of any learning programmes.

The official version of the Standards is published in English. However, there will be other language versions of the Standards produced for use in different participating countries.

National Certification Bodies can add to the Standards but cannot leave things out.

2.2 Levels

There are Standards at three management levels:

Level	Target Audience	Competence	Key Outcomes
Strategic Level	<ul style="list-style-type: none"> o Senior managers, senior consultants or directors with considerable experience in logistics management (Strategic managers) o Senior executives who have assumed logistics responsibilities from another business discipline 	<p>Requires the application of fundamental principles and complex techniques across a wide range of unpredictable contexts.</p> <p>Usually involves responsibility for substantial human, physical and financial resources.</p>	<p>The candidate must</p> <ul style="list-style-type: none"> o understand logistics strategies and processes, the interrelationships between and within logistics networks, and the role of logistics within the total business context o have special skills and knowledge in logistics strategies o to be able to define and optimise the logistics strategies within his/her area of responsibility.
Senior Level	<ul style="list-style-type: none"> o Managers or consultants planning, coordinating and controlling different parts of the logistics network o Graduate entrance to the profession who are on the fast track to senior management 	<p>Involves specialist skills and knowledge in a broad range of work activities, usually performed in a wide variety of tasks, mainly complex and non-routine.</p> <p>Has a substantial degree of personal autonomy and responsibility. Usually is responsible for the work of others.</p>	<p>The candidate must</p> <ul style="list-style-type: none"> o understand logistics strategies and processes, the interrelationships between and within logistics networks o have special skills and knowledge in management of processes and projects o to be able to define and optimise the logistics processes within his/her area of responsibility.
Supervisory/ Operational Level	<ul style="list-style-type: none"> o Supervisors in an operational role o First line managers 	<p>The candidate requires knowledge and skills in a broad range of work activities, usually performed in a wide variety of tasks, some of which are complex and non-routine.</p> <p>Could be responsible for the control or guidance of others.</p>	<p>The candidate must</p> <ul style="list-style-type: none"> o understand logistics strategies and processes, the interrelationships between and within logistics networks (generic knowledge) o have special functional skills and knowledge o to be able to optimise activities within his/her area of responsibility.

2.3 Assessment Procedure and Criteria

The ECBL only aims at certifying individual competences and is not linked in any way with training path or approach. It does not prescribe in any way the methods or courses by which candidates may attain or develop the knowledge and skills required to demonstrate competence to meet the Standards. Thus, formal training is not a prerequisite for ELA certification.

It is expected that many established institutions and places of education and training will devise programmes to meet the needs of local candidates. The structure of educational programmes does not necessarily have to follow the structure of competence modules as described in this document.

The ability of candidates to meet the required Standards will be assessed by National Certification Boards established in each ECBL member country.

The ELA Standards of competence - and any programmes based on the Standards - are intended for logistics managers. Individual National Certification Bodies may develop assessment strategies to meet their own country's educational requirements.

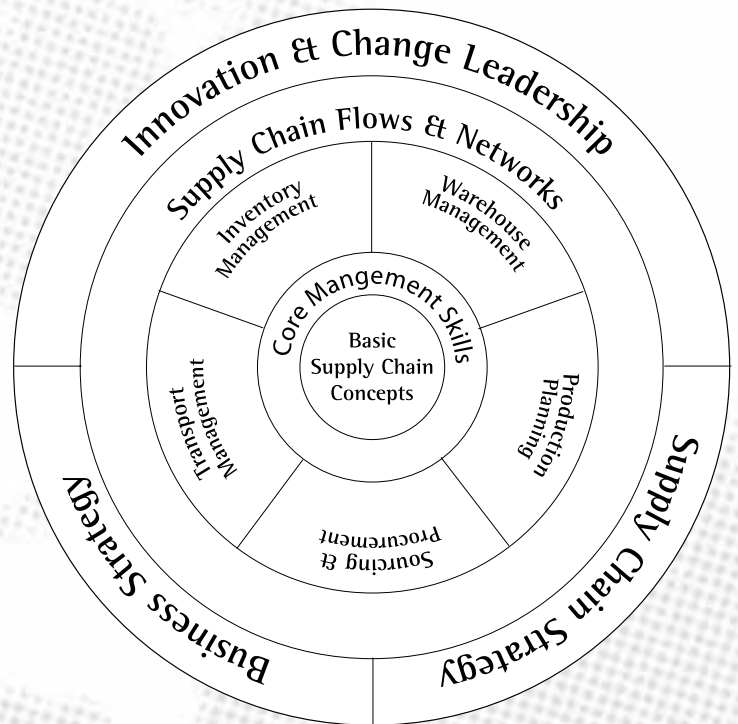
There are no specific guidelines for the period of experience that candidates require. Individual National Bodies may wish to offer guidance on the period of experience but the three level descriptors should provide the benchmark for assessment. The assessor should be satisfied that a candidate has demonstrated competence at the appropriate level.

