

# **CARISCA** Centre for Applied Research and Innovation in Supply Chain – Africa

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY,  
KUMASI.

## **KNUST SCHOOL OF BUSINESS**

**BSc. Pharmaceutical Supply Chain Management**

**PHSC 353**

**Introduction to Supply Chain Management**

**Credits: 3**

### **STUDY GUIDE**

Department of Supply Chain & Information Systems



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*This study guide is made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of CARISCA and do not necessarily reflect the views of USAID or the United States Government*

## INTRODUCTION

### Welcome

The **Introduction to Supply Chain Management** study guide contains the core content for this course. The course will cover overview of supply chain management, management components, coordination and integration, strategy, business process, and sustainability of supply chain management. The course will also cover supply chain networks, metrics, value, information systems, agility and resilience.

The content of this course is divided into **11 units**, which are further divided into sections. Each unit contains a minimum of three sections, and maximum of five sections. Each section contains only one key concept to allow a quick and efficient acquisition of new knowledge to your existing knowledge.

Industry case studies would be preambles to some of the unit. The objective is to ensure a better appreciation of the concepts, and their application. Understanding how these concepts affect a company and its customers and suppliers will help one achieve better results and deliver more value to the business.

At the end of some of the units, student will submit a written summary of not more than page of their learnings for the completed unit, and an electronic self-check questions on the vclass. The written summary, and questions are intended to help the student check whether he/she have understood the concepts in each section.

There will be group discussions, and two assignments; individual and group. The written summaries will serves as the individual assignment. The groups discussion will account for 5% of the total grade. The individual and groups assignments will constitute 10% of the total grade of the course. There will also be a mid-semester and end of semester examination which will account for 15% and 70% respectively. Duration for submission of assignment is two weeks from the date of the assignment.

It is my expectation that, this course will make it easier for you to understand supply chain management, and acquire the relevant skills to prepare you for industry. Additional materials on the course will be available on the learning platform, but this study guide should form the basis for your learning.

## **COURSE OVERVIEW**

Over the years, most businesses have focused their attention on the effectiveness and efficiency of separate business functions such as purchasing, production, marketing, financing, and logistics. The lack of connectivity and the silo nature among these functions, however, can lead to sub-optimal organizational goals and create inefficiency by duplicating organizational efforts and resources. To benefit from the synergy of inter-functional and interorganizational integration and coordination across the supply chain and to facilitate better strategic decisions, a growing number of businesses have begun to realize the strategic importance of planning, controlling, and designing a supply chain as a whole.

A **supply chain** consists of all parties involved, directly or indirectly, in fulfilling a customer request. The supply chain includes not only the manufacturer and suppliers, but also transporters, warehouses, retailers, and even customers themselves. Within each organization, such as a manufacturer, the supply chain includes all functions involved in receiving and filling a customer request. These functions include, but are not limited to, new product development, marketing, operations, distribution, finance, and customer service.

**Supply chain management** (SCM) is the management of a network of interconnected businesses involved in the ultimate provision of product and service packages required by end customers. SCM may be thought of as the management of all activities aimed at satisfying the end consumer; as such it covers almost all activity within the organisation. It has been suggested that it incorporates a number of key success factors which include a clear procurement strategy, effective control systems, and development of expertise. SCM therefore represents and reflects a holistic approach to the operation of the organisation.

## **COURSE OBJECTIVE(S)**

The objectives of this course are to:

- Provide students with an overview of supply chain management and major flows in the supply chain.
- Assist with understanding of the individual processes of supply chain management and their interrelationships within individual companies and across the supply chain.
- Introduce students to the management components of supply chain management
- Equip students with the tools and techniques useful in implementing supply chain management.
- Provide an understanding of the supply chain business processes.

## **LEARNING OUTCOMES**

*On completion of the Introduction to Supply Chain Management course the students should be able to:*

- i. Discuss the goal of a supply chain and explain the impact of supply chain decisions on the success of a business.
- ii. Discuss the management components of supply chain and explain their integration to deliver value to a business.
- iii. Discuss the different supply chain strategies, and explain their advantages and disadvantages.
- iv. Identify the key supply chain performances metrics, and explain its significance in delivering the end customer needs.
- v. Discuss and explain the component of supply chain governance; people, process, and technology.

## **REQUIRED TEXTBOOKS/READINGS**

1. Chopra, S., Meindl, P., & Kalra, D. V. (2016). Supply Chain Management: Strategy, Planning, and Operation 6th. Pearson Education India.
2. Jacobs, F. R., Chase, R. B., & Lummus, R. R. (2014). Operations and supply chain management (pp. 533-535). New York, NY: McGraw-Hill/Irwin.
3. Siems, T. (2005) "Supply Chain Management: The Science of Better, Faster, Cheaper," Federal Reserve Bank of Dallas – Southwest Economy, pp. 1,7-12.

4. Laura, R., Kopczak, K., and Johnson, E. M. (2003) "The Supply Chain Management Effect", MIT Sloan Management Review, Vol. 44 No 3, 27-34
5. Simchi-Levi, D., Kaminsky, P., Simchi-Levi, E., & Shankar, R. (2008). Designing and Managing the Supply Chain: Concepts, Strategies and Case Studies. Tata McGraw-Hill Education.

