



## STRATHMORE BUSINESS SCHOOL

### BACHELOR OF SUPPLY CHAIN AND OPERATIONS MANAGEMENT

### END OF SEMESTER EXAMINATION

### SCM 4106: SUPPLY CHAIN 4.0 AND INDUSTRIAL INTERNET OF THINGS

DATE: Wednesday, 4<sup>th</sup> December 2024

TIME: 10:30 – 12:30

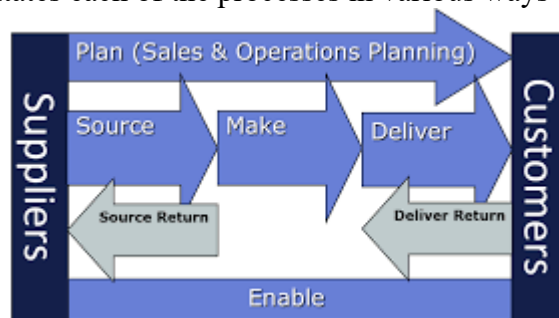
#### INSTRUCTIONS

- 1) Answer **QUESTION ONE** and any other **TWO QUESTIONS**
- 2) Question one is compulsory and carries **30 marks**
- 3) All other questions carry **15 marks each**

#### **Question One**

**(30 marks)**

- a) The Supply Chain Operations Reference Model (SCOR) (see figure below) brings out the major processes applicable in a supply chain for effective management. Supply chain 4.0 facilitates each of the processes in various ways whilst posing some challenges.



#### **Required:**

Explain with the aid of an example, the effect of the following Supply Chain 4.0 technologies on the performance of the supply chain of organisations that adopt them.

- i). Data Analytics **(5 marks)**
  - ii). IoT **(4 marks)**
  - iii). Blockchain **(4 marks)**
- b) Artificial Intelligence is one of the technologies that seem to have sweeping effects in virtually all spheres of human existence. The supply chain has not been left behind and there are numerous applications of AI in virtually all elements of the supply chain with varying degrees.

**Required:**

- i). Explain **two** reasons that has made AI so pervasive (3 marks)
  - ii). Explain the application of AI in the logistics sector (5 marks)
  - iii). Discuss any **two** ethical concerns regarding application of AI in the supply chain (4 marks)
- c) Discuss the role of Supply Chain 4.0 in greening the supply chain (5 marks)

**Question two (15 marks)**

- a) Illustrate the history of Industry 4.0 (7 marks)
- b) Discuss the meaning and application of the envisioned Supply Chain 5.0 (8 marks)

**Question Three (15 marks)**

It is argued that warehousing will in the future become the preserve of the Industrial 4.0 technologies combined, eliminating the use of human beings. Discuss.

**Question Four (15 marks)**

- a) It is said that there is a change in the landscape of the organisational operating environments leading to a pull towards “demand driven” rather than “forest driven” strategies, some pundits say that the move is towards a segment of ‘one’. Supply chain 4.0 is among the technologies that are being put in place in response to this changing landscape.

**Required:**

- i). Explain any **two** changes from the demand side. (3 marks)
  - ii). Explain any **two** changes from the supply side. (3 marks)
  - iii). Explain how Supply Chain 4.0 technologies may have contributed to the changes and/or may be the solution for organisations responding to these changes. (4 marks)
- b) It is argued that some sectors are more amenable to the adoption of Supply Chain 4.0 technologies than others. Evaluate the potential application of supply chain 4.0 technologies in the mining supply chain. (5 marks)

**Question Five (15 marks)**

Block chain technology has been touted as panacea to some of the problems manifest in supply chains. Maersk, one of the leading players in the shipping sector proposed the use of blockchain in the supply chain for various reasons.

**Required:**

- a) Explain using an example any **two** applications of blockchain in the supply chain. (4 marks)
- b) Illustrate the application of smart contracts in a supply chain context bringing out its key benefits and hurdles (6 marks)
- c) Distinguish between public, and private blockchains bringing out the pros and cons of each. (5 marks)