2.4 Quality Assurance

The ECBL continuously manages and improves its certification processes. It documents them in professionally maintained procedures. It constantly monitors the performance of its constituent bodies and assessors.

2.5 Structure

The Wheel serves as a diagrammatic tool for



presenting the general model of the ELA Standards. The Standards are based on a common framework, the details for each level can be found in the following chapters which also define the interrelationship between the levels and between the modules. It is important to note that the term module refers to areas of competence, not necessarily to training modules.

A module can be exclusive for a certain level (e.g. Innovation & Change Leadership at Strategic Level), or it can cross levels, such as Warehouse Management at Supervisory/Operational and Senior Levels. Some of the modules are compulsory (e.g. Basic Supply Chain Concepts), others are optional (e.g. Transport Management).

In the following section, the modules relevant for each of the three levels are indicated.

3 Standards of Competence

3.1 Common Module

The “Basic Supply Chain Concepts” module applies at all levels and needs to be assessed only once.

Basic Supply Chain Concepts (compulsory)

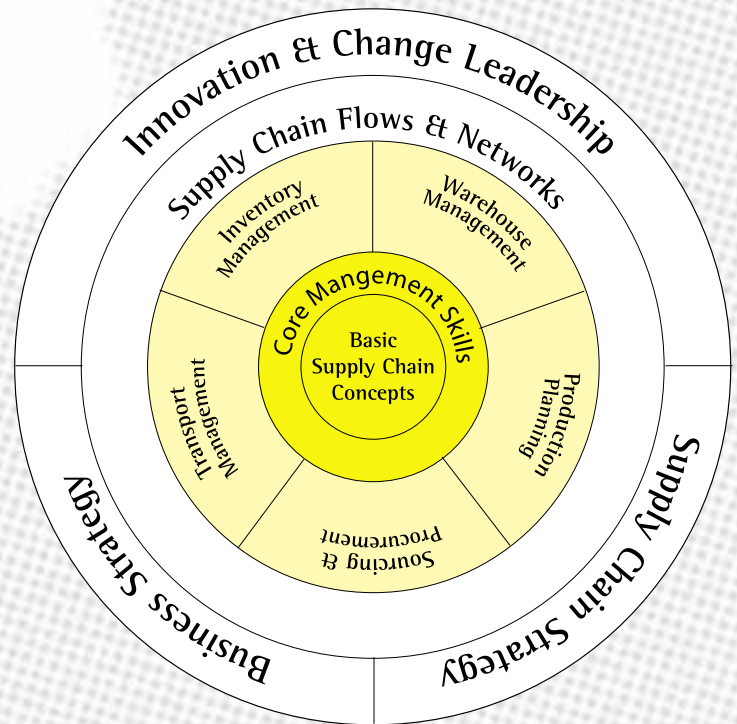
- Explain the scope and role of component activities within the supply chain
- Map a supply chain identifying component activities
- Identify the source and characteristics of supply and demand
- Explain how supply chain contributes to competitive advantage
- Identify how the supply chain activity contributes to sustainability
- Determine the financial impact of supply chain activity
- Explain how MTS, ATO, MTO and ETO configurations work
- Determine the lead times within a supply chain
- Identify the existence of demand amplification and its impact
- Assess the barriers that hinder supply chain flows
- Identify how changes in supply and demand impact cost to serve
- Identify opportunities for trade-offs between supply chain activities
- Identify the key roles for information and IT within the supply chain

Due to the constant progress in Information and communication technologies (ICT), specific technologies are not defined in the modules. It is a prerequisite, though, that current technologies must be applied in all relevant fields. ICT competences are implicit in every module.

3.2 Supervisory/Operational Level

The Supervisory/Operational Level comprises of two compulsory modules plus a further two functional modules selected from a suite of five.