### **GRADING**

Grades in this course will be based on hand-ins as follows:

One individual assignment (Summary of a completed unit): **5%**

One group assignment: **10%**

Participation in group discussions:

Mid-Semester Examination: **15%**

End of term Examinations: **70%**

**Total: 100%**

### **ACADEMIC/SCIENTIFIC WRITING REQUIREMENT**

Students are required to exhibit utmost academic and scientific writing skills in their presentations and assignments. In this course all assignment for individual and group portfolios and particularly the term paper, are supposed to follow all the standards of scientific writing. The terms paper (**optional**) gives students the opportunity to explore, in greater detail, one of the topics covered in the course. The introduction the paper is must have a volume of maximum of **2500** words. Deliverable assignments should be written in Times New Roman, Font size 12, 1.5 spaced with one-inch margins, and with a list of references based on and formatted to the Harvard Style.

## ASSIGNMENT SCHEDULE

All assignments are due before the end of the specified day of delivery (GMT 23:59). All assignments are to be uploaded to the hand-in folder for this course unless other instructions are given. If you are unable to hand in your assignment on the LMS of KBS (**vclass**), you may email it to the course facilitator (on the said day of delivery). Failure to deliver assignments on the specified date will attract penalties in the form of a reduced grade.

Assignment (Some units has self-check questions)	Description (Assignment title)	Type (Individual/Group)	Deadline (Duration)	Value (of final grade)
Summary	Summary of learnings for unit 1	Individual	A week	5%
Multiple choice questions	Self-check questions	Individual	N/A	N/A
Case Study	Super Responsive Supply Chain: The Case of Spanish Fast Fashion Retailer Inditex-Zara	Group	2 weeks	15%
Summary	Summary of learnings for unit 4	Individual	A week	5%
Essay	Requisition-to-pay process	Individual	A week	5%
Multiple choice questions	Self-check questions	Individual	N/A	N/A
Summary	Summary of learnings for unit 7	Individual	A week	5%
Multiple choice questions	Self-check questions	Individual	N/A	N/A
Summary	Summary of learnings for unit 9	Individual	A week	5%
Unit	Self-check questions	Individual	N/A	N/A
Summary	Summary of learnings for unit 9	Individual	A week	5%

\*Participation in online discussions would accounts for 5% of final grade

\*Total score for all assignment would be converted at 10% of final grade

\*Mid-semester examination would account for 15% of final grade. The facilitator may opt to use an assignment as the mid-semester examination.

\*Deadline for submitting assignment could be weekly based

## **UNIT 1**

### **OVERVIEW OF SUPPLY CHAIN MANAGEMENT**

#### **OVERVIEW**

Supply chain management (SCM) is the management of a network of interconnected businesses involved in the ultimate provision of product and service packages required by end customers. SCM may be thought of as the management of all activities; especially procurement, logistics, and operations aimed at satisfying the end consumer. It incorporates a number of key success factors which include a clear procurement, logistics, and operations strategies, effective control systems, and development of expertise. SCM therefore represents and reflects a holistic approach to the operation of the organisation.

#### **CONTENT**

- 1.1 Understanding Supply Chain, and Supply Chain Management
- 1.2 The Objective of Supply Chain Management
- 1.3 Supply Chain Operating Model Decisions Phases
- 1.4 Examples of Supply Chains

#### **REQUIRED READINGS**

1. Chopra, S., Meindl, P., & Kalra, D. V. (2016). Supply Chain Management: Strategy, Planning, and Operation (pp 1-17) 6th Ed. Pearson Education India.
2. Min, H. (2015). The Essentials of Supply Chain Management: New Business Concepts and Applications (pp 1-9). Pearson Education Ltd, USA.

#### **LEARNING OUTCOMES**

By the completion of this unit, student should be able to;

1. Understand the fundamental principles of supply chain and supply chain management.
2. Understand the differences between supply chain perspectives and traditional business perspectives.



3. Recognize the managerial benefits and potential challenges of the supply chain practices, and analyze the impact of supply chain management on the bottom line and the competitiveness of the organization.

## **SESSION/ ACTIVITIES**

### **SESSIONS 1**

The goal of a supply chain should be to maximize overall supply chain surplus. Supply chain surplus is the difference between the value generated for the customer and the

total cost incurred across all stages of the supply chain; total cost reduction to maximize profit while sustaining quality to meet end customer expectations.

Supply chain decisions have a large impact on the success or failure of each business because they significantly influence both the revenue generated and the cost incurred. Successful supply chains manage flows of product, information, and funds to provide a high level of product availability to the customer while keeping costs low.

To induce business partners into supply chain transformations, there should be evidence of measurable (quantifiable) benefits and risks accrued from supply chain integration. Thus, the firm should clearly understand the specific impacts of supply chain integration on its business bottom lines, such as return on assets, profitability, revenue growth, and market shares.

