

KENTUCKY DEPARTMENT OF EDUCATION
SUPPLY CHAIN MANAGEMENT AND LOGISTICS
FUTURING PANEL REPORT
SEPTEMBER 11, 2023



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Project Overview

On May 23, 2023, the Kentucky Department of Education (KDE) partnered with MBA Research & Curriculum Center to convene a Futuring Panel with supply chain management (SCM) and logistics executives and professionals from areas across Kentucky. The panel was conducted in Frankfort at the department's Office of Career and Technical Education. This Futuring Panel was assembled to support the development of a supply chain management pathway for KDE, including four courses and possible certifications, and to initiate business and industry partnerships for KDE in this career area. It was facilitated to provide insight into SCM trends and issues that are impacting workforce needs today and in the years to come.

During the panel proceedings, supply chain management professionals provided their perspectives and expertise on:

- Definitions for *supply chain*, *supply chain management*, and *logistics*
- How work is organized within the supply chain management industry
- Trends shaping SCM workforce-development needs in Kentucky
- A review and validation of current curriculum standards in SCM, along with identification of gaps within the standards
- A list of broad topics to include in a pathway course of study
- Validation of ethical leadership traits as they relate to SCM
- Ethics and ethical dilemmas in SCM
- Credentials and certifications of value in the SCM industry
- Ongoing professional development recommendations
- Emerging occupations



Kentucky Department of Education

MBA Research and Curriculum Center Futuring Panel Report

The supply chain management and logistics panelists represented one or more of the following areas:

- Planning
- Sourcing
- Making/Manufacturing
- Delivering
- Returns/Reverse logistics
- Enablement

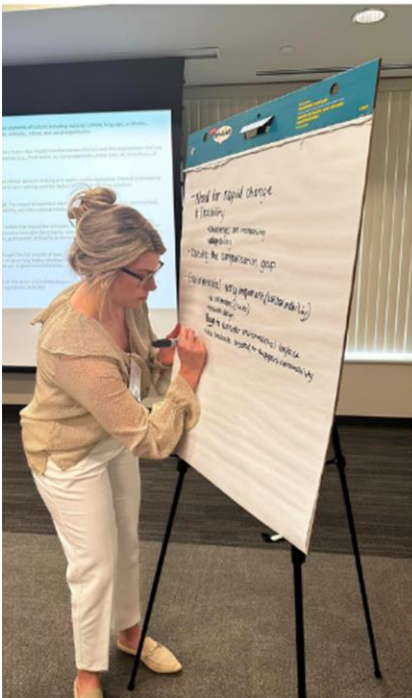


Photo Credit: KY Office of Career and Technical Education

Definitions Discussion

Panel participants were asked to review, discuss, and respond to the following definitions. We recorded their feedback for possible adjustments to our current, working definitions for *supply chain*, *supply chain management*, and *logistics*. The definitions are still a work-in-progress as we consider changes based on the feedback.

SUPPLY CHAIN: The network of organizations, activities, and technologies involved in creating a product and delivering it to the consumer

- The production and distribution; getting the finished product to consumers
- Add “materials” or “supplier of materials”
- Products “and services”
- Add “supplier of people” Heather Embry, Walmart SC

“Supply Chain is the connection and interaction of multiple steps—from sourcing to manufacturing to warehousing to distribution—to efficiently deliver a good, service, or information to a customer.”

Mark Thackeray, Northern Kentucky University

Comments from online validation survey:

- “Raw materials” should be included
- Add “service” component
- Add in “services” and the definition is sufficient.
- Add “on time” and “with the correct quantity”
- Very broad but gets the point across
- Replace “the network of” with “the collaboration of”
- Add “cost” as part of the network; product “or service”

SUPPLY CHAIN The process of overseeing the flow of products, information, and finances,

MANAGEMENT: from raw materials to finished products

- Needs “inclusion of materials”
- Needs to include “people”
- SCM includes “management of people”
- Integrate “right time, at the right price” for delivery of goods
Troy Roberts, Toyota Tsusho America, Inc.
- “To the consumer,” and “returns”
- Products “and services” (Several people agreed with adding “and services”; see also, supply chain definition feedback, with the same comment, above.)
- “Starting with raw materials and transforming into finished products for the consumer.”

Comments from online validation survey:

- “Services” should be included
- Add “service” component
- I think this is leaving out the interdependence of the different stakeholders in a supply chain. Maybe add a comment around “collaboration to continually improve”?
- “Manager of people”
- This definition would appear to end when the product is finished, and overlooks getting the finished product to consumer through various avenues.
- Include “managing people”—many times, in any setting, managers need to lead associates correctly in order for them to succeed in their positions [and] future endeavors, as well as [for] the business to succeed.
- Add “people” development
- Not just to “finished product” but also “delivered to the customer”
- Add “people” to flow

“The process of overseeing the flow of products, people, information, assets, and finances, from raw materials to finished and delivered products.”

Futuring Panel Participants

LOGISTICS: The coordination of the movement and storage of products throughout the supply chain

- The coordination of “moving parts”

Comments from online validation survey:

- Instead of just “coordination” include “management”
- “Manufacturing” logistics is also a big factor. Where, how, and what will we produce on a given line?
- Very broad, but yes
- Agreed

“The coordination of the movement, storage, and transportation of products throughout the supply chain.”

Futuring Panel Participants

How Work Is Organized in Supply Chain Management Careers

Currently, within the [National Business Administration Standards](#), supply chain management performance indicators (skill and knowledge statements) are located in the business administration core, the business management cluster, and the operations management pathway. We asked the business participants if these are the correct locations based on their experience.

Participants agreed that the supply chain management skills and knowledge generally fall into the business management cluster and operations pathway. They also thought that there is enough content in supply chain management to support the creation of a pathway as opposed to developing course options in other pathways.

MBA Research defines a pathway as meeting the following criteria:

• Presence of a discrete, core body of knowledge
• Existence of a career ladder
• Extent of professional certification and training
• Existence of professional associations
• Critical mass in terms of numbers of jobs

The following is a summary of the discussion regarding supply chain management qualifying as a pathway within business management.

Can SCM be its own pathway? Yes.

Is there a discrete core body of knowledge? Yes.

Is there a career ladder? Yes.

Some of the career areas include planning, procurement, and continuous improvement. An employee can start in purchasing and advance to procurement. They can also start in warehousing, which can lead to sales and operations, then inventory control, and perhaps accounting.

Is a college degree important for entering into a SCM career? Degrees may be required by some companies but not necessary for all entry-level positions.

“Yes, I require it (bachelor’s degree) but not everyone does. Employers are hiring for supply chain management skills specifically, not just operations management. I went to school for supply chain management, myself. There is not a demand for operations management but rather supply chain positions.”

Mindy Antonchak, Catalent Winchester

Is there a critical mass in terms of jobs? Yes!

The group confirmed there is incredible growth and demand for positions in this field.

Are there professional associations, certifications, and training? Yes.

Universities and professional associations offer the following degree programs and continuing education/certifications:

- Northern Kentucky University and Eastern Kentucky University both have postsecondary programs for supply chain management.
- Association of Supply Chain Management (ASCM) provides certifications. **Formerly, American Production Inventory Control System (APICS)*
- Institute of Supply Chain Management (ISM) has two regional branches in Kentucky and offers membership, continuing education, and certifications:
 - Bluegrass chapter: Lexington and the eastern portion of the state
 - Western chapter: covers western portion of the state
- Council of Supply Chain Management Professionals (CSCMP) also offers certifications.

Are credentials required or encouraged?

“CPSM: Certified Professional Supply Chain Management is required to be earned within first four years.”

Mindy Antonchak, Catalent Winchester

Skills for some jobs can be gained through entry-level positions. Examples of entry-level positions include:

buyer / planner/ logistics / materials handler / materials manager / analytical positions / cycle counter / customer account manager / account representative / operations / sales representative / business development representative / inventory control / sales procurement / continuous improvement

Trends Discussion

Panelists were asked to identify trends that are affecting or changing the way they do business or how they plan for the future. Group facilitators stressed the importance of identifying trends evident in the supply chain management and logistics industry, specifically in Kentucky.

We encouraged executives to think about trends from a business perspective rather than from an educational/teaching perspective. Participants were given six general categories to consider as they identified trends.