Basic Supply Chain Concepts (compulsory, see competence listing in 3.1)



Core Management Skills (compulsory)

- Create, maintain and enhance effective working relationships
- Communicate in an effective manner
- Interpret business financial statements
- Contribute to the development of objectives by obtaining and presenting information
- Make recommendations for the improvement of operational effectiveness
- Obtain, evaluate and present supply chain information to other company departments
- Plan, organise and lead the work of team and individuals
- Contribute to the development of teams and individuals
- Implement a process for the monitoring of actual costs against a budget
- Contribute to the health and safety and security of the working environment
- Comply with relevant legislation and regulations
- Apply management tools, methods and techniques such as statistics and process management
- Contribute to the implementation of a change initiative

- Identify how different supply chain activities impact on each other
- Identify opportunities for functions to work differently together

Inventory Management (optional)

- Contribute to the evaluation of the inventory environment
- Agree inventory performance objectives
- Classify items by demand characteristics
- Identify major segments of inventory using ABC analysis
- Measure demand variability and forecast error
- Forecast demand using appropriate techniques for demand characteristics
- Set safety stock levels and stock trigger points
- Determine order quantities
- Utilise different inventory management systems
- Assess and improve supplier performance
- Audit stock levels and identify improvement opportunities
- Manage the use of IT support for inventory activities
- Update, analyse, verify and reconcile inventory records
- Monitor inventory performance using appropriate measures
- Contribute to the provision of inventory resources
- Contribute to the performance and quality control of inventory operations
- Contribute to development of plans and procedures for reverse logistics
- Contribute to the development and use of inventory processes and procedures

Production Planning (optional)

- Contribute to the evaluation of the production environment
- Agree production planning performance objectives
- Identify and aggregate demand
- Create, amend and monitor production plans
- Plan master production schedules
- Establish and maintain a Bill of Materials
- Create and review capacity plans
- Calculate material requirements and place supplier orders
- Assess and improve supplier performance
- Audit material stock levels and identify improvement opportunities
- Manage the use of IT support for production planning activities
- Update, analyse, verify and reconcile material records
- Monitor production planning performance using appropriate measures
- Contribute to the provision of production planning resources

- Contribute to the performance and quality control of production planning operations
- Contribute to development of plans and procedures for reverse logistics
- Contribute to the development and use of production planning processes and procedures

Sourcing and procurement (optional)

- Contribute to the evaluation of the sourcing environment
- Agree sourcing performance objectives
- Specify material requirements
- Identify sources of materials
- Prepare supply schedules and place orders on suppliers
- Manage quality control and inspection activities
- Monitor receipt operations activity
- Assess and improve supplier performance
- Manage the use of IT support for sourcing activities
- Monitor sourcing performance using appropriate measures
- Contribute to the provision of sourcing resources
- Contribute to the performance and quality control of sourcing operations
- Contribute to development of plans and procedures for reverse logistics
- Contribute to the development and use of sourcing processes and procedures

Transport Management (optional)

- Contribute to the evaluation of the transport environment
- Agree transport performance objectives
- Select mode of transport
- Manage transport scheduling operations
- Plan primary transport (trucking) operations to meet objectives
- Plan secondary transport (local delivery) operations to meet objectives
- Plan transport transshipment operations to meet objectives
- Manage transport loading and unloading operations
- Check goods are properly packed for transport
- Manage the maintenance of transport equipment
- Manage the use of IT support for transport activities
- Monitor transport performance using appropriate measures
- Contribute to the provision of transport resources
- Contribute to the performance and quality control of transport operations
- Contribute to the compliance with transport legislation
- Contribute to development of plans and