#### **Activity 1**

Visit the online course room and familiarize yourself with the online contents in the course material folder in the LMS for KBS. Here you will find “Unit 1” folder that contains a self-checks multiple choice questions. Answer all the questions, and confirm same by sharing your experience on the self-check multiple choice question forum. The lead facilitator may provide additional information to the class where necessary.

Also read the pages of the following books (pdf version).

1. Chopra, S., Meindl, P., & Kalra, D. V. (2016). Supply Chain Management: Strategy, Planning, and Operation (pp 1-17) 6th Ed. Pearson Education India.

2. Supply chain management and networks: CIPS Knowledge (2020).

**Activity 1**

Write a summary of your learnings in unit 1. The summary should not exceed a page of A4 sheet. It should be written in Times New Roman, Font size 12, 1.5 spaced with one-inch margins. Submit the completed assignment via the email provided by the facilitator.

## **UNIT 2**

### **MANAGEMENT COMPONENTS OF SUPPLY CHAIN**

#### **OVERVIEW**

The goal of supply chain management is to look holistically at the entire supply chain. From the supplier through to the consumer, supply chain management serves as a function to maximise value from all activities. Supply chain management can be broken down into six key components in line with the Supply Chain Operation Reference (SCOR) Model.

To enhance the customer values and meet customer requirement, careful planning of demand-creation and fulfillment activities is critical to the success of the whole organization. Planning cannot be articulated without understanding the dynamics of interrelated business activities and jointly developing ideas for business process improvement among the intra and inter-organizational units; plan, source, make, deliver, and return.

#### **CONTENT**

- 2.1 Understanding make or buy decisions
- 2.2 Global sourcing decisions.
- 2.3 Demand and production management.
- 2.4 Storing and delivering products effectively
- 2.5 Effective return process in supply chain.

#### **REQUIRED READINGS**

1. Min, H. (2015). The Essentials of Supply Chain Management: New Business Concepts and Applications (pp 1-9). Pearson Education Ltd, USA.
2. [Supply Chain Management | CIPS](#)
3. [scor-v12-0-framework-introduction.pdf \(apics.org\)](#)

#### **LEARNING OUTCOMES**

By the completion of this unit, student should be able to;

1. Understand the importance of end-to- end planning in supply chain.

2. Understand the Supply Chain Operations Reference (SCOR) model as management tools and how each of the component influence effective supply chain management.

3. Integrate demand, forecasting and production throughout the supply chain.

## **SESSION/ ACTIVITIES**

### **SESSIONS 2**

The ultimate goal of supply chain management is to serve the customer better, supply chain management begins with the understanding of customer values and requirements. The SCOR model is a cross-functional, cross-industry management and performance measurement tool that aims to capture the multidimensional aspects of supply chain activities.

Such aspects include reliability (e.g., delivery performance, fill rates, perfect order fulfillment), responsiveness (e.g., order fulfillment lead time), flexibility (e.g., supply chain response time, production flexibility), cost (e.g., costs of goods sold, supply chain management cost, value-added productivity, warrant and return processing cost), and assets (cash-to-cash cycle time, inventory days of supply, asset turns). An effective management of the component of SCOR drive supply chain excellence.

### **Activity 2**

Visit the online course room and familiarize yourself with the online contents in the course material folder in the LMS for KBS. Here you will find “Unit 2” folder that contains a **self-checks multiple choice questions**. Answer all the questions, and confirm same by sharing your experience on the **self-check multiple choice question forum**. The lead facilitator may provide additional information to the class where necessary.

Also read the pages of the following books (pdf version).

1. Min, H. (2015). The Essentials of Supply Chain Management: New Business Concepts and Applications (pp 1-9). Pearson Education Ltd, USA.

2. [Supply Chain Management | CIPS](#)

3. [scor-v12-0-framework-introduction.pdf \(apics.org\)](#)

## **UNIT 3**

### **SUPPLY CHAIN COORDINATION AND INTEGRATION**

#### **OVERVIEW**

The concept of supply chain management has evolved around a customer-focused corporate vision, which drives changes throughout an internal and external linkages and then captures the synergy of inter-functional, interorganizational integration and coordination.

Supply chain coordination occurs when all stages of a supply chain work toward the objective of maximizing total supply chain profitability based on shared information. Lack of coordination can result in a significant loss of supply chain surplus. Coordination among different stages in a supply chain requires each stage to share appropriate information with other stages. For example, if a supplier is to produce the right parts in a timely manner for a manufacturer in a pull system, the manufacturer must share demand and production information with the supplier. Information sharing is thus crucial to the success of a supply chain.

The successful integration of the entire supply chain process can bring about a number of bottom-line benefits; improved customer service and value added, enhanced fixed capital, utilized assets, increased sales and profitability. The goal of delivering enhanced customer service and adding economic value to the supply chain can only be achieved through the synchronized management of the flow of physical goods and associated information from sourcing to consumption.