Trend Categories

CULTURAL:	The major elements of culture, including material culture, language, aesthetics, education, religion, attitudes, values, and social organization
ENVIRONMENTAL:	Any forces that impact how businesses interact with the environment and use their natural resources (e.g., fresh water, air, living organisms, metal ores, oil, most forms of energy)
GLOBAL/POLITICAL:	The impact of a political ideology (e.g., capitalism, socialism, communism, nationalism), stability, and international relations on business
GOVERNANCE:	Factors that impact the principles and standards that govern business decision-making and business oversight. Governance refers to all processes and decisions that seek to define actions, grant power, and verify performance
REGULATORY/LEGAL:	The full breadth of laws, rules, and regulations that businesses are subjected to by governing bodies, whether through civil or common code, domestic or international law, or governmental entities, agencies, or jurisdictions
TECHNOLOGICAL:	The direct and indirect impact of technology on any aspect of business, from strategy to operations to tactics

Trends List

Top Trends

- Automation's ability to help businesses deliver quality products and services to customers on time, at a low cost
- Increase in global economic uncertainty and the need for geopolitical awareness
- Changes in organizational communication and an increase in employee-focused leadership and initiatives
- Building flexibility and security into the network to adapt to rapid change – mesh network
- Being able to source, digest, analyze, and communicate multiple streams of data and tie it back to business strategy
- Rebranding supply chain management to obtain, retain, and promote supply chain talent

Additional Trends

- Working capital management is currently critical
- Demand and capacity planning haven't been mastered yet in a holistic way
- Increase in customers asking for environmental responsibility
- Ongoing challenges with truck driver shortage
- Workplace flexibility is here to stay
- The increasing need for reverse logistics/returns process

Top Trends, Related Skills, and Curriculum Resources

In addition to identifying the top trends, we asked business participants to share the skills needed in the workplace to successfully address the trends. Immediately following each trend and its related skills, teachers will find curriculum resources that are applicable to teaching the skills.

As a reminder, Kentucky teachers have free access to all MBA Research LAP modules via their [MBA Learning Center account](#) (login required). Simply search in Commons for the LAP titles that you would like to use. Don't have an account set up? [Contact MBA Research](#) to get started.

Automation's ability to help businesses deliver quality products and services to customers on time, at a low cost

Key points of discussion

Automation is being utilized to create fully and semi-robotic facilities. The primary issue automation resolves in a warehouse is that of stalled production on a product due to employees not scanning materials to log what is inventoried. Automation can improve these errors. If you design for automation, the building layout is significantly different.

Overall, automation is intended to support the delivery of the best products or services in the most efficient manner to the customer. Automation's benefits can impact inventory (automating the receiving of goods or raw materials), warehousing (managing space, location of products), lean manufacturing, and processes. Essentially, automation is employed to continue the process of getting more out of less.

Concerns and challenges abound for automation/artificial intelligence (AI). Moving toward automation, are jobs going to be here in the future? What keeps employees here now? Automation is coming, but they need to retain their current talent.

- Who controls the automation and maintenance? Who understands AI?
- Safety is an issue.
- Automation is seen as a solution to worker attrition as well as for companies looking to cut production costs and minimize cost increases for customers.
- Manufacturers are telling suppliers they are looking to lower costs 20% over the next 5–10 years. This is contractual. Working with suppliers to determine if the design allows for automation (robotics) or manual labor.
- Companies are also using automation for last checks and quality management.

Reliance on technology for entry-level jobs: **Using tech is cheaper than human workforce**, so paring down makes departments more profitable. Sometimes companies try to reskill employees to relocate them to other jobs, but this is difficult with longtime employees disinterested in change.

One company was reportedly building lifts for three major companies, all automated. **One off-location driver operates six automated lifts.** The lift notifies the driver of any issue it cannot resolve. Once integrated, there will be regular forklift maintenance needed.

Truck speeds are lower but require no breaks. Trucks maintain one service speed. The computer analyzes containers and then schedules remote drivers. The need for workers decreased by 50%. However, there will be an **increased need for maintenance, manufacturing, and warehouse design.** The result will be increased efficiency.

We asked: “How are you using AI today?”

GE Appliances has just begun using it with damaged units—looking for a way to use AI software to document a damaged/returned appliance and determine if it’s a re-sellable unit.

HJI Supply Chain Solutions is teaching its team ChatGPT for scrubbing handbooks, still using humans for double checks, since it is a robot. Having an AI assistant analyze reports can help HR strategize training and free up time to complete other tasks.

Team Modern uses AI in transportation safety (monitor driver attention while driving) and for demand forecasting.

Retailing commerce (Amazon, Kroger, etc.) uses AI to see what demographics shop at specific times of the day and then populate shelves to accommodate. Cashless/Cashierless is next technology.

“Amazon, with 70% accuracy, can tell what you’re going to buy before you buy it. Kroger has learned who shops at their store and at what time of day and will change the display based on that.”

Tyler Marcum, Sherwin Williams

Amazon is responsible for what consumers now expect from e-tailing. The “Amazon Effect” has made our jobs more difficult in many ways because the expectation of customers is that everything be available on demand. The amount that Amazon has invested is not practical at most companies.

“The biggest trend is that consumers expect instant visibility and real-time information. It’s creating a void in the market because some are willing to do that and some are not.”

Eric Rossi, Valvoline Global

Related skills and technology needs:

- Computer background and skills (material requirements planning (MRP) and enterprise resource planning (ERP) systems; SAP, JDE, advanced Excel skills)
- MS Excel based is needed for all resource processing and automotive
- SharePoint, SQL needed
- Microsoft Suite
- Business Objects—data management system
- PowerBI—“fancier Excel” being taught at NKU in lieu of Business Objects
- Basic computer understanding includes ability to use a computer, not just ability to use apps
- Mechanical background—knowing how to relate to and work with automation (repair/maintenance/cross-checking)
- Systems integration: ERP/MRP/etc. and critical thinking about systems and how they interrelate; knowing how to cross-check and test the automation functionality
- Communication skills—knowing where to go to ask questions

Curriculum Resources

Resources to facilitate learning about this trend are available in the following LAP modules:

- LAP-NF-003 TECH-tastic (Technology's Impact on Business)
- LAP-NF-110 In the Know (Nature of Information Management)
- LAP-OP-443 Deliver the Goods (Concept of Supply Chain)

Increase in global economic uncertainty and the need for geopolitical awareness

Key points of discussion

There is a business impact of global crises and challenges in countries like Russia, Ukraine, and Taiwan. There is a need today to be aware of all the global geopolitical issues that are impacting the supply chain network, and to mitigate risks by looking for alternatives when encountering price increases and supply chain disruptions in traditionally “low-cost” countries. There needs to be discernment in understanding price vs. quality and understanding the total-cost model—looking at the intangibles of value, inventory, logistics. Determine if it’s cheaper to manufacture domestically. Participants specifically noted the war in Ukraine, changing relations with China, and supply chain disruptions with other countries.

They are experiencing pressures and shortages in the supply chain and changes in lead times due to ongoing global conflicts. This impacts business continuity, risk, and requires determining if cost increases are real or if there is greed in the supply chain. Consumer-facing product issues in the supply chain have mostly been mitigated. Steel is back to normal. Large companies with materials needing chips for electronics are still delayed.

Understanding increases in trade company tariffs and government regulations is important (Section 301 tariffs on Chinese goods was mentioned). How does this impact price in the entire supply chain? Sourcing and procurement divisions (account reps) typically handle this analysis.

Procurement engineers are now fully involved rather than just on the front end. This is a change from engineering being the driving force and has improved timelines of getting product to the customer and market. This is a need for all sizes of businesses.

Companies are considering bringing back domestic sourcing to address expense increases. They’re also looking at trucking and logistics. There’s been a 500% drop in ocean freight in the last year. They need employees to be globally and domestically educated to make well-rounded decisions. They blend materials with domestic and international goods. Knowing the best sources for each part type, material, or service is key.

Related skills:
• Low-cost counter sourcing
• Ability to recognize price vs. value
• Risk assessment/risk management
• Understanding how to calculate total cost (total-cost model)
• Microsoft Suite
• Determining readiness to market
• Facility/Ability to adapt to change
• Cost analysis and market benchmarks for negotiations to determine if it’s time to purchase
• Training for cross-functionality in accounts payable and receivable and how departments work together to maximize outcomes

Curriculum Resources

Resources to facilitate learning about this trend are available in the following LAP modules:

- LAP-SM-075 Prepare for the Worst; Expect the Best (Nature of Risk Management)
- LAP-EC-903 Be Resourceful (Economic Resources)
- LAP-EC-104 Stretch Your Boundaries (The Global Business Environment)

Changes in organizational communication and an increase in employee-focused leadership and initiatives

Key points of discussion

Employers are looking to attract and retain talent with incentives that respond to today’s employee needs. Diversity, equity, inclusion, and culture matter to employees. This is especially important in a tight labor market.