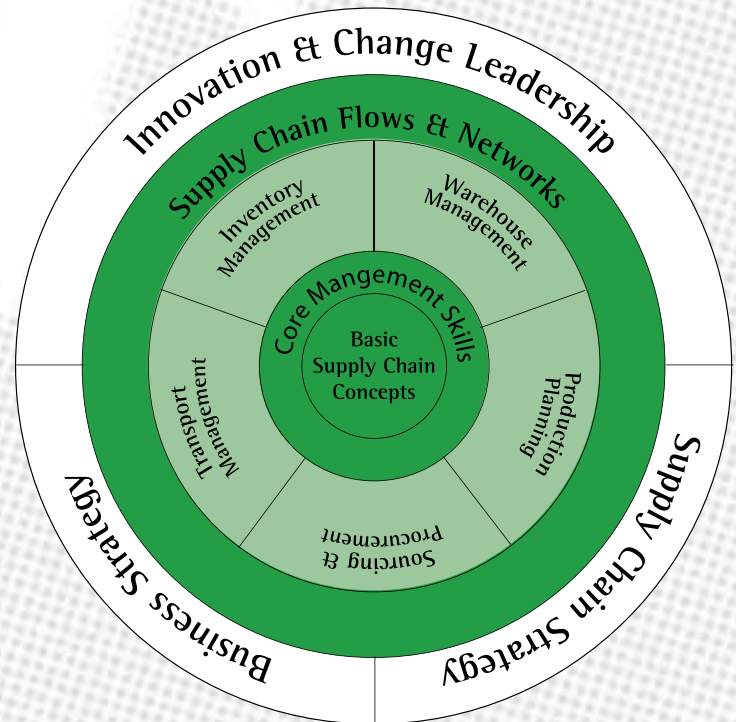
- procedures for reverse logistics
- Contribute to the development and use of transport processes and procedures

Warehouse Management (optional)

- Contribute to the evaluation of the warehouse environment
- Agree warehouse performance objectives
- Manage warehousing receiving operations
- Manage warehouse storing operations
- Manage warehouse order assembly and packing operations
- Manage warehouse despatching operations
- Manage the control of inventory within the warehouse
- Manage the care of warehouse equipment
- Manage the use of IT support for warehouse activities
- Monitor warehouse performance using appropriate measures
- Contribute to the provision of warehouse resources
- Contribute to the performance and quality control of warehouse operations
- Contribute to the compliance with warehouse legislation
- Contribute to development of plans and procedures for reverse logistics
- Contribute to the development and use of warehouse processes and procedures

3.3 Senior Level

The Senior Level comprises of three compulsory modules plus a further three functional modules selected from a suite of five.



Basic Supply Chain Concepts (compulsory, see competence listing in 3.1)

Core Management Skills (compulsory)

- Organise the recruitment and selection of staff
- Create, maintain and enhance effective working relationships
- Plan, organise, direct and control the work of others
- Communicate in an effective manner
- Identify, plan, implement and manage change
- Prepare a business plan
- Interpret business financial statements
- Contribute to a budget and monitor costs against an operating plan
- Set up and interpret performance indicators to assess business performance
- Design an appropriate organisational control structure
- Identify how different supply chain activities impact on each other
- Identify opportunities for functions to work differently together
- Manage the health and safety of the work environment
- Comply with relevant legislation and regulations
- Apply management tools, methods and

techniques such as statistics, process management, modeling and quantitative methods

- Develop teams and individuals
- Manage projects
- Develop and implement plans to manage knowledge

Inventory Management (optional)

- Analyse inventory positioning within a network
- Analyse the performance and quality requirement for inventory
- Analyse the business requirement for inventory
- Evaluate the impact of environmental factors on inventory activity
- Formulate action plans to respond to environmental factors
- Audit productive and non-productive inventory levels
- Select and implement forecasting systems
- Manage the inventory requirements associated with new products
- Manage the inventory requirements associated with promotional activity
- Select and implement inventory management systems
- Manage inventory through a supply chain network
- Prepare resource plans for inventory including financing options
- Identify trade-off opportunities with other supply chain activities
- Develop inventory plans and proposals evaluating costs and added value
- Develop plans and procedures for reverse logistics
- Manage the inventory operations to comply with legislative and social responsibilities
- Select, implement and sustain IT support for inventory activity
- Establish, maintain and improve inventory performance management system
- Develop inventory processes and procedures
- Identify and select inventory service providers

Production Planning (optional)

- Identify sources of waste within production and plans to eliminate it
- Analyse the performance and quality requirement for production planning
- Analyse the business requirement for production planning
- Evaluate the impact of environmental factors on production activity
- Formulate action plans to respond to environmental factors
- Set up a production planning framework
- Create and manage a demand planning system

- Contribute to the sales and operations planning process
- Produce capacity requirement plans
- Prepare resource plans for production including financing options
- Identify trade-off opportunities with other supply chain activities
- Develop production plans and proposals evaluating costs and added value
- Develop plans and procedures for reverse logistics
- Manage the production operations to comply with legislative and social responsibilities
- Select, implement and sustain IT support for production planning activity
- Establish, maintain and improve production planning performance management system
- Develop production planning processes and procedures
- Identify and select production planning service providers

Sourcing and procurement (optional)