#### **CONTENT**

- 3.1 Understanding Coordination and Integration in Supply Chain.
- 3.2 The benefits and challenges of supply chain integration
- 3.3 The different levels of supply chain integrations
- 3.4 Differences in push and pull based supply chain integration
- 3.5 The role of information technology in supply chain integration

#### **REQUIRED READINGS**

1. Min, H. (2015). The Essentials of Supply Chain Management: New Business Concepts and Applications (pp 3-7). Pearson Education Ltd, USA.

- Ivanov, D., Tsipoulanidis, A., & Schonberger, J. (2019). Global Supply Chain and Operations Management: SA Decision-Oriented Introduction to Creation of Value (pp 53-62) Second Edition. Springer Nature Switzerland AG.

### **LEARNING OUTCOMES**

By the completion of this unit, student should be able to;

1. Comprehend the concepts of collaboration, coordination and integration in supply chain, and how these drive operational excellence.
2. Analyse the role of information technology in supply chain integration; Enterprise Resource Planning Software Applications.
3. Recognize the benefits and the challenges of supply chain integration.
4. Comprehend the supply chains strategies of businesses from coordination and integration perspective.

### **SESSION/ ACTIVITIES**

#### **SESSIONS 3**

The successful integration of the entire supply chain process can bring about a number of bottom-line benefits; improved customer service and value added, enhanced fixed capital, utilized assets, increased sales and profitability. The goal of delivering enhanced customer service and adding economic value to the supply chain can only be achieved through the synchronized management of the flow of physical goods and associated information from sourcing to consumption.

The establishment of collaborative relationships among supply chain partners is a prerequisite to integration, and therefore, information sharing. Collaborative relationships cannot be built without mutual trust among supply chain partners and technical platforms (e.g., the Internet, electronic data interchange, extensible markup language, enterprise resource planning, and warehouse management systems) for information transactions.

### **Activity 3.1**

#### **Cases Study**

Super Responsive Supply Chain: The Case of Spanish Fast Fashion Retailer

Inditex-Zara.

<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwiJ6rPo2qP5AhXSIFwKHefGALAQFnoECAkQAQ&url=https%3A%2F%2Fwww.nytimes.com%2F2012%2F11%2F11%2Fmagazine%2Fhow-zara-grew-into-the-worlds-largest-fashion-retailer.html&usg=AOvVaw1Nb7pqgnFvW-BX2oYspG-P>

**Instruction:** Form a group of 5 members, and analyze the case of Inditex-Zara from a supply chain integration perspective with a focus on integration type, level, and the utilization of information technology.

Submit not less than 5 pages writing on the case with instructions above, and prepare a high-level power point deck for presentation.

### **Activity 3.2**

Visit the online course room and familiarize yourself with the online contents in the course material folder in the LMS for KBS. Here you will find “Unit 3” folder that contains a **self-checks multiple choice questions**. Answer all the questions, and confirm same by sharing your experience on the **self-check multiple choice question forum**. The lead facilitator may provide additional information to the class where necessary.



## **UNIT 4**

### **SUPPLY CHAIN STRATEGY**

#### **OVERVIEW**

A firm's supply chain strategy consists of all the long-term goals, plans, policies, culture, resources, decisions and actions that relate to the supply chain. This strategy gives the context for all other decisions about an organization's supply chain, and should balance the competing demands of:

- Higher strategies: including the mission and corporate and business strategies.
- Business environment: which includes all external factors that affect supply chain, but which managers cannot control – such as customers, market conditions, available technology, economic conditions, legal restraints, competitors, shareholders, interest groups, social conditions and political conditions.
- Internal features: which are factors within the organization that managers can control – such as employee skills, finances, products, facilities, technology used, customer relations, choice of suppliers, resources available, etc.

#### **CONTENT**

- 4.1 Value Added and Costs Reduction
- 4.2 Operations and supply chain Strategies
- 4.3 Behavioural and Operational Causes of Bull

#### **REQUIRED READINGS**

1. Walters, D. (2007). Supply Chain Risk Management: Vulnerability and Resilience in Logistics (pp 62-68). Kogan Page Limited, Philadelphia, USA.
2. Ivanov, D., Tsipoulanidis, A., & Schonberger, J. (2019). Global Supply Chain and Operations Management: SA Decision-Oriented Introduction to Creation of Value (pp 81-144) Second Edition. Springer Nature Switzerland AG.

## **LEARNING OUTCOMES**

By the completion of this unit, student should be able to;

1. Understand the different types of supply chain strategies
2. Comprehend efficient and effective supply chain strategies
3. Recognize the Behavioural and operational drivers of bullwhip-effect

## **SESSION/ ACTIVITIES**

The aim of SCM is to move materials along the supply chain efficiently enough to give both high customer satisfaction and low costs. To achieve these, managers must design both the structure of the supply chain and the methods of controlling the flow of materials. The broad function of SCM integrates several different activities ranging from procurement through to physical distribution.

SCM is evolving quickly, with managers under continuing pressure to find better ways of organizing their supply chain. These improvements are changing both the activities that are done in supply chain and the way that they are done. Managers generally aim at lower costs (corresponding to a strategy of cost leadership) or better customer service (corresponding to product differentiation).