Engaging with the team and providing detail in constructive feedback increases employee satisfaction. Promoting from within reduces turnover and time spent on training.

One incentive mentioned was a **“pay per shift” app** that employees can use to receive compensation immediately following each shift, rather than waiting a typical pay period for a paycheck.

Related skills:

- Leadership
- Employee retention
- Creating a flexible workplace
- Diversity, Equity, and Inclusion knowledge and understanding
- HR changes
- Pay-per-shift app

Curriculum Resources

Resources to facilitate learning about this trend are available in the following LAP modules:

- LAP-EI-140 More Than Just Talk (Effective Communication)
- LAP-EI-909 Lead the Way (Concept of Leadership)
- LAP-EI-064 Culture Club (The Nature of Organizational Culture)
- LAP-HR-493 Take the Lead! (Leadership in Organizations)

Building flexibility and security into the network to adapt to rapid change

Key points of discussion

The focus today is on adaptability, flexibility, and the security of a mesh network to allow for rapid response to change. Over the last three years, with everything that happened during the pandemic, the supply chain has undergone immense change. Post-pandemic, customers are expressing concerns about risk management, supply chain resilience, and business continuity. The focus today is different and is not always driven by price as it traditionally has been. Companies are willing to pay extra for this supply chain diversification/mesh network. Customers want to know that their supply is secure; it's the leading factor in business discussions.

As global/political things happen that hurt a workforce, it's important to identify the root cause and try to accommodate. Being transparent with communication means fewer misinterpretations and less misinformation spreading. One example was the trucker protests on the borders. The company responded by educating the entire workforce, explaining why workers were being laid off and helping team members apply for unemployment.

Building alternative resources into the network helps. If one vendor is not available, having another ready to go is important. If one country is closed, another is open. **Network diversification** with partners secures the supply chain. **Doing a risk assessment of their network** helps companies know which vendors, companies, or countries are impacted by risk and its effects.

"Covid taught that if you have a singular supply chain, one link breaks and you are out of business. Now using a supply chain mesh, which allows for multiple options, may give 30% of work to one vendor and 70% of work to another vendor. Can flex those percentages based upon vendor ability to accommodate."

Tyler Marcum, Sherwin Williams

Trying to find trends in the market early so they can act on them: More emphasis is on forecasting and dynamic response time. For example, planning and monitoring for the impacts of weather and climate change need to be factored into the risk for a business.

Related skills:
• Analytic skills
• Ability to see the big picture and connect dots
• Information technology: basic understanding of sourcing data (knowledge of SQL, light coding)
• Base knowledge of ERP/MRP systems
• Understanding how information flows between companies
• Forecasting/Demand analyst

Curriculum Resources

Resources to facilitate learning about this trend are available in the following LAP modules:

- LAP-SM-075 Prepare for the Worst; Expect the Best (Nature of Risk Management)
- LAP-EI-062 Make It a Win-Win (Negotiation in Business)
- LAP-MP-013 Futurecast (The Nature of Sales Forecasts)
- LAP-OP-443 Deliver the Goods (Concept of Supply Chain)

Being able to source, digest, analyze, and communicate multiple streams of data and tie it back to the business strategy

“Obviously, this is data analytics, but there are two big pieces: relate it back to a business strategy. You can get people who can analyze data, but being able to tie it back to something relative from a business perspective is important. The other piece is sourcing. It’s important to be able to source data from multiple sources and tie it into one source and be able to communicate that out.”

Eric Rossi, Valvoline Global

Related skills:

- Data analytics
- Communication and soft skills
- Storytelling with data
- Adaptability with ambiguity
- End-to-end business knowledge

Curriculum Resources

Resources to facilitate learning about this trend are available in the following LAP modules:

- LAP-EI-140 More Than Just Talk (Effective Communication)
- LAP-EI-006 Go With the Flow (Demonstrating Adaptability)
- LAP-EI-092 Embrace the Unknown (Developing a Tolerance for Ambiguity)

Rebranding supply chain management to obtain, retain, and promote supply chain talent

Key points of discussion

Participants discussed the need for rebranding the supply chain career field, to help people understand supply chain as a career destination. They acknowledged that this starts early within the education system and that they want to be having conversations with students around the benefits, the needs, and the opportunities in supply chain management. Only a small percentage of workers in SCM careers currently have a degree in SCM. There are now degree programs available in Kentucky, and employers are looking to hire for these specific skills and knowledge.

This verged into an extensive conversation on the current (urgent) need for talent recruitment and retention. The discussions centered around the following topics:

Recruitment of talent is a challenge, particularly in finding employees who have the core experience needed while understanding the upward mobility timeline and social norms (social media, remote work, etc.) They are only seeing a handful of applicants and very few are qualified. Instead of posting a job, they usually go out and steal talent. The days of posting the job and saying “come and get it” are over. It’s also hard to retain people because they are “stolen” from other companies.

“I’ve been doing this for 29 years and this is the first time we have had trouble recruiting talent.”

Eric Rossi, Valvoline Global

They are looking to solve the recruiting issues by promoting from within, however it has been hard to get leadership buy-in. Internal promotions are more cost-effective but it is more work for managers and leaders to train and prepare those below to move upward.

“We are so focused on management that we aren’t managing our successors, and then that runs a huge gap in our internal supply chain. Internal promotions are actually more cost-effective but buy-in is the gap sometimes.” Kristin Kaelin-Campbell, HJI Supply Chain Solutions

Retention is also an issue: Companies hire, and then within a year, people leave because they are ready to promote out. Participants said, “The rules of engagement have changed dramatically.” Attachment to vocation and work has turned into “Why should I give you my life when there’s no trajectory; pay is capped; I’m worth more.” COVID made workers ask who values them. Businesses and expectations of their workforces must change to accommodate this thought process. Solutions offered included adapting company culture for work–life balance, not docking for sick time, and assessing policies to allow second-chance workers to join the workforce.

Related skills:

- Leadership skills
- Coaching
- Ability to provide and receive feedback
- Work with and attract diverse populations
- Ability to be visionary

Curriculum Resources

Resources to facilitate learning about this trend are available in the following LAP modules:

- LAP-EI-060 Vision Quest (Enlisting Others in Vision)
- LAP-EI-909 Lead the Way (Concept of Leadership)
- LAP-EI-041 Bring Out the Best (Coaching Others)
- LAP-EI-903 Grin and Bear It (Using Feedback for Personal Growth)
- LAP-OP-443 Deliver the Goods (Concept of Supply Chain)
- LAP-OP-303 Top of the (Supply) Chain (Nature of Supply Chain Management)

Additional Trend Identification and Discussion

Working capital management (accounts payable/receivable/cash flow) is currently critical

Based on the uncertain economy, the recent period of inflation, forecasting for the unpredictable overseas procurement, and managing post-COVID inventories, skills are needed to manage cash flow and be able to convert large inventories to cash.

“With supply chain you can’t please everyone; you always have too much or too little. It’s a Goldilocks job.”

Mindy Antonchak, Catalent Winchester

Demand and capacity planning haven’t been mastered yet in a holistic way

To address enterprise resource planning, companies use a variety of systems: JDE, SAP, SOP, MRP. All are Excel-based software used in demand-and-capacity planning, but there is need for integration.

Increase in customers asking for environmental responsibility

“We don’t have a conversation where that doesn’t come up. How is the audience going to perceive it? How many more miles are we on the road with trucks? We try as hard as we can with manufacturing to keep waste on-site. We have to consider carbon emissions, and waste generated, all of that is being considered in our decision-making process. We actually create new products to benefit from that. The consumer wants environmentally friendly products—we are in the oil industry, e.g., trying to use 80% less plastic.”