- Analyse the performance and quality requirement for sourcing
- Analyse the business requirement for sourcing
- Evaluate the impact of environmental factors on sourcing activity
- Formulate action plans to respond to environmental factors
- Prepare sourcing plans
- Identify and evaluate sourcing options
- Assess and select new suppliers
- Assess and improve supplier performance
- Establish supplier agreements
- Select and implement supply management systems
- Create and manage collaborative supplier relationships
- Construct and manage supply control system
- Prepare resource plans for sourcing including financing options
- Identify trade-off opportunities with other supply chain activities
- Develop sourcing plans and proposals evaluating costs and added value
- Develop plans and procedures for reverse logistics
- Manage the sourcing operations to comply with legislative and social responsibilities
- Select, implement and sustain IT support for sourcing activity
- Establish, maintain and improve sourcing performance management system
- Develop sourcing processes and procedures
- Identify and select sourcing and procurement service providers

Supply Chain Flow and Network Management (compulsory)

- Identify opportunities to use e-business/IT integration to improve supply chain flows
- Identify opportunities to use ERP systems to improve supply chain flows
- Identify opportunities to use new developments to improve supply chain flows
- Identify opportunities to collaborate with suppliers to improve supply chain flows
- Identify opportunities to collaborate with customers to improve supply chain flows
- Model supply chain networks as a holistic, flow-oriented system
- Devise tactical plans for the use of transport in the supply chain
- Devise tactical plans for the use of warehousing in the supply chain
- Devise tactical plans for the use of inventory in the supply chain
- Devise tactical plans for the use of sourcing in the supply chain
- Devise tactical plans* for the use of production in the supply chain
- Map the processes connected with supply chain activity
- Audit supply chain and interpret the findings
- Contribute to the creation of supply chain objectives
- Develop and document supply chain processes and procedures
- Establish, maintain and improve supply chain performance management systems
- Apply appropriate techniques to plan and model processes within the supply chain
- Apply appropriate techniques to plan and model inventory positioning within the supply chain
- Provide technical and professional advice on preparing programmes and projects to implement supply chain strategy

Transport Management (optional)

- Analyse the supply and demand of transport resources
- Analyse the performance and quality requirement for transport activity
- Evaluate the impact of environmental factors on transport activity
- Formulate action plans to respond to environmental factors
- Plan national and international movements
- Plan the coordination of multi-modal operations
- Prepare resource plans for the movement of goods including financing options
- Identify trade-off opportunities with other supply chain activities
- Develop transport plans and proposals evaluating costs and added value

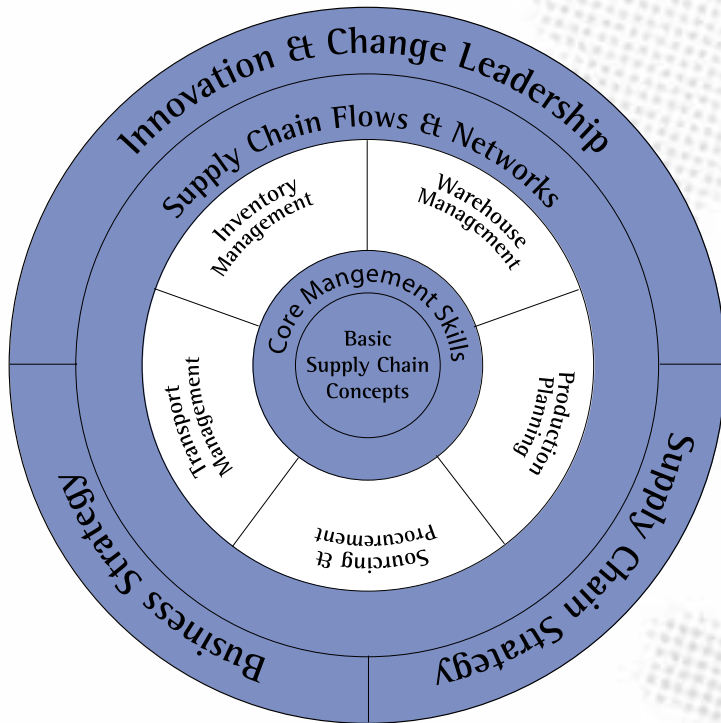
- Develop plans and procedures for reverse logistics
- Manage the transport operations to comply with legislative and social responsibilities
- Select, implement and sustain IT support for transport activities
- Establish, maintain and improve transport performance management system
- Develop transport processes and procedures
- Select transport equipment
- Identify and select transport service providers

