APICS SUPPLY CHAIN MANAGER

Competency Model

APICS
The Association for Operations Management®

APICS SUPPLY CHAIN MANAGER
COMPETENCY MODEL

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INTRODUCTION

Supply chain managers are crucial to the global economy. They represent a unique discipline responsible for supporting the global network of delivering products and services across the entire supply chain, from raw materials to end customers. Specifically, supply chain managers engage in the design, planning, execution, control, and supervision of supply chain activities with the objectives of creating net value, building a competitive infrastructure, leveraging worldwide logistics, synchronizing supply with demand, and measuring performance globally.

APICS The Association for Operations Management is the premier membership organization providing education, certification, and career development opportunities to supply chain professionals worldwide. The APICS Certified Supply Chain Professional (CSCP) Learning System and corresponding certification gives professionals the knowledge and skills they need to be successful. Knowledge and skills combined with work experience create the competencies required for individuals to excel in their careers and distinguish themselves in their field. In recognition of this, APICS developed the Supply Chain Manager Competency Model to guide individuals considering careers in supply chain management, supply chain professionals seeking to advance their positions, and human resource managers who are hiring in this fast-growing field.

About the model

The structure of the APICS Supply Chain Manager Competency Model follows guidelines set by the Employment and Training Administration of the United States Department of Labor. The model is visually represented in a diagram for easy reference, as seen on the following page. The model is organized into tiers of competencies and includes descriptions of the activities and behaviors associated with each competency. The Competency Model Clearinghouse defines competency as “the capability to apply or use a set of related knowledge, skills, and abilities required to successfully perform 'critical work functions' or tasks in a defined work setting.” In many cases, the competencies outlined in this model are adapted from the APICS Operations Management Body of Knowledge (OMBOK) Framework.

Acknowledgements

The APICS Supply Chain Manager Competency Model was a research project undertaken by the APICS 2009 Future Leaders. They were supported by the 2009 Body of Knowledge Committee, the 2009 Voice of the Customer Committee, and staff in the Professional Development Division of APICS. In addition, APICS leaders and staff used public domain information obtained from the Competency Model Clearinghouse (www.Careeronestop.org) in the model’s creation.

Occupation-related

Supply Chain Manager Specific Requirements

includes requirements such as certification, licensure, and specialized educational degrees, or physical and training requirements for supply chain managers.

- Bachelors or equivalent degree
- Supply chain industry association membership
- Supply shain-specific certification

Profession-related

Supply Chain Manager Knowledge Areas and Technical Competencies

represent the knowledge, skills, and abilities needed by supply chain managers.

- Performance trade-offs
- Warehouse management
- Transportation management
- Supply chain synchronization
- Risk management
- Sustainability
- Locating facilities
- Distribution
- Warehousing
- Logistics
- International regulations
- Strategic sourcing and supplier relationship
- Customer relationship management
- Applying lean and six sigma tools

Operations Management Knowledge Areas and Technical Competencies

represent the knowledge, skills, and abilities needed by all occupations within operations management, including supply chain managers.

- Strategy development and application
- Supply chain management
- Process improvement and six sigma
- Execution, planning, scheduling control
- Project management
- Lean management
- Enabling technology application

Foundational

Workplace and Leadership Competencies

represent those skills and abilities that allow individuals to function in an organizational setting.

- Problem solving and decision making
- Teamwork
- Accountability and responsibility
- Customer focus (internal and external)
- Planning and organizing
- Conflict management
- Enabling technology

Academic Competencies

are primarily learned in an academic setting, and include cognitive functions and thinking styles.

- Math, statistics, and analytical thinking
- Reading and writing for comprehension
- Applied science and technology
- Supply chain fundamentals
- Foundations of business management
- Operations and enterprise economics

Personal Effectiveness Competencies

represent motives and traits as well as interpersonal and self-management styles and generally are applicable to a number of industries at a national level.