Eric Rossi, Valvoline

Some comments included:

- Installed two RTO (regenerative thermal oxidizer) that burn off solvent to heat boilers, so it conserves energy
- Using methods to decrease energy usage, using renewable energy, reducing water use
- Recycling
- Intermodal systems to regulate carbon emissions. Paying credits to be carbon neutral
- Hazardous-materials knowledge is important to ensure fines are not accrued by company and drivers are provided with what they need for transport
- Vests are made from recycled water bottles (Walmart)

Ongoing challenges with truck driver shortage

The forecast is 1M drivers needed. There is more freight than drivers in the market. They are experiencing a freight recession (comparable to 2007–2009). Customers have indicated that in Q3/4 we will see a rebound. Inventory is more normalized and higher than pre-pandemic.

There is more federal legislation coming regarding safety (American Transportation Association) that is impacting product transportation. The following are all contributing to a lack of drivers:

- Government regulations implemented over last 10 years
- Electronic logs
- Federal Drug & Alcohol Clearinghouse, random drug tests, and lengthy steps for drivers to reinstate their credentials after failing a drug test; they often move on to other jobs to secure income (80% don't return after a failed test)
- Companies have to invest to meet the requirements
- Aging workforce
- The age requirement for CDL credential (21) and up-front costs are barriers; companies are funding this now and creating a payback plan for drivers
- Automation is creating fears of being replaced
- Competition from within the industry, including for school bus drivers

“Recruitment is a dog-eat-dog world for truck drivers. Corporate offices cold-call drivers, email, and post ads to recruit. Industry is extremely competitive. The average turnover is 130% for drivers.”

Logan Williams, J.B. Hunt

Workplace flexibility is here to stay

Other cultural changes in the workplace include providing workplace flexibility with regard to schedules, particularly for those with families and young children. Due to global networks, having some employees arriving early and others working late allows for increased communication options with global contacts. It also opens up recruitment opportunities to a global market of talent.

Remote work improved resilience and stretched people beyond their comfort zone to use remote tools to collaborate. Even though engagement and productivity dropped while working from home, there is no indication of returning to the 60-hr work week. People really value being able to work from home. Each organization has a different balance—production teams still need to be fully on-site.

The increasing need for reverse logistics/returns process

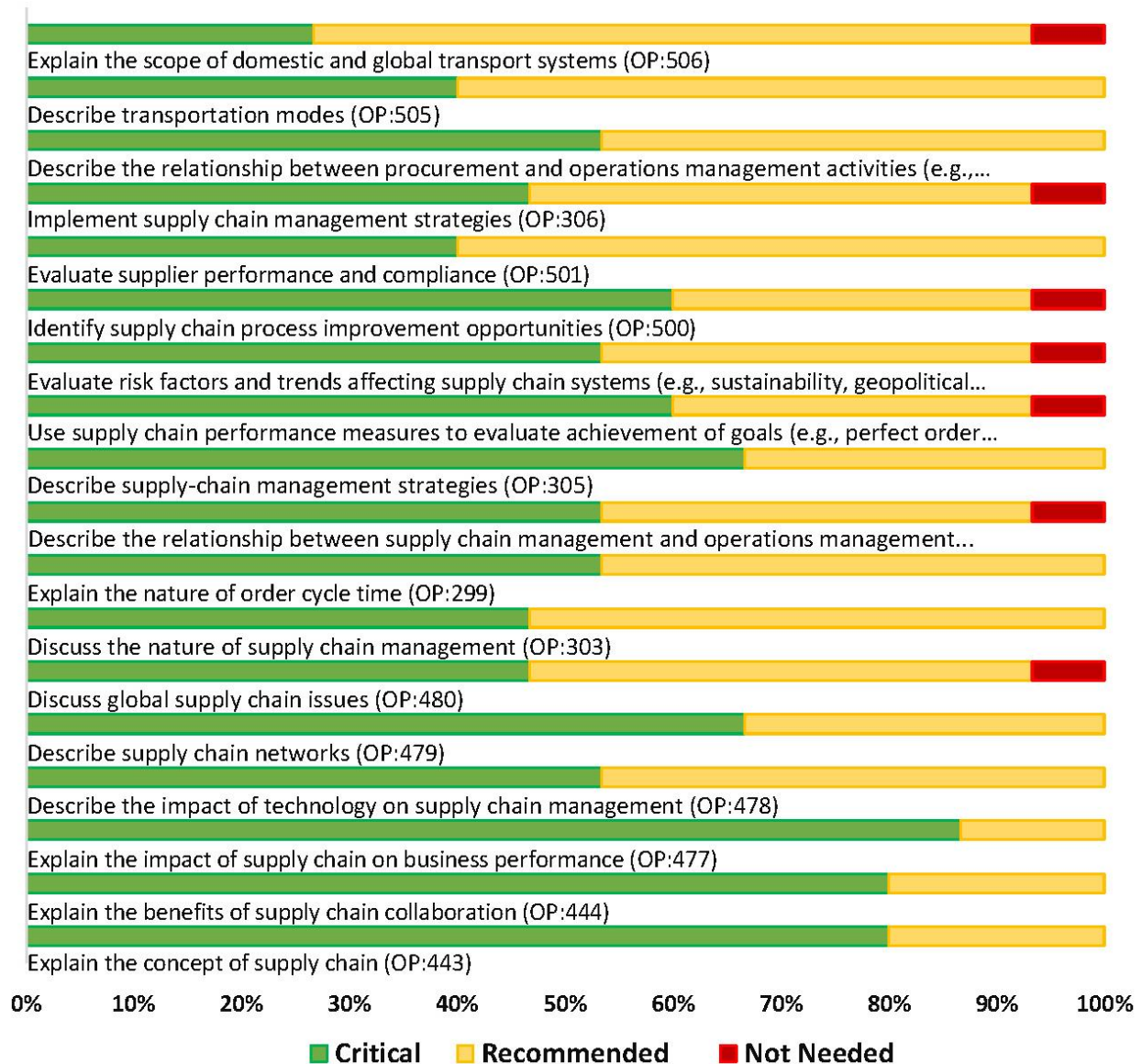
Returns are often housed within the same facility but have different inbound and outbound processes. “Returns” has its own address. E-commerce is a piece in the supply chain and it’s growing rapidly. Some returned items must be discarded, and this impacts carbon neutrality.

Standards Validation Process

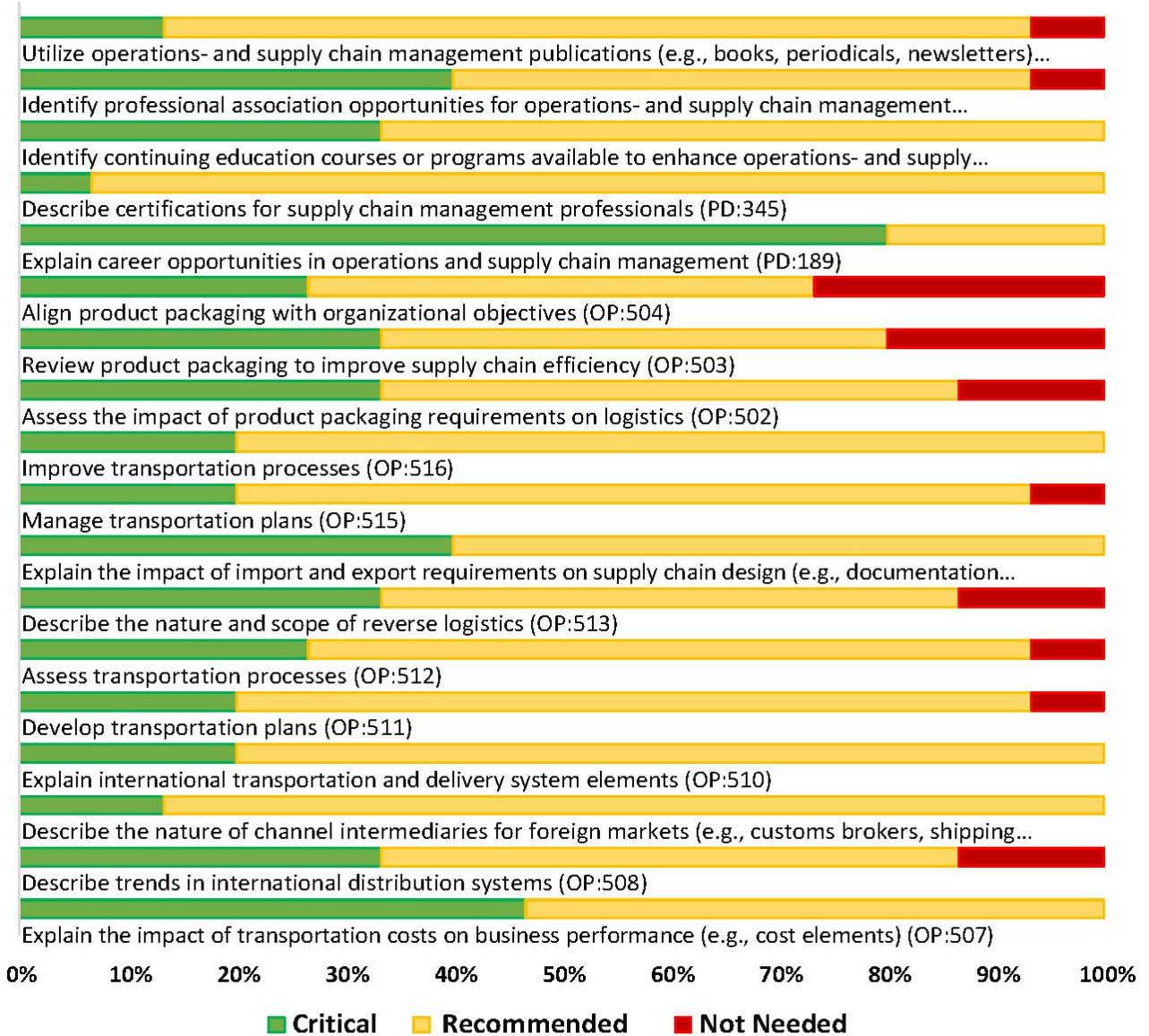
Validation of Skill Statements (36 performance indicators—online survey)