Warehouse Management (optional)

- Analyse warehouse stock list and throughput profile
- Analyse the performance and quality requirement for warehouse activity
- Analyse the business requirement for warehousing activity
- Evaluate the impact of environmental factors on warehouse activity
- Formulate action plans to respond to environmental factors
- Determine space requirements
- Select warehouse work methods
- Select warehouse equipment
- Select warehouse packing equipment and materials
- Plan warehouse layouts
- Prepare resource plans for the warehousing including financing options
- Identify trade-off opportunities with other supply chain activities
- Develop warehouse plans and proposals evaluating costs and added value
- Develop plans and procedures for reverse logistics
- Manage the warehouse operations to comply with legislative and social responsibilities
- Select, implement and sustain IT support for warehouse activities
- Establish, maintain and improve warehouse performance management system
- Develop warehouse processes and procedures
- Identify and select warehouse service providers

3.4 Strategic Level

The Strategic Level is comprised of six compulsory modules; all the modules below must be completed.



Basic Supply Chain Concepts (compulsory, see competence listing in 3.1)

Business Strategy

- Provide assistance in the formulation of corporate strategic position
- Contribute to the evaluation and selection of corporate strategy
- Contribute to the implementation of corporate strategy.
- Identify organisational logistics needs to support business strategy
- Agree priorities for developing the logistics activity
- Assess the impact of the economic principles of supply and demand
- Evaluate the structure of the market place
- Evaluate the usage of alternative costing and pricing methodologies
- Identify options for funding infrastructure
- Investigate and evaluate the provision of all kinds of infrastructure
- Conduct an economic appraisal and social cost-benefit analysis
- Evaluate the impact of government & political influences and policy formation
- Evaluate the impact of social and environmental policies and developments
- Evaluate the impact of economics and policy on logistics strategies

- Evaluate the impact of legislation and regulations
- Formulate action plans to respond evaluation of economics and policy

Supply Chain Strategy

- Align supply chain strategy to business strategy
- Align supply chain strategy to product development and marketing strategies
- Establish and communicate supply chain objectives
- Determine supply chain performance and quality requirements
- Determine customer supply chain requirements
- Evaluate the opportunities to benchmark supply chain activities
- Map and analyse AS IS supply chain
- Determine supply chain cost to serve
- Review decoupling point position
- Identify & evaluate opportunities for collaborative relationships
- Determine TO BE supply chain performance specification
- Check supply chain plans meet corporate, legislative and social responsibilities
- Generate potential supply chain configurations
- Evaluate and select AS IS configuration
- Prepare consolidated supply chain plan evaluating costs and value added
- Develop plans for securing resources to support plans
- Justify proposals for expenditure on strategy
- Review tactical supply chain plans
- Create and maintain a supply chain organisation
- Specify the requirement of systems to support supply chain plans
- Evaluate the performance and quality of supply chain operations

Core Management Skills

- Create, maintain and enhance effective working relationships
- Communicate in an effective manner
- Identify, plan, implement and manage change
- Prepare a business plan
- Interpret business financial statements
- Prepare a logistics budget and monitor activity against operating plan
- Set up and interpret performance indicators to assess business performance
- Design an appropriate organisational control structure
- Identify how different supply chain activities impact on each other
- Identify opportunities for functions to work differently together

- Comply with relevant legislation and regulations
- Apply management tools, methods and techniques such as statistics, process management, modeling and quantitative methods
- Develop teams and individuals
- Manage projects
- Develop and implement plans to manage knowledge

Innovation and Change Leadership

- Prepare and provide opportunities for individuals and groups to learn by collaboration
- Provide opportunities for individuals to learn.
- Initiate change and improvement to logistics operations.
- Analyse the pressures for change
- Create a clear shared vision for logistics change
- Prepare a plan to develop the capacity to change
- Identify and communicate the actionable first steps
- Prepare plans for the implementation of logistics strategy
- Align measurement and reward systems

Supply Chain Flow and Network Management

- Identify opportunities to use e-business/IT integration to improve supply chain flows
- Identify opportunities to use ERP systems to improve supply chain flows
- Identify opportunities to use new developments to improve supply chain flows
- Identify opportunities to collaborate with suppliers to improve supply chain flows
- Identify opportunities to collaborate with customers to improve supply chain flows
- Model supply chain networks as a holistic, flow-oriented system
- Map the processes connected with supply chain activity
- Audit supply chain and interpret the findings
- Develop and document supply chain processes and procedures
- Establish, maintain and improve supply chain performance management systems
- Apply appropriate techniques to plan and model processes within the supply chain
- Apply appropriate techniques to plan and model inventory positioning within the supply chain