- Awareness of the needs of others
- Integrity
- Continuous learning
- Effective communication
- Interpersonal skills
- Creativity

FOUNDATIONAL COMPETENCIES

Personal Effectiveness Competencies

Personal Effectiveness competencies represent motives and traits as well as interpersonal and self-management styles, and generally are applicable to any number of industries.

Awareness of the needs of others

- Understand others' business needs and goals.
- Have perspective into others' points of view.
- Build rapport and credibility with colleagues.
- Anticipate others' needs and respond to their concerns and problems.

Integrity

- Demonstrate trustworthiness and professionalism in dealing with clients, peers, and team members.
- Respond in a consistent manner to situations that require honesty and candor.
- Avoid conflicts between work and personal interests or activities.

Continuous learning

- Demonstrate an interest in personal learning and development; seek feedback from multiple sources about how to improve and develop; modify behavior based on feedback or self-analysis of past mistakes.
- Take steps to develop and maintain knowledge, skills, and expertise necessary to achieve positive results; participate fully in relevant training programs and actively pursue other opportunities to develop knowledge and skills.
- Anticipate changes in work demands and participate in assignments or training that address these changing demands; treat unexpected circumstances as opportunities to learn.
- Engage in personal career development by identifying occupational interests, strengths, options, and opportunities; make insightful career planning decisions based on integration and consideration of others' feedback; seek out additional training to pursue career goals.

Effective communication

- Express information to individuals or groups considering the audience and the nature of the information (*e.g.*, technical or controversial); speak clearly and confidently; organize information in a logical manner; speak using common English conventions including proper grammar, tone and pace; track audience responses and react appropriately to those responses; effectively use eye contact and non-verbal expression.
- Receive, attend to, interpret, understand, and respond to verbal messages and other cues; pick out important information in verbal messages; understand complex instructions; appreciate feelings and concerns of verbal messages.
- Practice meaningful two-way communication by speaking clearly, paying close attention and seeking to understand others, listening attentively and clarifying information and attending to nonverbal cues and responding appropriately.
- Influence others; persuasively present thoughts and ideas; gain commitment and ensure support for proposed ideas.

Interpersonal skills

- Relate well to clients, colleagues, and team members.
- Maintain a positive, supportive, and appreciative attitude.
- Actively listen to others and demonstrate an understanding of their point of view.
- Create an open environment that encourages people to work together to solve problems and improve practices and services.
- Explore and resolve conflicts as they arise.
- Communicate clearly to avoid misunderstanding.

Creativity

- Demonstrate intellectual curiosity about why things are the way they are. Challenge the status quo.
- Change, elaborate, adapt, and improve own ideas or those of others.
- Demonstrate a bias towards action; materialize thoughts into products or services.

FOUNDATIONAL COMPETENCIES

Academic Competencies

Academic competencies are primarily learned in an academic setting and include cognitive functions and thinking styles.

Math, statistics, and analytical thinking

- Practice applied mathematics in collecting and interpreting quantitative data.
- Demonstrate the ability to scrutinize and break down facts and thoughts into their strengths and weaknesses.
- Develop the capacity to think in a careful and discerning way, to solve problems, to analyze data, and to recall and apply information.

Reading and writing for comprehension

- Understand what has been read; gather information from a text.
- Demonstrate an understanding of material read by forming opinions and sharing personal experiences.
- Apply the strategies of self-questioning, retelling, writing, summarizing, predicting and verifying, story mapping, role play, and responsiveness.

Applied science and technology

- Demonstrate an understanding of the factors that are considered important to the branch of knowledge or technology.
- Understand the use of technology and its interrelation with life, society, and the environment, drawing upon such subjects as industrial arts, engineering, applied science, and pure science.
- Develop knowledge of specific tools and how they affect a person's ability to adapt to and control his or her environment.
- Demonstrate an ability to gain knowledge or understanding to meet a specific, recognized need.
- Possess knowledge that is sufficiently general, clearly conceptualized, carefully reasoned, systematically organized, critically examined, and empirically tested with regard to the specific science or technology.

