



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

DATE: Monday, 31<sup>st</sup> July 2023

Time: **2 hours**

**Instructions**

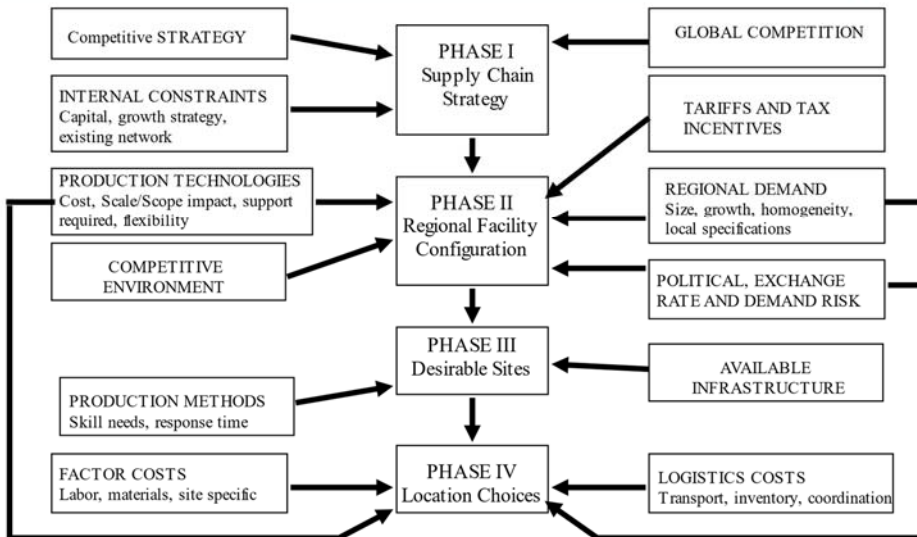
1. This examination consists of **FIVE** questions.
2. Answer **Question ONE (COMPULSORY)** and any other **TWO** questions.

**Question One**

**(Total 30 marks)**

- a) Below is a framework for the decisions to be taken to optimally design a supply chain network as proposed by Supra and Mendl (2010).

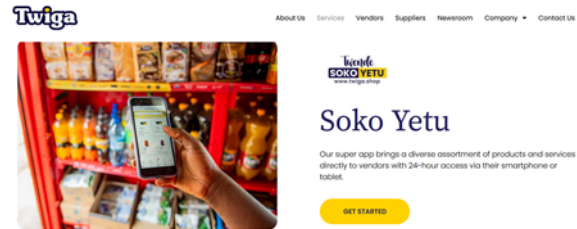
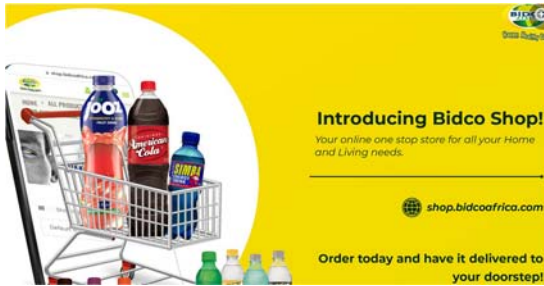
## A Framework for Network Design Decisions



**Required:**

With reference to Marshall Fisher’s 1997 article “What’s the Right Supply Chain for your Product?” and any other source explain the three elements of the supply chain strategy that is phase I of the framework. Illustrate with suitable examples. **(12 marks)**

- b) Regional configuration which is phase II of the framework has four factors influencing it. Explain any two of the factors using an organisation that is Kenyan or conducts operations in Kenya. **(6 marks)**
- c) Bidco Oil ltd and Twiga Foods ltd whose logos are shown below are examples of organisations that are innovating in the online shopping market space to facilitate availability and convenience to customers and vendors in Kenya.



**Required:**

Imagine you were recruited as they were designing the supply chain network needed to provide delivery services for ONE of the two firms.

- i) Outline the distribution and or logistics network you would use for the firm. **(7 marks)**
- ii) Justify the choices you would make in the design. **(5 marks)**

**Question Two (Total 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.

**Required:**

- a) Explain the concept of network optimization in supply chain management. **(4 marks)**
- b) Discuss the five key steps involved in optimizing a supply chain network **(5 marks)**
- c) Explain any three optimization techniques commonly used in practice." **(6 marks)**

**Question Three (Total 15 marks)**

- a) Discuss any five challenges and considerations involved in designing a global supply chain network. **(10 marks)**
- b) Explain how any three of the challenges can be addressed while designing the supply chain. **(5 marks)**

**Question Four**

Explain how the following technological advancements may impact the design and management of supply chain networks.

- a) Big Data Analytics (4 marks)
- b) Internet of Things (2 marks)
- c) Supply chain digital twins (4 marks)
- d) Block chain (3 marks)
- e) Drones (2 marks)

**Question Five**

**(Total 15 marks)**

Risk management is a crucial aspect of supply chain network design and though it is not part of optimizing the network it could negate any benefits considered in the decisions on which network design to adopt hence needs to be considered as the network is being designed to improve chances of realising any benefits envisioned.

**Required:**

- a) Explain the concept of risk management in supply chain network design. (3 marks)
- b) Discuss four types of risks that can affect supply chain performance and propose strategies for mitigating these risks during the design process. (12 marks)