### **Activity 4**

Write a summary of your learnings in unit 4. The summary should not exceed a page of A4 sheet. It should be written in Times New Roman, Font size 12, 1.5 spaced with one-inch margins. Submit the completed assignment via the email provided by the facilitator.

## **UNIT 5**

### **SUPPLY CHAIN BUSINESS PROCESSES**

#### **OVERVIEW**

A process is a content and logic sequence of functions or steps that are needed to create an object in a specified state. A business process is a network of activities for accomplishing a business function. Processes have input and output parameters and may be tied to one functional area or be cross-functional. Today companies are organized on the basis of process.

The basic concept of managing processes in an organization is called business process management and includes a variety of tools, methodologies to analyze, design, and optimize processes. The analysis of process results may be characterized by effectiveness (the achievement of process goals) and efficiency (performing the process with minimum costs).

#### **CONTENT**

- 5.1 Business process activities in supply chain?
- 5.2 Role of business process management in supply chains
- 5.3 Business process optimization and re-engineering

#### **REQUIRED READINGS**

- 1. Ivanov, D., Tsipoulanidis, A., & Schonberger, J. (2019). Global Supply Chain and Operations Management: SA Decision-Oriented Introduction to Creation of Value (pp 81-144) Second Edition. Springer Nature Switzerland AG.

#### **LEARNING OUTCOMES**

By the completion of this unit, student should be able to;

- 1. Recognize the key business processes in supply chain
- 2. Understand supply chain business process as a continuous improvement activity
- 3. Comprehend the role of business process in delivering value to the business and end customer.

## **SESSION/ ACTIVITIES**

### **SESSIONS 5**

A business process is a network of activities for accomplishing a business function. The basic concept of managing processes in an organization is called business process management and includes a variety of tools, methodologies to analyze, design, and optimize processes. The analysis of process results may be characterized by effectiveness (the achievement of process goals) and efficiency (performing the process with minimum costs).

Process models describe supply chain and operations management activities from an information processing perspective. At the enterprise level, such MIS as ERP, WMS, and TPS systems are used. During the last decade, new IT for operations and SC integration have been developed. Examples include data mining, cloud computing, physical internet, pattern recognition, knowledge discovery, and early warning systems, to name a few. Trends in IT development for SCM include Business Intelligence and data mining, cloud computing and SaaS, E-Business, and Industry 4.0.

Examples of processes include the following areas; manufacturing and production, e.g., assembling the product, sourcing, e.g., selecting suppliers, and human resources, e.g., hiring employees.

#### **Activity 5**

Describe a requisition-to-pay process of an organization of your choice, and recommend two initiatives to improve the current state of the process. Submit a maximum of 2 pages writing detailing the processes.

## **UNIT 6**

### **SUSTAINABLE SUPPLY CHAIN MANAGEMENT**

#### **OVERVIEW**

Supply chains influence the environment and are influenced by it. In light of ecological problems, natural disasters, and society development challenges, the necessity for new viewpoints on supply chain management has become even more obvious. The former paradigm of overall and unlimited customer satisfaction has naturally failed because of the limited resources available for this satisfaction. SC sustainability is based on a triple-bottom-line; social, environmental, and financial.

Supply chain sustainability can be measured in terms of energy consumption, water consumption, greenhouse gas emission, and waste generation. It is important that these metrics be tracked across as wide a scope of the supply chain as possible

#### **CONTENT**

- 6.1 What is sustainable supply chain management?
- 6.2 The Role of Sustainability in a Supply Chain.
- 6.3 A challenge of supply chain sustainability; the tragedy of the commons.
- 6.4 Key metrics for supply chain sustainability.

#### **REQUIRED READINGS**

- 1. Chopra, S., Meindl, P., & Kalra, D. V. (2016). Supply Chain Management: Strategy, Planning, and Operation (pp 501-509) 6th Ed. Pearson Education India.
- 2. Ivanov, D., Tsipoulanidis, A., & Schonberger, J. (2019). Global Supply Chain and Operations Management: SA Decision-Oriented Introduction to Creation of Value (pp 100-103) Second Edition. Springer Nature Switzerland AG.

#### **LEARNING OUTCOMES**

By the completion of this unit, student should be able to;

- 1. Understand the importance of sustainability in a supply chain.

2. Discuss the challenge to sustainability and identify opportunities for improved sustainability in supply chains.
3. Describe key metrics that can be used to measure sustainability for a supply chain.

## **SESSION/ ACTIVITIES**

### **SESSIONS 6**

As supply chains have globalized and emerging countries have grown, it has become increasingly clear that the world's resources and environment will not be able to support this growth unless supply chains become more sustainable. Besides the need to make the world more sustainable, an increased focus on sustainability has allowed some supply chains to reduce risk, become more efficient, and also attract some customers who value these efforts.

Many actions that improve sustainability of a supply chain impose costs that are local (to an individual, a firm, supply chain, or country) but provide common benefits that are more global. In contrast, a disregard for sustainability provides benefits that are local but costs that are shared globally. As a result, encouraging sustainability without some external pressure either in the form of a public mandate or economic incentive can be difficult.