Supply chain fundamentals

- Understand that supply and logistics is a system of organizations, people, technology, activities, information, and resources involved in moving a product or service from supplier to customer.
- Possess basic knowledge of supply chain activities, including transformation of natural resources, raw materials, and components into a finished product that is delivered to the end customer.
- Recognize the ways that supply chains link value chains.

Foundations of business management

- Understand all management activities carried out in the course of running an organization, including controlling, leading, monitoring, adjusting, organizing, and planning.
- Analyze financial statements and explain the implications of standard financial ratios and all components of the balance sheet and income statement.
- Create interactive decision support models that allow the development of multiple scenarios and demonstrate the sensitivity of outcome to multiple independent variables.
- Calculate project and organizational cash flow forecasts; present value investment comparisons and risk-adjusted return calculations.
- Demonstrate knowledge of visual presentation techniques including charting, histograms, and flow sheets, as well as oral and written presentation techniques.
- Practice basic business communications.
- Understand fundamental organizational behavior.

Operations and enterprise economics

- Understand the importance of and demonstrate the ability to take raw materials or knowledge and convert it into a product or service that has more value to the customer than the original material or data.
- Determine the success or failure rate of a business using financial accounting, incorporating terms and techniques including: income; expense; cost of goods sold; gross margin; balance sheet; return on assets; inventory turns; capital asset management; and cash management.
- Employ the technique of break-even analysis, which finds the break-even point, the volume at which revenues exceed total costs.
- Find the Best Operating Level (BOL), the level of capacity for which a process was designed. This is the also volume of output at which average unit cost is minimized.

FOUNDATIONAL COMPETENCIES

- Use cost accounting systems to keep track of all costs of building products, labor, material, overhead, and variances. These systems include activity-based costing (ABC) and cost analysis and control.

Workplace and Leadership Competencies

Workplace competencies represent those skills and abilities that allow individuals to function in an organizational setting.

Problem solving and decision making

- Practice goal-directed thinking and action in situations for which no routine solutions exist.
- Understand a problem situation and its step-by-step transformation based on planning and reasoning.
- Demonstrate ability in choosing between alternative courses of action using cognitive processes such as memory, thinking, and evaluation.
- Demonstrate ability to map processes of likely consequences of decisions, to work out the importance of individual factors, and to choose the best course of action.

Teamwork

- Demonstrate a commitment to the mission and motivation to combine the team's energy and expertise to achieve a common objective.
- Understand the dynamics of effective teamwork in order to attain higher levels of team performance.
- Demonstrate ability to work as part of a tight-knit and competent group of people.

Accountability and responsibility

- Demonstrate a willingness to accept responsibility or and accountability for one's actions.
- Exhibit a moral, legal, or mental accountability in areas for which one is responsible.
- Understand that these two workplace competencies are intertwined, and that both abilities must be present in order to succeed.

Customer focus (internal and external)

- Understand this is an organizational orientation toward satisfying the needs of potential and actual customers.
- Ensure that the whole organization, and not just frontline service staff, puts its customers first.
- Ensure all activities, from the planning of a new product to its production, marketing, and after-sales care, are built around the customer.
- Understand that every department and every employee should share the same customer-focused vision.
- Practice good customer relations management and maintain a customer relations program.
- Demonstrate ability able to balance the needs of the organization and the needs of the customer.

Planning and organizing

- Effectively plan what is to be achieved and involve all relevant staff members.
- Anticipate important or critical events, identifying resource requirements and assigning responsibility for specific work, including deadlines and performance expectations.
- Demonstrate the use of information-gathering techniques, analyzing situations and identifying implications in order to make correct decisions.
- Demonstrate ability to monitor progress and to make changes as required.
- Ensure that staff is aware they will be accountable for achieving the desired results through planned program evaluation and individual performance appraisal.
- Ensure that staff is provided with the necessary tools to succeed.

Conflict management

- Demonstrate ability to manage conflict by identifying and handling conflicts in a sensible, fair, and efficient manner.
- Demonstrate skill in effective communicating, problem solving, and negotiating with a focus on party interests.