Panel participants completed an online validation of existing performance indicators (PIs)—knowledge and skill statements—for supply chain management. The PIs will serve as the foundation for the development of new curriculum resources. The following charts illustrate the compiled feedback:

KY Supply Chain Management Performance Indicator Validation Part 1



KY Supply Chain Management Performance Indicator Validation Part 2



Gaps in Standards and Broad Topics Generation

Following the validation process, we asked participants to identify gaps in the existing standards and to generate a broad list of topics to be covered within a high school pathway for supply chain management.

Gaps in the standards:

- Analytical skills
- Customer service and support skills
- How information travels between companies
- Print-reading in manufacturing
 - Product structure
 - Project Planning
- Relationship building—internal/external suppliers
- Technology available within the industry

“Some people do not understand product structure with multiple layers and how to plan or source products. Employees need to understand the difference between quoting as an assembled product, or outsourced. It helps to know how to quote based on print reading.”

Bill Cox, Clark Material Handling Company

Broad topics list:

- Ability to work in stressful, high-pressure situations
- Analytical skills
- Benefit Effort Analysis (BEA)
- Bids and business acquisition
- Coaching/Mentoring: giving and receiving honest feedback
- Communication skills
- Continuous improvement
- Customer service and support
- Decision-making skills
- Electronic Data Interchange (EDI) feeds
- Inventory management
- Lean Six Sigma
- Planning
 - Demand planning
 - Material resource planning (MRP)
- Process improvement
- Procurement
- Relationship-building with internal and external suppliers
- Risk/Reward negotiations (in contracts)
- Sales and operations planning process
- Setting expectations
- Systematic problem-solving—different methods of problem-solving
 - Fishbone
 - Five Why’s
 - Root cause analysis (RCA)

Business Ethics/Ethical Leadership

MBA Research & Curriculum Center and the [Daniels Fund](#) have formed a partnership to promote the teaching and learning of business ethics at the high school level. As part of our research to help strengthen our curricula and instructional materials in the business ethics realm, and to learn firsthand about issues in business ethics within workplaces, we asked Kentucky supply chain management panelists to review and rank the importance of ethical leadership traits, suggest additional ethical leadership traits, and talk about ethics generally within their career area.

Ethical Leadership Traits Validation

The traits are listed in the order that panelists reviewed and validated them.

Ethical Leadership Traits	Critical	Recommended	Not Needed
1. Describe the nature of emotional intelligence	87.5%	12.5%	
2. Recognize and overcome personal biases and stereotypes	81%	19%	
3. Assess personal strengths and weaknesses	69%	31%	
4. Assess personal behavior and values	56%	44%	
5. Demonstrate honesty and integrity	94%	6%	
6. Demonstrate responsible behavior	94%	6%	
7. Demonstrate fairness	87.5%	12.5%	
8. Assess risks of personal decisions	69%	31%	
9. Take responsibility for decisions and actions	75%	25%	
10. Build trust in relationships	80%	20%	
11. Describe the nature of ethics	56%	44%	
12. Explain reasons for ethical dilemmas	75%	25%	
13. Recognize and respond to ethical dilemmas	87.5%	12.5%	
14. Explain the use of feedback for personal growth	69%	31%	
15. Show empathy for others	81%	19%	
16. Exhibit cultural sensitivity	75%	25%	
17. Explain the nature of effective communications	69%	31%	
18. Foster open, honest communication	87.5%	12.5%	
19. Participate as a team member	75%	25%	
20. Explain the concept of leadership	62%	38%	
21. Explain the nature of ethical leadership	75%	25%	
22. Model ethical behavior	87.5%	12.5%	
23. Determine personal vision	44%	50%	6%
24. Inspire others	50%	50%	
25. Develop an achievement orientation	31%	69%	
26. Enlist others in working toward a shared vision	69%	31%	
27. Treat others with dignity and respect	87.5%	12.5%	
28. Foster positive working relationships	81%	19%	

Ethical Leadership Traits	Critical	Recommended	Not Needed
29. Assess long-term value and impact of actions on others	69%	31%	
30. Set personal goals	50%	50%	
31. Follow rules of conduct	75%	25%	
32. Make decisions	81%	19%	
33. Demonstrate problem-solving skills	81%	19%	

Additional Recommended Leadership Traits

- Decision-making skills
- Ability to overcome bad decisions, to move on to a better decision
- Understand your audience
- Communication skills and teamwork—don't work in a silo
- When managing a team, work with your team members to help them set their own goals; follow up on their progress

Additional Comments

- How do we communicate in a more efficient manner?
- Give and seek feedback to continuously improve as an individual and as an organization.

Discussion on Ethical Leadership

Participants were asked what ethical principles are especially important in SCM and why.

Continuously give and seek feedback.

- Have regular meetings and talk about specifics. Speak with direct-reports daily and do annual performance reviews. Going into a performance review should not be a time for surprise. This is critical for employee retention today.
- Give details when someone meets or exceeds expectations. Being specific is important to young people, not just, "You're doing great."
- Create employee coaching and mentoring opportunities.

Create an employee recognition program.

"You can say that someone went above and beyond and share that out; the reward is everyone is excelling and can earn paid leave."

Shane Grayson, Stober Drives, Inc

Have empathy; recognize contributions and successes before asking for modifications.

"Empathy and recognition are key for this generation of employees."

Bill Cox, Clark Material Handling Company

Have the courage to speak up when you see something. Observing how supervisors treat workers; culture and environment of company are important. Example: Participant observed a supervisor yelling at an employee on the line and immediately reported it to the plant supervisor.

Knowing the right thing to do and being able to properly advise on *what* to do.

Teach how to have difficult conversations. Example: If a worker takes longer breaks than allowed; having that discussion followed by disciplinary action is necessary. Be respectful and take the emotion out of the discussion.

Ethics in the Workplace

We asked if it is okay to have ethical conversations. Panel participants answered “Yes!” by an overwhelming show of hands. Across the board, conversations around ethics are important and accepted by industry members on this panel.

Multiple generations working together with varying expectations, e.g., “Respect is earned.” vs. “My thoughts and feelings should be valid to you as a leader.” Know what each employee needs and how to speak with them. Some people want public recognition, while others would not enjoy that. Understanding differing needs of employees and shift to meet those needs as appropriate.

“We do this every day with our customers so we can do it with our employees.”

Kristen Kaelin-Campbell, HJI Supply Chain Solutions

Leadership: “Company sends out periodic surveys [on employee satisfaction] but creating a culture of ethical leadership across the board and letting the employees see that and take part in that makes a bigger impact.” Eric Rossi, Valvoline

Ethical Dilemmas

We asked: How are you seeing workers deal with ethical dilemmas?

“It’s critical to be ethical for all the obvious reasons but also all the business reasons. It’s not just the cheapest one [choice], you want to make the best choice.”

