



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF ENGINEERING

DEPARTMENT OF INDUSTRIAL AND MANUFACTURING ENGINEERING

MENG MANUFACTURING SYSTEMS/ENGINEERING & OPERATIONS MANAGEMENT

LOGISTICS

TIE 6132

STAGE 1 EXAMINATION

SEPTEMBER 2024

This examination paper consists of **7** printed pages

Time Allowed:

3 hours

Total Marks:

100

Examiner's Name:

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INSTRUCTIONS AND INFORMATION TO CANDIDATE

1. Answer **Question 1** and any other **Four (4)** Questions.
2. Each Question carries a total of 20 Marks.
3. Start the answer to each full question on a fresh page.
4. Use of calculators is permissible.
5. Ensure neatness and legibility of work.

QUESTION 1

Read the attached Case Study [**Zimbabwean Manufacturing Industry – Case of Delta Corporation**], and answer the following questions.

- a) Discuss the impact of economic instability on Delta Corporation's manufacturing operations. How has the company adapted to these challenges? [5]
- b) Evaluate Delta Corporation's strategy of diversifying its product line. What are the potential benefits and risks associated with this strategy? [5]
- c) Analyse how local sourcing has helped Delta Corporation address supply chain issues. What are the advantages and limitations of this approach? [5]
- d) Assess the role of technological investment in enhancing Delta Corporation's production efficiency. What challenges might the company face in this area? [5]

QUESTION 2

Examine the supply chain of the National University of Science and Technology focusing on its structure as well as effectiveness.

- a) Identify the key stakeholders in the University's supply chain, including suppliers, producers and distributors. [5]
- b) Discuss whether there are multiple tiers of suppliers and the roles they serve within the supply chain. [5]
- c) Evaluate the effectiveness of the University's supply chain in terms of efficiency and reliability. [5]
- d) Examine if inventory is present, its forms and how it is managed. [5]

QUESTION 3

- a) Edgars is a Zimbabwe based retail company that is in the business of selling fashionable clothes and cosmetics.
 - i. Determine the types of suppliers that Edgars uses for its clothes and cosmetics. [5]

ii. Describe the criteria that Edgars might use to evaluate and select its suppliers.

[5]

b) Define partnerships and explain their role in business. Then describe three (3) key advantages and three (3) key disadvantages of forming partnerships.

[10]

QUESTION 4

a) Write brief notes on the four types of supply relationships commonly adopted in supply chain management. For each type provide a concise description and highlight key characteristics.

[12]

b) A purchase-portfolio matrix is outlined in **FIGURE Q4** below. Using a valid example, explain how the matrix is used to categorise and manage different types of purchases. Include an explanation of the matrix's components and how they influence purchasing strategies.

[8]