Enabling technology

- Provide a means to generate giant leaps in performance and capabilities of the user using equipment and methodology.
- Possess knowledge of hardware and software components which, when properly integrated, enable a specific process to be realized.
- Understand that all technology enables something.

PROFESSION-RELATED COMPETENCIES

Operations Management Knowledge Areas and Technical Competencies

Operations management knowledge areas and technical competencies represent the knowledge, skills and abilities needed by all occupations within operations management, including supply chain managers.

Strategy development and application

- Answer the questions: "Where are we going?" and "How are we going to get there?", and create a specific and purposeful path when there are clear answers to these two questions.
- Create a strategy based on the company's core values, mission, and your vision.
- Determine core competencies, strategic challenges.
- Develop goals, objectives and specific strategies to accomplish those goals.
- Create priorities once objectives are determined.
- Deploy action plans throughout the organization.
- Establish a process for aligning day-to-day decisions to the strategic plan.

Supply chain management

- Demonstrate ability to manage the network of interconnected businesses involved in the ultimate provision of product and service packages required by end customers.
- Understand that supply chain management spans all movement and storage of raw materials, work-in-process inventory, and finished goods from point-of-origin to point-of-consumption.

Process improvement and six sigma

- Understand the systematic approach to closing of process or system performance gaps through streamlining and cycle time reduction, and identify and eliminate causes of quality below specifications, process variation, and non-value-adding activities.
- Maintain company processes that afford optimum operation and enhance the company's quality management system.
- Demonstrate ability to visualize the total process and aid in locating problem areas using process mapping, quality improvement, and visualization tools to locate, quantify, and correct root causes of problems.
- Perform periodic evaluations to maintain processes by gathering pertinent information, such as problem symptoms from knowledgeable sources and carrying these through to the problems, potential causes, and root causes of the problem.
- Hold gains in process improvements by establishing key performance measurements, benchmarking metrics, and continuous process improvement initiatives to improve process quality on continual basis.

Execution planning, scheduling, and control

- Determine the need for material and capacity to address expected demand, execute the resulting plans, and update planning and financial information to reflect the results of execution.
- Plan the management function by defining goals for future organizational performance and decide on the tasks and resources needed to attain those goals.
- Schedule a timetable of events and decide when and where certain events will occur.
- Control and check errors, taking any corrective action so that deviation from standards are minimized and the stated goals of the organization are achieved in a desired manner.

Project management

- Understand the discipline of planning, organizing, and managing resources to bring about the successful completion of specific project goals and objectives.
- Achieve project goals and objectives while honoring the project constraints, typically scope, time, and budget.
- Optimize the allocation and integration of inputs necessary to meet pre-defined objectives.
- Define the set of activities that use resources, such as money, people, materials, energy, space, provisions, communication, and motivation, to achieve the project goals and objectives.

PROFESSION-RELATED COMPETENCIES

Lean management

- Identify and reduce or eliminate waste in all areas of a supply chain.
- Calculate the total system cost of delivering a product or service to the customer.
- Develop systems that allow employees to produce perfect results by:
  - Educating suppliers to create value for customers by streamlining processes in the value chain.
  - Using suppliers whose methods and core competencies will align with lean requirements and developing long-term relationships with them.
  - Reducing or entirely eliminating the cost of changing from one product or service to another.

Enabling technology application

- Recognize that continuous process improvement is an accepted way of life in business and that few companies lack a continuing quality or process improvement effort.
- Implement improvement methods, such as business process reengineering, Total Quality Management (TQM), Six Sigma, lean manufacturing, and Theory of Constraints.
- Understand that technology and process functionality has an interconnected relationship and that each helps transform the other.
- Initiate process improvements that are enabled and supported by technology.

Supply Chain Manager Knowledge Areas and Technical Competencies

Supply chain manager knowledge areas and technical competencies represent the knowledge, skills and abilities needed by supply chain managers.