### **Activity 6**

Visit the online course room and familiarize yourself with the online contents in the course material folder in the LMS for KBS. Here you will find "Unit 6" folder that contains a self-checks multiple choice questions. Answer all the questions, and confirm same by sharing your thought of supply chain sustainability.

## **UNIT 7**

### **SUPPLY CHAIN NETWORKS**

#### **OVERVIEW**

One of the important issues in supply chain management is to design and plan out the overall architecture of the supply chain network and the value adding flows that go through it. It is imperative to step back and look at the supply chain as whole and formulate strategies and processes that maximise the total supply chain value-adding and minimises the total supply chain cost.

Network design decisions have a significant impact on performance because they determine the supply chain configuration and set constraints within which the other supply chain drivers can be used either to decrease supply chain cost or to increase responsiveness. All network design decisions affect one another and must be made taking this fact into consideration. Decisions concerning the role of each facility are significant because they determine the amount of flexibility the supply chain has in changing the way it meets demand

Supply chain network design decisions include the assignment of facility role; location of manufacturing, storage, transportation-related facilities; and the allocation of capacity and markets to each facility.

#### **CONTENT**

7.1 What is supply chain network design?

7.2 The role of network design in supply chain.

7.3 Factors influencing supply chain network design decisions.

#### **REQUIRED READINGS**

1. Watson, M., Lewis, S., Cacioppi, P., & Jayaraman, J. (2013). Supply Chain Network Design: Applying Optimization and Analytics to the Global Supply Chain (pp 18-23). Pearson Education Australia PTY, Limited.
2. Chopra, S., Meindl, P., & Kalra, D. V. (2016). Supply Chain Management: Strategy, Planning, and Operation (pp 108-117) 6th Ed. Pearson Education India.

## **LEARNING OUTCOMES**

1. Understand the role of network design in a supply chain.
2. Identify factors influencing supply chain network design decisions.
3. Understand the use of optimization for facility location and capacity allocation decisions.

## **SESSION/ ACTIVITIES**

### **SESSIONS 7**

A firm's supply chain allows it to move product from the source to the final point of consumption. Leading firms around the world, from large retailers to high-tech electronics manufacturers, have learned to use their supply chain as a strategic weapon.

The number and locations of facilities is a critical factor in the success of any supply chain. Some experts suggest that 80% of the costs of the supply chain are locked in with the location of the facilities and the determination of optimal flows of product between them. The most successful companies recognize this and place significant emphasis on strategic planning by determining the best facility locations and product flows. The discipline used to determine the optimal location and size of facilities and the flow through the facilities is called supply chain network design.

### **Activity 7**

Write a summary of your learnings in unit 7. The summary should not exceed a page of A4 sheet. It should be written in Times New Roman, Font size 12, 1.5 spaced with one-inch margins. Submit the completed assignment via the email provided by the facilitator.



## **UNIT 8**

### **SUPPLY CHAIN METRICS**

#### **OVERVIEW**

In this fast-paced, increasingly competitive business world, an organization that cannot get the job done faster or better than its competitors is unlikely to survive. Therefore, the organizational performance can be directly translated into its competitiveness. Because we cannot improve organizational performance without measuring it, organizational performance measurement has been one of the most important management practices in supply chain.

Supply chain metrics are measurable performance parameters developed to determine the success or failure of the value chain's practices or processes. The output of the metrics, when employed for decision making is termed as Key Performance Indicator (KPI). Supply chain metrics applies to all sub-functions; procure-to-pay, inventory management, warehousing, productions etc.

#### **CONTENT**

- 8.1 Drivers and metrics of supply chain performance
- 8.2 Supply Chain Performance metrics and Its Impact on the Bottom Line
- 8.3 Supply Chain Key Performance Indicators (KPIs)
- 8.4 A Balanced Scorecard for Supply Chain Performance Measurement

#### **REQUIRED READINGS**

1. Min, H. (2015). The Essentials of Supply Chain Management: New Business Concepts and Applications (pp 420-433). Pearson Education Ltd, USA.

#### **LEARNING OUTCOMES**

1. Identify the major drivers of supply chain performance
2. Discuss the key performance metrics, including key performance indicators (KPIs), and it's importance to the supply chain management.
3. Understand the role of balanced scorecard approach in measuring the supply chain performance.

## **SESSION/ ACTIVITIES**

### **SESSIONS 8**

A supply chain performance measure is a means of providing feedback to the management throughout the supply chain that enables them to make informed decisions and take necessary corrective actions in a timely manner. It is also one of the ways to communicate with stakeholders of the organization and its supply chain partners regarding the efficiency and effectiveness of supply chain activities.

In order to continually improve supply chain efficiency and maintain supply chain excellence, an organization and its supply chain partners should uncover and adopt best-in-class supply chain practices on an ongoing basis. A key to the successful identification of those practices is the establishment of multifunctional, integrated performance measurement tools.