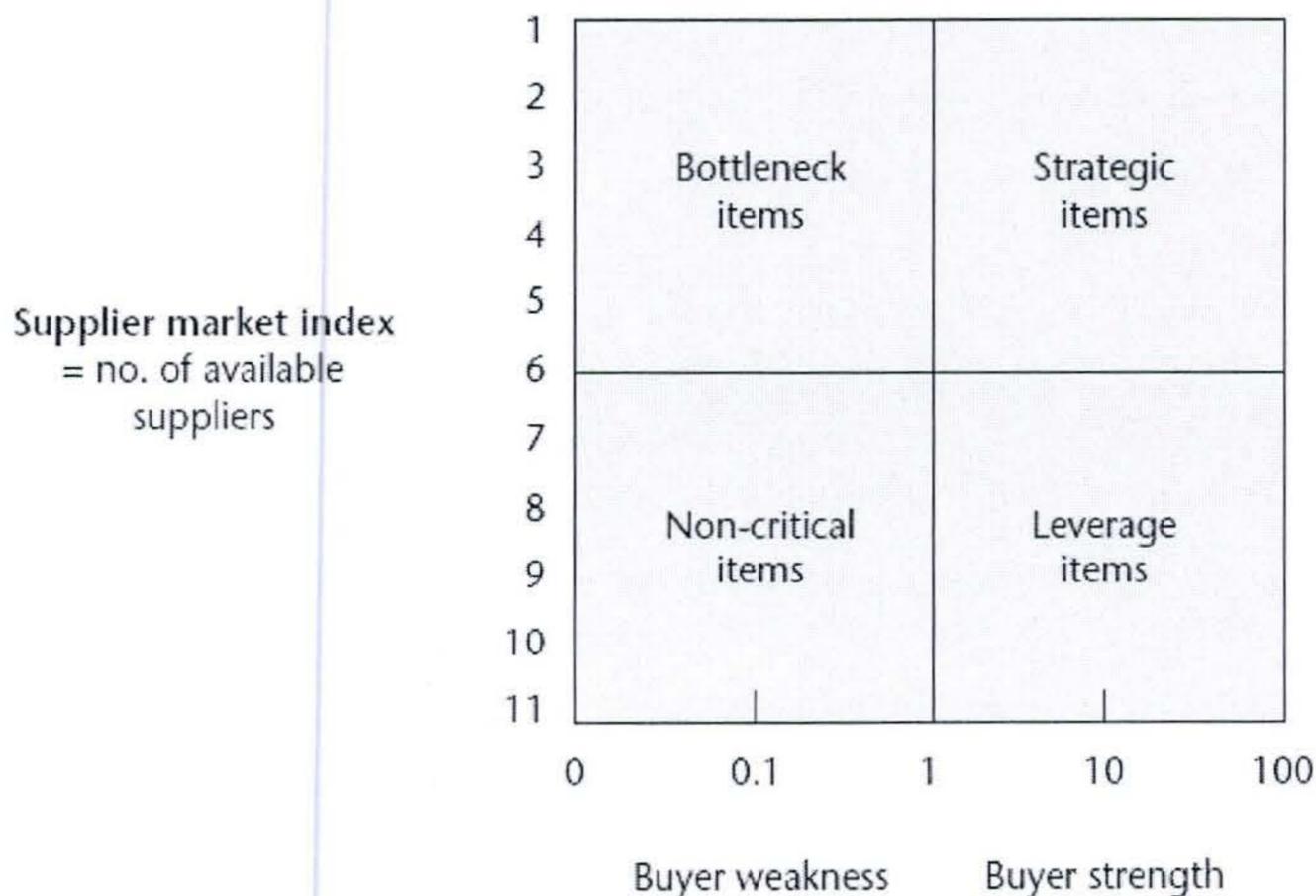


Figure Q4: Purchase-Portfolio Matrix

QUESTION 5

- a) With the aid of valid examples, differentiate between indirect and direct distribution channels. [8]
- b) When choosing a distribution strategy, what factors should a company consider? [6]
- c) What role do cultural factors play in regional logistics? [6]

QUESTION 6

- a) How does the implementation of ERP systems influence supply chain visibility and coordination? [6]
- b) What are the primary strategic advantages of outsourcing for an Organisation that is looking to expand globally? [8]
- c) What criteria would you consider most important when deciding whether to outsource a part of your Organisation's supply chain. [6]

QUESTION 7

- a) In the context of Supply Chain Management, analyse the key benefits of adopting a Lean Supply Strategy, such as Value Stream Mapping. Discuss how these benefits contribute to operational efficiency and translate into competitive advantages for the organisation. In your analysis, consider aspects such as customer satisfaction, cost reduction and process improvement. [8]
- b) Within a supply chain:
 - i. Describe the steps involved in analysing Key Performance Indicator (KPI) data to identify potential issues. [4]
 - ii. Discuss how you would differentiate between various types of underperformances based on KPI data, such as inefficiencies in Production, Logistics or Inventory Management. [4]

- iii. Explain the specific actions and strategies you would implement to address different types of underperformance revealed by the data. Include in your explanation, considerations for short-term corrective measures and long term improvements. [4]

Case Study: Zimbabwean Manufacturing Industry – A Case of Delta Corporation

Background:

Delta Corporation is one of Zimbabwe's largest and most established beverage manufacturers, producing a range of products including beers, soft drinks, and bottled water. Established in 1946, Delta has faced various economic challenges over the decades, including hyperinflation, currency instability, and changing consumer preferences. Despite these challenges, Delta has managed to maintain a strong market presence through strategic adaptation and innovation.

Challenges Faced:

1. **Economic Instability:** Zimbabwe has experienced periods of severe economic instability, including hyperinflation and currency devaluation. These factors have led to increased costs of raw materials and difficulties in pricing products competitively.
2. **Supply Chain Disruptions:** Due to economic instability, Delta has faced issues with sourcing raw materials and managing supply chains. This has impacted production schedules and increased operational costs.
3. **Technological Upgrades:** The Company has needed to invest in modernizing its technology to improve production efficiency and quality, but this requires significant capital investment which is challenging given the economic climate.
4. **Consumer Preferences:** Changing consumer preferences, including a shift towards healthier beverages, have required Delta to innovate and diversify its product offerings.

Strategies Implemented:

1. **Diversification:** Delta has diversified its product line to include a range of beverages beyond its traditional beer offerings, such as non-alcoholic drinks and bottled water, to appeal to a broader market.
2. **Local Sourcing:** To mitigate supply chain issues, Delta has focused on increasing its use of locally sourced raw materials. This reduces dependence on imported goods and supports the local economy.

3. Technological Investments: Despite financial constraints, Delta has prioritized investments in modern production technologies to enhance efficiency and product quality.
4. Cost Management: The Company has implemented rigorous cost control measures, including optimizing production processes and renegotiating supplier contracts to manage rising costs.