Performance trade-offs

- Design a responsive, agile and efficient supply chain that has the ability to:
  - Meet the changing and diverse needs of customers.
  - Manufacture and deliver a broad range of high-quality products and services in the shortest reliable lead times and in varying volumes to provide enhanced value to customer.
  - Deliver high-quality products with short lead times at low cost.

Warehouse management

- Control the movement and storage of materials within a warehouse.
- Apply a total systems approach to designing and managing the entire flow of information, materials, and services – from raw materials, suppliers, through factories and warehouses, and finally to the customer.
- Monitor the movement of products through a warehouse.
- Provide and transform inputs into products and services, and link to the distribution network and local service providers that localize the product.

Transportation management

- Manage transportation operations.
- Maximize freight loads while minimizing freight costs.
- Ensure efficient use of transportation resources while meeting the needs of the customer.
- Integrate movement demands with vehicle resources.

Supply chain synchronization

- Balance supply with demand, considering both lead time and demand variability created by supply patterns not matching demand patterns.
- Effectively collaborate and communicate with supply chain members.
- Integrate activities across organizations on the supply chain by ensuring information visibility in inventory levels, anticipated productions, and material-in-transit.
- Mitigate the bullwhip effect.

Risk management

- Accurately identify risks affecting supply, transformation, delivery, and customer demand.
- Develop strategies, for example dual sourcing, buffering, forward buying, etc that minimize financial impact uncertainties, such as yields, timing, pricing, and catastrophic events.
- Effectively analyze the probability, control, and impact of risks identified.

PROFESSION-RELATED COMPETENCIES

Sustainability

- Understand current industry and government regulations governing sustainability.
- Be able to calculate carbon footprint of business processes.
- Develop processes that strive to eliminate waste.
- Incorporate renewable raw materials.
- Assemble an effective reverse logistics program.
- Pursue transportation alternative to reduce energy and emissions.
- Utilize safe and reusable containerization.
- Pursue paperless documentation.
- Coordinate shipping and freight to use full truckloads.
- Convert outputs to inputs; recycle end-products and components when possible.

Locating facilities

- Apply qualitative techniques when quantifiable data are not available or when measures for different criteria relevant to the logistics decisions are used.
- Apply quantitative techniques when solving logistic problems, such as the designing of routes and the scheduling of vehicles.
- Incorporate the transportation model to find the optimal allocation of sources of supply, typically plants, to meet demand at destinations in the network, typically warehouses.
- Efficiently distribute products among suppliers, manufacturing facilities, distribution centers, warehouses, and customers through a logistics network.
- Reach optimal efficiency of all vehicle assets within a network through a vehicle routing process.

Distribution

- Move material, usually one organization's finished goods or service parts, from the manufacturer or distributor downstream to the customer.
- Transfer goods and services from the raw materials suppliers and producers to the end users or consumers.
- Choose shipping methods, considering the trade-offs between costs and benefits.
- Apply the cross-docking technique when bringing items into a distribution center for immediate dispatch.
- Divide truckloads of homogeneous items into smaller, more appropriate quantities for use by break-bulk handling.
- Consolidate several items into larger units for fewer handlings, for example placing items in boxes loaded and wrapped as a pallet by unitization packaging.

Warehousing

- Receive, store, and ship materials to and from production or distribution locations by incorporating warehousing activities.
- Configure warehouses to have formal storage locations that identify the row, rack section, level, and shelf location, typically with an alphanumeric location bar code or label.
- Place high-turn items closest to packing and shipping areas, which will reduce picking, put-away times, and transportation within the warehouse.
- Select random locations when travel distances are not an important consideration and when overall utilization of warehouse space is important.

PROFESSION-RELATED COMPETENCIES

Logistics

- Obtain, produce, and distribute materials and products in the proper places and in the proper quantities.
- Apply logistics with the movement of personnel, as well as the design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposition of material.
- Develop and implement a formal logistics strategy.