Mindy Antonchak, Catalent Winchester

Ethics in procurement is critical. Example: If one of your downstream suppliers is using child labor, that’s your company using child labor. It’s up to the company to investigate that their vendors are operating with ethical standards.

Are government kickbacks happening? This is important in this field because there are a lot of opportunities for poor practice.

Switching from supplier A to supplier B sometimes means taking millions of dollars out of another company’s pockets. Sticking to facts and understanding the impact of switching suppliers and changing cash flow to and from partners is vital. These are hard discussions that employees need to be capable of having.

Job descriptions and equitable pay—When we’re not paying enough for positions that require a bachelor’s degree, this feels unethical.

Certifications of Value Discussion

Certifications in High School

Few participants had heard of the certifications KDE currently offers to high school students. They were curious about the intent around those credentials. KDE explained that they prepare students both for career entry and for continuing into postsecondary studies.

Customer Service

Participants recommended giving high school students a good foundation of knowledge to prepare them for an entry-level job, such as customer service. While working in the entry-level position, they can obtain postsecondary training, ideally leading to a 4-year degree in SCM.

“Typically, the people we are hiring have a [college] degree. Most of the stuff my peers are writing down will be certificates you get when you’ve got a degree in SCM from college. You’ve started work, your employer says, “Hey, why don’t you go take this?” We would struggle to hire someone right out of high school. The perfect scenario would be to give someone in high school exposure, hire them into customer service, and, while they are doing that, get secondary education.”

Eric Rossi, Valvoline Global

Data Analytics

We asked what entry-level jobs are available that only require a high school diploma. In addition to customer service, data analytics was mentioned. They explained that most jobs in supply chain are not realistic for graduates right out of high school. But there is a clear career ladder to enter the supply chain.

Basic analytics skills would prepare students for entry-level positions and participants acknowledged that this would be advantageous for companies to hire recent high school grads who are proficient in pulling, analyzing, and communicating/telling the story of data. They would hire right out of high school for these skills.

FBLA was mentioned as a tremendous opportunity for learning, practicing, and networking with peers and business professionals.

College Experience

Workplace learning such as coops, apprenticeships, and internships are critical for college level students to gain exposure to the workplace.

Credentials and Certifications Worksheet

Are credentials/certifications necessary in your career area?

- **Yes:** 37.5% (6/16 participants)
- **No:** 62.5% (10/16 participants)

Help us identify credentials and certifications relevant in your field:

Certification/ Credential	Required?	If required, at what stage?	Does your company provide any support for employees to obtain this credential?	What type of support is offered?
APICS /CPIM	1 Just nice to have 1 No	1 No defined time frame	2 Yes	2 Pay differential 1 Advancement
APICS/CSCMP	1 No	1 No defined time frame	1 Yes	1 Pay differential 1 Advancement
ASCM (APICS Material Positions)	1 No 1 Recommended for advancement	1 No defined time frame	1 Yes	1 Time away from work for class/study 1 Other: Pay materials/lump- sum payment
Bachelor’s Degree (SCM concentration preferred)	3 Yes 1 No 1 Recommended for advancement	3 Before employment	3 Yes 1 No	2 Pay differential 2 Advancement 3 Other: Lump-sum payment; 5k yearly paid school; Pay for college education
Certified Management Accountant	1 Just nice to have	1 No defined time frame	1 Yes	1 Advancement 1 Time away from work for class/study 1 Other: Cover costs of classes, study materials, and tests
CPF (Certified Professional Forecaster)	1 Recommended for advancement	1 First 2 years of employment	1 Yes	1 Advancement 1 Time away from work for class/study 1 Costs of classes, study materials, and tests

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Certification/ Credential	Required?	If required, at what stage?	Does your company provide any support for employees to obtain this credential?	What type of support is offered?
CSCP	1 Recommended for advancement	1 Before advancement	1 No	
HS Diploma	1 Yes	1 Before employment	1 Yes	
ISM-CPSM Certified Professional in Supply Chain Management	1 Yes 1 No 1 Recommended for advancement	1 Within 4 years	1 Yes	1 Time away from work for class/study 1 Other: A lump-sum payment
Lean Six Sigma Certifications	1 No 1 Recommended for advancement 2 Nice to have	1 First 1–2 years of employment 3 No defined time frame	3 Yes 1 No	1 Pay differential 2 Advancement 2 Time away from work for class/study 2 Other: internal mentors; costs of classes, study materials, and tests
MBA	2 Nice to have 1 Recommended for advancement	3 No defined time frame	2 Yes 1 No	1 Pay differential 1 Other: \$/semester
Microsoft Office (Excel)	4 Yes 1 Recommended for advancement	3 Before employment 1 Before advancement 1 No defined time frame	2 Yes 2 No	1 Time away from work for class/study
PMP (Project Management Professional)	1 No	1 No defined time frame	1 No	1 Pay differential 1 Advancement
SHRM/PHR	1 Recommended for advancement	1 Before advancement	1 Yes	1 Pay differential 1 Advancement 1 Time away from work for class/study

Additional Comments:

We do not place a high emphasis on certifications, but I would be interested in reviewing what this group stated in terms of certifications required.

Most of the time we do not require certifications. It is rare that I see them on resumes.

Credentials/Certifications are not important within the supply chain field. You are constantly training and learning. Anything extra is just something to have.

Tuition assistance is given, once hired, to further career development/goals.

Professional Development Used by Industry Professionals

- Networking at conferences, meeting with people, informational interviews
- Mentors
- Leadership training, 4x/yr
- LinkedIn Learning: Excel courses—some compensation for training
- Peer groups
- Prioritizing your own professional development
- Incentivizing learning and PD
- Conferences and peer groups
- Search Ted Talks (business topics, leadership)
- ASCM, national and local chapters; attend conferences
- Student organizations like FBLA in high school and college for foundational skills and opportunities to practice
- Carhartt and Stober Drives, Inc. offer great apprenticeship opportunities

“Network. It doesn’t matter who it is or what they do, just ask questions, and learn.”

Logan Smith, Valvoline Global

Emerging Occupations in Supply Chain

Experience Managers—The sole purpose is to gauge driver satisfaction to ensure positive work experience. Safety is also a big concern.

Senior Continuous Improvement Leader—Look at all key performance indicators and break them down by auditing every location and identifying issues in departments. These roles break down what has happened and how problems are being addressed. This role works in similar ways with both vendors and suppliers.

Collaborating With Sales

Although not an emerging occupation, participants reported that they are seeing changes to the sales team roles, asking SCM professionals to join them in customer meetings to communicate supply chain confidence and performance details to customers. Customers are driving requests for data and analytics on supply chain performance. It’s “another weapon in the salesperson’s arsenal. It wins business.”

“It’s like a supplier scorecard in reverse—customers want to know, ‘What are my risks/what are the gaps?’” The sales conversation historically centered around price, product, and packaging; now supply chain is a big topic of concern. The maturity-model assessment scores supply chain on specific points, and customer business is determined by score now, as well. The customer is looking for risks that might expose them to financial loss.

Observations and Recommendations

Based on feedback from Kentucky Supply Chain Management Futuring Panel participants, MBA Research and Curriculum Center recommends that the Kentucky Department of Education consider the following:

Recommended Course Sequence for a Supply Chain Management Concentration

We recommend that Kentucky utilize MBA Research and Curriculum Center’s National Business Administration Standards to help define, support, and further strengthen curriculum in the Business Management Cluster and Operations Management Pathway. Additionally, MBA Research is continuing to conduct secondary research on supply chain management and will finalize a listing of SCM-specific performance indicators by early 2024.

The list of supply chain management performance indicators that were validated by SCM professionals is available on p. 24-25 of the report and in Addendum A.