In order for these tools to be meaningful and useful, they should correspond to the organization's strategic mission and be linked to its supply chain strategy. In other words, a key to developing supply chain performance measures is identifying and understanding the major elements (e.g., market share, customer value, business outcomes, revenue growth, and research and development) of the company's strategic goals.

#### **Activity 8**

Visit the online course room and familiarize yourself with the online contents in the course material folder in the LMS for KBS. Here you will find "Unit 8" folder that contains a self-checks multiple choice questions. Answer all the questions, and confirm same by sharing your thought of supply chain sustainability.

## **UNIT 9**

### **CREATING SUPPLY CHAIN VALUE**

#### **OVERVIEW**

The value chain consists of the product development and supply chain processes of an organization. It covers all stages of the lifecycle from idea concept, raw material sourcing, production, distribution, end customer use to the point where the product goes back to a biological or technical cycle, thus closing the loop.

Effective supply chain management entails coordination and collaboration with multiple stakeholders, including multifaceted value chain partners that involve suppliers, intermediaries, third-party service providers, and downstream customers. A value chain perspective should be the lens through which a performance-based approach to supply chain management links various stakeholders; each agency affecting others along a continuum of logistical preparedness. An evaluation of the entire sequence from equipment or material manufacture to the end user, using effective value chain analysis, can create a supply chain that is more responsive to various customers' needs and delivers value.

#### **CONTENT**

- 9.1 The concept of value creation
- 9.2 Coordination and Collaboration in value creation.
- 9.3 Digitalization as a driver of supply chain value

#### **REQUIRED READINGS**

1. D'heur, M. (2015). Sustainable Value Chain Management: Delivering Sustainability through the Core Business (pp 4-8). Springer International Publishing Switzerland.

#### **LEARNING OUTCOMES**

1. Identify the basic stages in supply chain value creation.
2. Explain the interconnections between the production and distribution strategies.
3. Discuss digitization as a driver of value creation in supply chain

## **SESSION/ ACTIVITIES**

### **SESSIONS 9**

The value is created when the supply chain is in sync with the demand chain.

The supply chain value is often driven by four key imperatives; reduced uncertainty, which minimizes asset intensity through the reduction and elimination of inventory; increased speed, which minimizes the risk of obsolescence; increased revenue resultant from the maximization of customization and the subsequent customer loyalty, and increased productivity through multiple asset productivity.

A key to the supply chain success is how efficiently and effectively multiple business functions and firms across the traditional organizational boundaries break their barriers to create synergies among themselves, and deliver value.

#### **Activity 9**

Write a summary of your learnings in unit 9. The summary should not exceed a page of A4 sheet. It should be written in Times New Roman, Font size 12, 1.5 spaced with one-inch margins. Submit the completed assignment via the email provided by the facilitator.

## **UNIT 10**

### **SUPPLY CHAIN AGILITY AND RESILIENCE**

#### **OVERVIEW**

An agile supply chain is the one that has the potential to respond to changing requirements in a way that accelerates the delivery of ordered goods to customers. Supply chain resilience is the ability to maintain, execute and recover planned execution along with achievement of the planned.

The result of integrated supply chain risk management is a supply chain that is not inherently vulnerable to risks, and is resilient and agile enough to recover quickly from unexpected events.

The chain is only as strong as its weakest link. Disruption at any point in a supply chain causes problems for the whole chain, so managers have to identify risks throughout the chain to find the weakest parts.

There are always weak spots in a network, and these might include single paths, links with long lead times, members facing specific organizational risks, those that are unwilling to share information, members that do not manage risks properly, and so on.

#### **CONTENT**

10.1 Agile supply chain concept

10.2 What is supply chain resilience?

10.3 The need for resilient supply chain

10.4 Relationships within a resilient supply chain

#### **REQUIRED READINGS**

1. Ivanov, D., Tsipoulanidis, A., & Schonberger, J. (2019). Global Supply Chain and Operations Management: SA Decision-Oriented Introduction to Creation of Value (pp 100-103) Second Edition. Springer Nature Switzerland AG.

#### **LEARNING OUTCOMES**

1. Explain the concepts of agility and resilience in supply chain.
2. Discuss the need and importance of resilience in supply chain.
3. Understand the relationship between the nodes a resilient in supply chain

## **SESSION/ ACTIVITIES**

### **SESSIONS 10**

Supply managers do not only deal with supply chain risks. They also need to put strategies in place to manage supply chain resilience. Supply chains need to be planned such that they are stable, robust, and resilient, i.e. so they can cope with uncertainty in the planning stage and are able to deal with disturbances and disruptions during SC execution.

Supply chain flexibility and robustness are interrelated. Risk mitigation for inventory or considering a backup location, and purchasing items from an alternative supplier are useful strategies. These robustness and flexibility strategies have certain costs.

Companies should therefore balance their robustness and flexibility investments and possible losses from disruptions to reduce the Ripple Effect and mitigate decreased supply chain performance, which would lead to lost sales, penalty payments, and is significantly negative from a reputational point of view.