Glossary of Terms Used in Standards of Competence

Term	Description
AS IS supply chain	
ATO	Assemble to order
Communication	Communication includes written or oral
Competitive advantage	Competitive advantage means cost leadership, service differentiation or product leadership
Decoupling point	Decoupling points separate forecast and order driven activity
Demand amplification	Demand amplification is also referred to as the Forrester effect, bullwhip or whiplash effects
Demand characteristics	Demand characteristics include random/predictive, stable/trends, seasonality, fast/slow, high/low, outliers
Demand variability	Demand variability includes mean absolute deviation, mean squared error and standard deviation
Environment	Environment includes legislation, economic policies, government policies, technology developments and information technology developments
ETO	Engineer to order also referred to as build or purchase to order
Financial impact	Financial impact considers profit and loss statement, balance sheet, return on investment and cash flow
Financial statements	Financial statements include profit and loss statement, balance sheet, return on investment and cash flow
Forecasting systems	Forecasting systems include short term, long term and seasonal
Government and political	Government and political includes local, national, European and international as appropriate
Infrastructure	Infrastructure includes warehouse, transport, power, energy, public owned or private
Inventory control	Inventory control relates to all types of inventory: raw materials, work in progress, parts, components, finished goods, returned goods. Control refers to accuracy, rotation and quality.
Inventory management systems	Inventory management systems include fixed order, fixed order cycle and requirements planning
Lead times	Lead times include order cycle time, supply chain response time, process cycle time, acceleration and deceleration times
Logistics	Planning, execution and control of the movement and placement of people and/or goods and of the supporting activities related to such movement and placement, within a system organized to achieve specific objectives.
MTO	Make to order
MTS	Make to stock
Multi-modal	Multi-modal involves movements that take place on more than transport mode during the same journey

Non-productive inventory	Non-productive inventory includes excess and surplus stock
Performance objectives	Performance objectives include costs, service, reliability, responsiveness, flexibility, utilisation and quality
Plans	Plans include short-term, long-term and contingency and could include the use of internal or external resources
Primary transport	Primary transport involves bulk movements between two points often requiring the scheduling of driver, motive unit and trailer separately
Processes	Processes cover planning, execution, enabling and contingency activities
Productive inventory	Productive inventory includes safety stock, replenishment stock and anticipation stock
Reverse logistics	Reverse logistics refers to the return of product that is damaged, faulty, received in error, excess or surplus stock, packaging.
Secondary transport	Secondary transport involves movements often involving multiple deliveries involving scheduling the vehicle and driver together
Space requirements	Space requirements include storage areas, access aisles and gangways and working areas for loading, unloading, packing and assembly
Supply chain management	Organisation, planning, control and execution of the products flow from development and purchasing, through production and distribution, to the final customer in order to satisfy the requirements of the market cost-effectively.
Supply chain activities	Supply chain activities are associated with planning, source, make, deliver and return
Supply chain developments	Supply chain developments include CPFR, VMI, ECR, JIT
Supply chain flow barriers	Flow barriers include communications, functional barriers, lack of trust, inaccurate forecasting, imbalance between supply and demand, lack of supply chain process thinking
Supply chain map	Supply chain maps include primary and secondary activities and principle flows
Sustainability	Sustainability considers environmental, social and political factors to ensure activity can be performed over a period of time
Tactical supply chain plans	Tactical supply chain plans include sourcing, make, return and deliver covering warehouse, transport and inventory
TO BE supply chain	
Transport modes	Transport modes include: road, rail, air, sea, canal, pipeline
Transport resources	Transport resources includes drivers and vehicles either owned or contracted, packing equipment and handling equipment
Warehouse equipment	Warehouse equipment includes mechanical handling equipment, packing equipment, battery charging equipment, storage equipment and loading/unloading bay equipment such as dock levellers and shelters
Warehouse layouts	Warehouse layouts include planned areas for storage, aisles, gangways and working areas
Warehouse resources	Warehouse resources include labour, space and equipment
Warehouse stock analysis	Warehouse stock analysis includes characteristics such as toxicity, temperature, humidity, fragility, security

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