Students need a foundation of general business and management concepts and skills prior to immersing themselves in SCM coursework. Consider offering the following course sequence to help students move progressively toward a mastery of concepts in business and supply chain management:

Course 1 – Business & Marketing Essentials

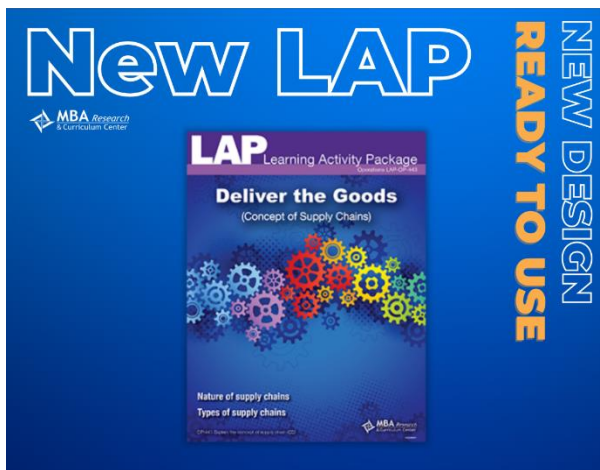
Course 2 – Introduction to Management

Course 3 – SCM-specific Course*

Course 4 – SCM-specific Course

*MBA Research is currently developing a Supply Chain Management Course Guide that will be available for the 2024-25 school year.

Learning Activity Packages Available for Supply Chain Management



In the build-up to creating the supply chain management course guide, MBA Research has released two Learning Activity Packages (LAPs) this year.

- [LAP-OP-443 Deliver the Goods \(Concept of Supply Chains\)](#)

In this LAP, students will learn about the different activities and roles within the supply chain, such as suppliers, manufacturers, and supply chain managers, as well as types of supply chain models and how different designs meet the needs of different businesses.

- [LAP-OP-303: Top of the \(Supply\) Chain \(Nature of Supply Chain Management\)](#)

This LAP introduces students to the essential functions and activities within supply chain management (SCM). It also explores emerging trends within SCM, including changes in technology, the evolving workforce, and growing consumer demand.

Two additional LAPs are scheduled for completion in the near future:

- **LAP-OP-477: Chain Reaction (Impact of Supply Chains on Business Performance)**
(projected release: December 2023)
- **LAP-OP-677: Title TBD (Ethics in Supply Chain Management)**
(projected release: January 2024)

Topics and Recommended Skills Across Panels

Drawing from SCM Futuring Panels in three states (OH, KY, and ID) and one virtual panel this year, certain topics and recommended skills consistently emerged across all panels. We recommend incorporating these core topics and skills into an SCM concentration or program of study.

Communication and Remote Work Skills – Supply chain management panelists emphasized that communication in all forms is incredibly important and valuable to success in this field. Relationship building and communication are critical in vendor negotiations, problem-solving, continuous improvement, and risk management, to name a few areas. We recommend several Communications LAPs in the teacher pull-out section of the report. Additionally, a recent Action Brief is available on the Emerging Trends in Workplace Flexibility.



We recommend pairing this **Action Brief** with the following performance indicators (PIs) and lesson modules (LAPs):

- HR:547 Manage flexible work arrangements (SP)
- EI:006 Demonstrate adaptability (CS) [LAP-EI-006](#)
- EI:037 Foster positive working relationships (CS) [LAP-EI-037](#)

Critical Thinking: 3 C's – These critical thinking skills were shared by Dr. James Kirby Easterling from Eastern Kentucky University as the pillars of critical thinking for supply chain management.

- Calculate
- Clarify
- Convey/Communicate

Data Science – Technology and the use of data are infused throughout all aspects of supply chain management. The need for these skills is in high demand and on the rise. The following topics were discussed across all SCM futuring panels.

- AI programming – understanding foundational coding
- Application programming interface (API) for "warehousing" documents in the cloud
- Automation – robotics and robotic process automation (RPA)
- Block-chain understanding
- Data analytics – the ability to create, source, and visualize data; closely related to the 3 C's of critical thinking
- Database management and cyber security
- Industry 4.0 – using technology to move toward integration and visibility and to improve accuracy across all aspects of the supply chain

Environmental, Social, and Governance Understanding – Compliance, reporting, carbon footprint, sustainability, reverse/circular logistics

Lean Management – Lean Six Sigma skills

Math and Finance Skills – A math or finance background is good for demand planning/forecasting, using optimization tools, understanding and creating formulas, and reading system bias that exists in technology.

Microsoft Office Suite and Computer Literacy – MS Excel, PowerPoint, and Teams were all cited as specific programs that are used regularly in SCM careers and business in general. Additionally, SCM employees need to be well-versed in general computer literacy, not just familiar with standalone apps.

Project management – Project management is viewed as a subset of SCM as it is temporary and has a timeframe with deadlines and finite goals. However, SCM also involves ongoing activities that support topline business effects (profits) and aim to lower bottom-line business effects (costs).

Resources from Post-Secondary Partners

In preparation for the futuring panel, MBA Research and KDE staff met with supply chain management department leads from Northern Kentucky University and Eastern Kentucky University. The following resources were identified and shared:

Eastern Kentucky University

- Dr. James Kirby Easterling's 2022 book **Supply Chain Simplified** – Consider [purchasing copies](#) for SCM teachers to gain a broad overview of the foundational concepts of supply chain management. Kendall-Hunt Publishing has generously provided access to Chapter One, free of charge, via the referenced link (below) as a “sneak peek” into the format and style of the book.
<https://he.kendallhunt.com/sites/default/files/heupload/Easterling-SupplyChainSimplified.pdf>



- **SCOKI** (Supply Chain in Ohio, Kentucky, and Indiana) – SCOKI has been working across the Northern Kentucky/Ohio region to offer unique opportunities for high school students to learn about supply chain careers as well as engage with leading supply chain companies in the region.
 - [Earn to Learn](#): SCOKI collaborates with a number of companies in the region. Employers offer externships, internships, co-op experiences, and entry-level jobs to high school students, college students, and adults in the tri-state area. SCOKI provides transportation assistance for high school students taking part in Earn to Learn.
 - SCOKI Youth Programs: <https://www.supplychainoki.com/outreach/youth-programs/>
 - Lunch and Learns with Business Partners: <https://www.supplychainoki.com/tours-and-presentations/>
 - Supply Chain Career Pathway Resources (videos on SCM topics): <https://www.supplychainoki.com/resources/>

Northern Kentucky University

- [School-Based Scholars Program](#) (SBS) – SBS is NKU's dual-enrollment program that offers eligible high school students the opportunity to take college classes for dual credit at a reduced tuition rate. High school students are in class with NKU students who are on the SCM track; there are four courses available to high school students; two are supply-chain focused.
- NKU has a [Hub of Supply Chain Excellence](#) located on its campus.

Additional Suggestions and Resources

Kentucky Department of Education staff did a wonderful job of connecting with business executives at the Supply Chain Management Panel. MBA Research encourages you to continue to leverage the connections made with the attendees and engage them with students and teachers to maximize learning experiences designed to prepare students for careers in supply chain management.

Encourage Kentucky educators to utilize State’s Connection. Kentucky, as a member of the MBA Research consortium, has access to resources in the State’s Connection portal. State’s Connection is a place for teachers and state leaders to access Action Briefs, MBA Research bookmarks, classroom project ideas, curriculum builder tools, and more. Users are required to register for the site. Learn more about State’s Connection and the benefits it offers here: <https://www.mbaresearch.org/local-educators/teaching-resources/states-connection-portal/>

MBA Research and Curriculum Center is proud to partner with the Kentucky Department of Education, and we are available for consultation at any time to discuss these recommended resources.

Thank You and Recognition of Contributors

Futuring Panel Participants

MBA Research and the Kentucky Department of Education would like to thank the participants of the Supply Chain Management Futuring Panel who spent the day sharing their expertise with us. Panel participants presented their own views based on their professional experiences, and not necessarily those of their companies.

We are always grateful to meet with and hear directly from business and industry professionals about what’s going on in the workplace. Thank you for your time and commitment to KY workforce development and business administration education.