### **Activity 10**

Visit the online course room and familiarize yourself with the online contents in the course material folder in the LMS for KBS. Here you will find “Unit 10” folder that contains a self-checks multiple choice questions. Answer all the questions, and confirm same by sharing your experience on the self-check multiple choice question forum. The lead facilitator may provide additional information to the class where necessary

## **UNIT 11**

### **SUPPLY CHAIN INFORMATION SYSTEMS**

#### **OVERVIEW**

The information systems of the firm coordinate business information and make it accessible to all functions quickly and accurately so that plans and processes can be integrated effectively.

Systems such as enterprise resources planning (ERP), advanced planning systems (APS), forecasting, supply chain, demand management, and lean techniques, provide comprehensive information management tools necessary for executing the day-to-day plans of the production strategy.

Technology tools enable the effective collection, management, and retrieval of information necessary to run the firm's information systems. Depending on the production process choice, applications like shop floor controllers, automated and web-based data collection, manufacturing execution systems (MES), electronic data interchange (EDI), and RFID can be used to support the production strategy.

#### **CONTENT**

11.1 What is management information systems?

11.2 The functions of management information systems in SCM

11.3 Management information systems technologies

#### **REQUIRED READINGS**

1. Ross, D. F. (2015). *Distribution Planning and Control: Managing in the Era of Supply Chain Management* (pp 840-883) 3<sup>rd</sup> Ed. Springer International Publishing, New York.

#### **LEARNING OUTCOMES**

1. Discuss management information system in supply chains
1. Comprehend the functions of information systems in SCM
2. Identify and discuss the use of various information system technologies.

**SESSION/ ACTIVITIES**

**SESSIONS 11**

Management Information Systems (MIS) collect, process, store, and distribute information in order to support decision making, coordination, and control. MIS use data, i.e. they are streams of raw facts. Information is data shaped into meaningful form. For companies, MIS is an instrument for creating value. Investments in the right information technology (IT) can result in superior returns in terms of productivity, revenue, and long-term strategic positioning.

On the one hand, MIS automate steps that were done manually before. On the other hand, MIS enable entirely new processes by changing the flow of information, replacing sequential steps with parallel steps, eliminating delays in decision making, and support new business models.

**Activity 11**

Write a summary of your learnings in unit 7. The summary should not exceed a page of A4 sheet. It should be written in Times New Roman, Font size 12, 1.5 spaced with one-inch margins. Submit the completed assignment via the email provided by the facilitator.



## **END-OF- COURSE EVALUATION**

Please visit the End of Course evaluation folder to pick the evaluation questionnaire. Answer the questions and submit your response to the facilitator. This evaluation is very critical to the betterment of the course in subsequent sessions.

The final examination, which counts towards 70% of your final grade, will include all topical issues discussed during this course. Please review all groups' reports, debates and individual assignments, as preparation for your final exam. The programmer's examination officer will communicate the final examination dates and venue to students sometime later.

Thanks for your cooperation!!!☐

**END-OF-SEMESTER EVALUATION – DM 510 DEVELOPMENT THEORIES AND STRATEGIES**

sn	Issues	1	2	3	4	5
<b>Factor 1: Appropriateness of Readings and Assignments</b>						
	Assignments were appropriate and effective for learning course content.					
	Discussion board assignments fostered a high level of interaction among students.					
	Online assignments included authentic, real-life activities.					
	Discussion board activities were designed to evoke further critical thinking about course content.					
	Selected readings and resources were adequate for the course objectives.					
<b>Factor 2: Technological Tools</b>						
	Links were descriptive and provided information regarding the content.					
	Links to external readings opened in new windows.					
	Interactive multimedia items allowed students to control content.					
	Technological requirements to complete the online course were specified.					
	Technological tools were used appropriately for the course content					
	Online course content included varied types of assignments to appeal to different learning Style					
<b>Factor 3: Instructor Feedback and Communication</b>						
	Feedback was informative and clearly articulated.					
	Feedback was delivered in a timely manner.					
	Instructor effectively communicated any changes/clarified any misunderstanding regarding course requirements.					
<b>Factor 4: Course Organization</b>						
	The sequence of online course activities was effectively organized and easy to follow					
	Dates on the syllabus and course schedule corresponded to online readings					
	Dates on the course schedule corresponded to drop box and discussion board submissions					
	Online course content was consistent in presentation.					
<b>Factor 5: Clarity of Outcomes and Requirements</b>						
	Assignments and activities were clearly linked to the course objective.					
	Evaluation criteria were clearly stated					
	Evaluation criteria for discussion board activities were clearly specified in advance					
	Requirements for drop box submissions were specified and easy to follow.					
	The course has evoked further interest in this field					
<b>Factor 6: Content Format</b>						
	Online course materials were free of spelling errors and grammatical errors					
	Font size and layout of the online content was consistent					

The scale consisted of 25 Likert type items, using a five-point scale (1 = strongly disagree; 2 = disagree, 3 = neutral; 4 = agree; 5 = strongly agree). **Source: Rothman, T., Romeo, L., Brennan, M., & Mitchell, D. (2010). 21st century best practice and evaluation for online courses. In International Conference: The Future of Online Education**