



STRATHMORE BUSINESS SCHOOL
BACHELOR OF SCIENCE IN SUPPLY CHAIN AND OPERATIONS MANAGEMENT
END OF SEMESTER EXAMINATION
SCM 4103: SUPPLY CHAIN NETWORK DESIGN

DATE: Mon, 22nd July 2024

TIME: 15:30 – 17:30

Instructions

1. This examination consists of **FIVE** questions.
2. Answer **Question ONE (COMPULSORY)** and any other **TWO** questions.

Question One

(30 marks)

- a) You have been invited for interview in one of the manufacturing firms for the position of management trainee in the supply chain field for a manufacturing firm. One of the key areas that the interview has stressed is the ability to ensure that you design a supply chain that complements and effectively supports the organisation's business. The interviewer indicates that they expect you to be very knowledgeable of the competitive environment and the firms in that industry. He requests you to pick an organisation in the manufacturing sector and explain:
- The organisation and its business
 - The strategy of the organisation
 - The supply chain that you would recommend for that organisation given its corporate strategy bringing out clearly how the supply chain would support the corporate strategy.

Required:

Prepare the document that brings out what you would answer. **(11 marks)**

- b) An important factor when designing a supply chain is to determine the implied demand uncertainty of the products/services.

Required:

How does the implied uncertainty differ between an integrated steel mill that measures lead times in months and requires large orders and a steel service centre that promises 24-hour lead times and sells orders of any size? **(4 marks)**

- c) International Cosmopolitan is a company that sells an enormous amount of fine jewellery worldwide from its headquarters in Paris, France. Presently 10% of their revenues come from sales in Kenya. International Cosmopolitan would like to grow the business by about 200% over the next three years. Presently, a majority of their product is kept in a private warehouse in France.

While the shipments to Kenya will always be relatively small in size due to the cost and nature of the product, International Cosmopolitan would still like to take advantage of any possible distribution efficiencies by sending their shipments to a distribution centre in Kenya that can then package their small shipments with other jewellery shipments headed towards common retailers and/or wholesalers. In order to do so they'll need to make accommodations for shipment, find retail and wholesale companies willing to distribute their product, find intermediaries to both help export the product out of France and help import the product into Kenya.

Based on the above information and your knowledge of international transportation, answer the questions below in the hopes of providing International Cosmopolitan with some preliminary information that will aid them in creating a successful supply chain network given expected changes:

- i) Which modes of transportation should be utilized in getting the product from International Cosmopolitan's warehouse in France to a distribution centre in Kenya? Explain your answer. **(4 marks)**
- ii) Using the framework for network design as brought out by Chopra and Meindl (2010) advise International Cosmopolitan on the regional configuration of their operation in Kenya. **(7 marks)**
- d) Explain the role of information and communication technologies in supply chain network design. **(4 marks)**

Question Two

(15 marks)

Network Design is considered one of the most important areas of supply chain management and entails a variety of decisions.

Required:

- a) Explain why network design is important. Give **two** well explained points. **(4 marks)**
- b) Outline **four** decision areas in network design, and for each bring out the effect of decisions made on the supply chain and organisational competitiveness. **(11 marks)**

Question Three**(15 marks)**

For many firms, transport costs are a major component of their overall costs and when controlled can lead to major cost savings for the organization.

Required:

Discuss key drivers that may be used to tailor transportation indicating clearly how tailoring helps in achieving better the objectives of the organization. **(15 marks)**

Note: Ensure you discuss issues of transportation options given customer density and distance as well as the inventory aggregation and when it is most beneficial.

Question Four**(15 marks)**

A key element designing a supply chain network is to identify the areas of trade-offs and determining the best option given different objectives for an organisation. This requires a variety of decisions and is assisted by optimisation tools and techniques.

Required:

- a) Explain the concept of network optimization in supply chain management. **(3 marks)**
- b) Discuss the key steps involved in optimizing a supply chain network and provide examples of optimization techniques commonly used in practice." **(7 marks)**
- c) It is recommended that management revisits design decisions after market changes, mergers, or factor cost changes. Using a simple example explain why you think this is the case. **(5 marks)**

Question Five**(15 Marks)**

- a) Many organisations started out as brick and mortar and have since incorporated some form of e-commerce in their operations.

Required:

- i). Explain any **two** changes that would need to be done in their supply chain to cater for the increased channels of fulfilment. **(4 marks)**
- ii). Would the design of the supply chain be different if the organisation was deciding to have both channels from the beginning instead of making changes to an existing channel? Explain. **(2 marks)**
- b) Covid 19, Ukraine war, Middle East conflict, floods and several other phenomena have caused disruptions in supply chains globally.

Required:

Explain any **three** elements in the design of the supply chain that would need to change to enhance resilience in the supply chain. **(9 marks)**