- Mindy Antonchak, Director, Supply Chain, Catalent Winchester
- Andrew Brown, Director of Operations, Team Modern
- Greg Breyer, Director, Supply Chain, East Kentucky Power
- Bill Cox, Procurement Supervisor, Clark Material Handling Company
- Heather Embry, Human Resources Office Manager, Walmart Supply Chain
- Shane Grayson, Technical Supply Chain Specialist, Stober Drives, Inc.
- Chris Hill, Director, Eastern Distribution, Rocky Mountain ATV/MC
- Kristen Kaelin-Campbell, Director, Talent & Culture, HJI Supply Chain Solutions
- Tyler T. Marcum, Area Supply Chain Manager, Sherwin Williams
- Blake Meade, Senior Customer Fulfillment Manager, GE Appliances, a Haier Company
- Troy Roberts, Assistant Sales Manager, Toyota Tsusho America, Inc.
- Eric Rossi, Senior Director of Supply Chain North America, Valvoline Global
- Charles Simpson II, E-Commerce Area Manager, Walmart Supply Chain
- Logan Smith, Forecast Analyst, Valvoline Global
- Logan Williams, Director, Operations, J.B. Hunt
- Abigale Wilson, Analyst—Indirect Purchasing, Toyota



Kentucky Partnership

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Kentucky Department of Education

- Tina Brogli, Work-Based Learning Coordinator
- Sherri Craig, Systems Consultant, End of Program Assessment Coordinator
- Beth Engle, Academic Program Manager, CTE Programs & Pathways Branch
- Cathy Hoehn, Business & Marketing Program Consultant, CTE Programs & Pathways Branch
- Morgan Lovitt, Program Consultant
- Lisa Oakes, Chartered Association Advisor for Kentucky DECA
- Erica Settelen, Program Consultant
- Mary Taylor, Industry Training Specialist, TRACK Apprenticeship Program
- Tom Thompson, Director, Division of Student Transition and Career Readiness
- Connie Witt, FBLA State Adviser

Special Guests

MBA Research would also like to thank the following special guests of the Kentucky Department of Education who attended the Futuring Panel as observers. A special thank-you to Dr. Kirby Easterling (EKU), who provided extensive support with business participant recruitment, and to Mark Thackeray (NKU), who provided additional feedback and resources related to curriculum development. Thank you also to Callie Miracle at the Kentucky Chamber of Commerce, Cassie Grigsby at the Kentucky Retail Federation, and Dr. Bruce Manley at the Bluegrass Community & Technical College.

Postsecondary Observers:

- Dr. James Kirby Easterling, Program Director and Assistant Professor, Global Supply Chain Management, College of Business, Eastern Kentucky University
- Theresa Smith, Teacher, Global Supply Chain Management, Eastern Kentucky University
- Mark Thackeray, Professor of Practice and Program Director, Northern Kentucky University

Kentucky Association Observers:

- Cassie Grigsby, Senior Vice President, Operations and Development, Kentucky Retail Federation
- Callie Miracle, Talent Pipeline Management Project Manager, Kentucky Chamber of Commerce

MBA Research & Curriculum Center

- Holly Atha, President/CEO
- Stephanie King, Director of Business Engagement
- Rick Mangini, Executive Vice President

Addendum A
Supply Chain Management Curriculum Standards

Supply Chain Management Curriculum Standards

Supply chain management performance indicators appear in multiple locations within the National Business Administration Standards. Some are in the Business Administration Core, which means that everyone in business needs to know the basics of supply chain. Other performance indicators appear in the Business Management Cluster Core, meaning that all individuals in business management need to know a bit more about supply chain management. And finally, a sizable number of performance indicators are located in the standards for the Operations Management Pathway.

Business Administration Core

Instructional Area: Operations

Performance Element: Understand supply chain management role to recognize its need in business.

Performance Indicators:

- [OP:443 Explain the concept of supply chain \(CS\)](#)

Objectives:

- a. Define the term supply chain.
- b. Identify common supply chain members.
- c. Explain types of supply chain activities.
- d. Describe supply chain flows (e.g., product, information, finances).
- e. Discuss the purpose and goals of supply chain.

- [OP:444 Explain the benefits of supply chain collaboration \(SP\)](#)

Business Management Cluster Core

Instructional Area: Operations

Performance Element: Understand supply chain management role to recognize its need in business.

Performance Indicators:

- [OP:477 Explain the impact of supply chain on business performance \(SP\)](#)

Objectives:

- a. Discuss the impact that an efficient supply chain has on customers (e.g., better customer experience, faster delivery times, lower prices, increased customer satisfaction, greater customer loyalty, etc.).
- b. Describe the impact that an efficient supply chain has on a business's profitability and cash flow (e.g., lower costs, higher profits, etc.).
- c. Explain how an efficient supply chain can impact business operations (e.g., less confusion, less duplication, less waste, improved efficiencies, faster production cycle, greater flexibility, better quality control).

- OP:478 Describe the impact of technology on supply chain management (SP)
- OP:479 Describe supply chain networks (SP)
- OP:480 Discuss global supply chain issues (SP)
- OP:303 Discuss the nature of supply chain management (SP)

Objectives:

- a. Define the term supply chain management (SCM).
- b. Explain the purpose of supply chain management.
- c. Describe elements of supply chain management (e.g., planning, sourcing and procurement, production, inventory management, distribution).
- d. Discuss supply chain management's role in developing an integrated supply chain.

Operations Management Pathway

Instructional Area: Operations

Performance Element: Conduct supply chain management activities to coordinate the movement of materials, information, and funds into an organization and the movement of finished products/services out of an organization.

Performance Indicators:

- OP:299 Explain the nature of order cycle time (SP)
- OP:301 Describe the nature of inter-organizational supply chains (SP)
- OP:304 Describe the relationship between supply chain management and operations management (SP)
- OP:305 Describe supply-chain management strategies (SP)
- OP:498 Use supply chain measures to evaluate achievement of goals (SP)
- OP:499 Evaluate risk factors and trends affecting supply chain systems (e.g., sustainability, political volatility) (SP)
- OP:500 Identify supply chain process improvement opportunities (SP)
- OP:501 Evaluate supplier performance and compliance (SP)
- OP:306 Implement supply chain management strategies (SP)

Performance Element: Understand purchasing activities to obtain business materials and services.

Performance Indicators:

- OP:486 Describe the relationship between purchasing and operations management activities (e.g., strategic sourcing, sustainability, supply chain management) (SP)

Performance Element: Evaluate transportation strategies to improve the performance and competitive advantage of the organization.

Performance Indicators:

- OP:505 Describe the transportation modes (SP)
- OP:506 Explain the scope of domestic and global transport systems (SP)
- OP:507 Explain the impact of transportation costs on business performance (e.g., cost elements) (SP)
- OP:508 Describe trends in international distribution systems (SP)
- OP:509 Describe the nature of channel intermediaries for foreign markets (e.g., distributors, agents) (SP)
- OP:510 Explain international transportation and delivery system elements (SP)
- OP:511 Develop transportation plans (SP)
- OP:512 Assess transportation processes (SP)
- OP:513 Describe the nature and scope of reverse logistics (SP)
- OP:514 Explain the impact of import and export requirements on supply chain design (e.g., documentation requirements, handling requirements) (SP) (SP)
- OP:515 Manage transportation plans (MN) (SP)
- OP:516 Improve transportation processes (MN) (SP)

Performance Element: Assess product packaging to improve supply chain

Performance Indicators:

- OP:502 Assess the impact of product packaging requirements on logistics (SP)
- OP:503 Review product packaging to improve supply chain efficiency (SP)
- OP:504 Align product packaging with organizational objectives (MN)

Performance Element: Evaluate transportation strategies to improve the performance and competitive advantage of the organization.

Performance Indicators:

- OP:505 Describe the transportation modes (SP)
- OP:506 Explain the scope of domestic and global transport systems (SP)
- OP:507 Explain the impact of transportation costs on business performance (e.g., cost elements) (SP)
- OP:508 Describe trends in international distribution systems (SP)
- OP:509 Describe the nature of channel intermediaries for foreign markets (e.g., distributors, agents) (SP)
- OP:510 Explain international transportation and delivery system elements (SP)
- OP:511 Develop transportation plans (SP)
- OP:512 Assess transportation processes (SP)
- OP:513 Describe the nature and scope of reverse logistics (SP)
- OP:514 Explain the impact of import and export requirements on supply chain design (e.g., documentation requirements, handling requirements) (SP)
- OP:515 Manage transportation plans (MN)
- OP:516 Improve transportation processes (MN)

Instructional Area: Professional Development

Performance Element: Participate in career planning to enhance job-success potential.

Performance Indicators:

- PD:189 Explain career opportunities in operations and supply chain management (SP)
- PD:345 Describe certifications for supply chain management professionals (SP)

Performance Element: Explore professional development opportunities to enhance operations-management skills.

Performance Indicators:

- PD:266 Identify continuing education courses or programs available to enhance operations- and supply chain management skills (SP)
- PD:267 Identify professional association opportunities for operations- and supply chain management professionals (e.g., educational opportunities, networking, conferences, newsletters, publications) (SP)
- PD:268 Utilize operations- and supply chain management publications (e.g., books, periodicals, newsletters) to update skills (SP)