International regulations

- Comply with international regulations in decision making in the distribution system, including customs regulations on what is restricted from entering a country; trade tariffs and duties on imported goods; security regulations, such as those contained in the 2007 SAFE Ports Act; and trade agreements, such as NAFTA or those of the European Union.
- Ensure the competitiveness of a country or protect a country's distribution and manufacturing systems by incorporating international regulations.
- Effectively bring material into a free trade zone (FTZ).
- Consider import and export taxes, relative currency valuation and volatility, and special agreements between cooperating countries when designing and operating a supply chain.

Strategic sourcing and supplier relationship management

- Effectively locate and source key materials suppliers, while analyzing the total cost associated with procuring an item or service.
- Focus on developing and maintaining long-term relationships with trading partners who can help the purchaser meet profitability and customer satisfaction goals.
- Integrate automation of request for quote (RFQ), request for proposal (RFP), electronic auctioning, business-to-business commerce (B2B), and contract management processes when using a strategic sourcing approach.
- Establish methods of meeting customer satisfaction goals.

Customer relationship management

- Effectively collect and analyze sales and marketing information to understand and support existing and potential customer needs.
- Effectively link delivery and service with customer needs in the design process.
- Incorporate contract management and administration when holding suppliers and customers accountable for meeting the work specified in a contract.
- Evaluate contract responsiveness, negotiate changes to a contract, and ensure that contractors are compensated for products or services provided.
- Measure customer satisfaction and develop loyal customers by using performance metrics taken from the customer's perspective, with criteria such as on-time delivery, perception of quality, percentage of complaints, and length of wait times.

Applying lean tools and six sigma

- Establish improvement initiatives focused on the reduction or elimination of waste in all areas of the supply chain.
- Execute ways of eliminating unnecessary steps in product design, as well as aligning suppliers' processes with the delivery schedules required for lean manufacturing.
- Demonstrate an understanding of unit acquisition cost by examining the total cost of ownership (TCO).
- Demonstrate the knowledge and experience to actively participate in Lean teams using tools such as:
  - Just-in-Time
  - Kaizen events
  - Kanban
  - Value Stream Mapping
- Demonstrate the knowledge and experience to actively participate in Six Sigma teams to define, measure, analyze, improve, and control processes (DMAIC).

OCCUPATION-RELATED COMPETENCIES

Supply Chain Manager Specific Requirements

Supply chain manager specific requirements such as certification, licensure, and specialized educational degrees, or physical and training requirements for supply chain managers.

Post secondary education

- The majority of supply chain management professionals hold post secondary degrees – a Bachelor's or equivalent.
- While a number of supply chain professionals have degrees related to supply chain or operations management, the majority hold degrees in other fields including, but not limited to, business, economics, engineering, or liberal arts studies.

Association membership

- Professional association membership ensures that the supply chain professional is able to link into a network of practitioners to share best practices, develop their careers, and continue their professional education. There are a number of supply chain associations related to specific industries, including but not limited to:
  - APICS The Association for Operations Management ***(APICS)***
  - Institute of Supply Management ***(ISM)***
  - Supply Chain Council ***(SCC)***
  - Council of Supply Chain Management Professionals ***(CSCMP)***
  - American Society for Transportation and Logistics ***(ASTL)***
  - Warehousing Education and Research Council ***(WERC)***

Certifications

- Once the professional is in the workplace, it is desirable to obtain a supply chain specific certification. While there are a number of supply chain certifications related to specific industries, general certifications include:
  - Certified Supply Chain Professional (CSCP) – APICS The Association for Operations Management
  - Certified in Production and Inventory Management (CPIM) – APICS The Association for Operations Management
  - Certified Professional in Supply Management (CPSM) – Institute of Supply Management
  - SCOR/P – Supply Chain Council
  - Certification in Transportation and Logistics (CTL) – American Society for Transportation and Logistics

APICS The Association for Operations Management

APICS The Association for Operations Management is the global leader and premier source of the body of knowledge in operations management, serving nearly 40,000 members globally. APICS education and certification programs are recognized worldwide as the standard of professional competence in production and inventory management, operations management, and supply chain management.

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