

MACHAKOS UNIVERSITY
SCHOOL OF BUSINESS AND ECONOMICS
DEPARTMENT OF BUSINESS ADMINISTRATION
B.COM (PROCUREMENT AND SUPPLY CHAIN MANAGEMENT OPTION) THIRD YEAR FIRST
SEMESTER EXAMINATION
BMS 317: PRINCIPLES OF SUPPLY CHAIN MANAGEMENT

Instructions:

- **Cheating is highly discouraged**
- **Attempt Question one which is compulsory and then choose two other questions of your choice.**
- **In case of an examination irregularity, the MksU examination policy shall be applied.**

QUESTION ONE

DEERE & COMPANY

Deere & Company (brand name John Deere) is well known for the manufacture and supply of machinery used in agriculture, construction, and forestry, as well as diesel engines and lawn care equipment. In 2014, Deere & Company was listed 80th in the Fortune 500 America's ranking and in 2013 was 307th in the Fortune Global 500 ranking. Supply Chain Cost Reduction Challenges: Deere and company has a complex product range, which includes a mix of heavy machinery for the consumer market and industrial equipment, which is made to order. Retail activity is extremely seasonal, with the majority of sales made between March and July. The company was replenishing dealers' inventory on a weekly basis, by direct shipment and cross-docking operations, from source warehouses located near Deere & Company's manufacturing facilities. This operation was proving too costly and too slow, so the company embarked on an initiative to achieve a 10% supply chain cost reduction over a four-year period.

The company undertook a supply chain network redesign program, resulting in the commissioning of intermediate “merge centers” and optimization of cross-dock terminal locations. Deere & Company also began consolidating shipments and using break-bulk terminals during the seasonal peak. The company also increased its use of third-party logistics providers and effectively created a network that could be tactically optimized at any given point in time. Deere & Company’s supply chain cost management achievements included inventory reduction of \$1 billion, a significant reduction in customer delivery lead times (from ten days to five or less) and annual transportation cost savings of around 5%.

- a) Analyze the supply chain activities that can be undertaken at the design decision phase of supply chain at Deere & Company. 10 mks
- b) Speed of operations can contribute to cost reduction at Deere & Company. Explain the measures that can be put in place to ensure quick turn-around of transportation vessels in this company. 10 mks
- c) One of the objectives of supply chain at Deere & Company is to ensure cost reduction. Analyze the various costs which could increase due to bullwhip effect in this company 10 mks

QUESTION TWO

- a) Discuss the differences between push and pull view in supply chain management. 10 mks
- b) Cooperation and trust in a supply chain relationship can lead to effective coordination of the supply chain. Explain the benefits associated with supply chain coordination that could be harnessed from a partnership relationship. 10 mks

QUESTION THREE

- a) A company that wants to maximize the customer service level can endeavor to minimize backorder levels as one of the strategies. Explain the ways in which such backorder levels can be minimized. 10 mks
- b) A supply chain measurement of Shilohtec Company limited showed that a shorter cycle has been achieved by the cash to cash cycle time metric. Explain the implications of such a shorter cycle metric to the company. 10 mks

QUESTION FOUR

- a) Give an analysis of the supply chain risks which can be attributed to the technological environment. 10 mks
- b) Companies which have mastered the art and science of managing supply chain risks can have a sharper competitive edge. Discuss the ways in which such a competitive edge can be achieved. 10 mks

QUESTION FIVE

- c) Explain the areas of application of Radio Frequency Identification Devices (RFIDs) in an organizational supply chain. 10 mks
- d) Supply Chain Operations Reference (SCOR) model is a tool for supply chain performance measurement. Describe the components that make up this model. 10 mks

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QUESTION ONE

INTEL

One of the world's largest manufacturers of computer chips, Intel needs little introduction. However, the company needed to make some significant supply chain cost reductions after bringing its low-cost "Atom" chip to market. Supply chain costs of around \$5.50 per chip were bearable for units selling for \$100, but the price of the new chip was a fraction of that, at about \$20. The Supply Chain Cost Reduction Challenge: Somehow Intel had to reduce the supply chain costs for the Atom chip, but had only one area of leverage—inventory.

The chip had to work, so there were no service trade-offs that could be made. Being a single component, there was also no way to pay less in the way of duties. Intel had already whittled packaging down to a minimum and with a high value-to-weight ratio, the chips' distribution costs could not really be pared down any further. The only option was to try to reduce levels of inventory, which, up to that point, had been kept very high in order to support a nine-week

order cycle. The only way Intel could find to make supply chain cost reductions was to bring this cycle time down and therefore reduce inventory. Intel decided to try what was considered an unlikely supply chain strategy for the semiconductor industry: a true make-to-order scenario. The company began with a pilot operation using a manufacturer in Malaysia.

Through a process of iteration, they gradually sought out and eliminated supply chain inefficiencies to incrementally reduce order cycle time. Further improvement initiatives included: Reduced the chip assembly test window from a five-day schedule, to a bi-weekly, 2-day-long process, Introduced a formal S&OP planning process, Moved to a vendor-managed inventory model wherever it was possible to do so. Through its incremental approach to cycle time improvement, Intel eventually drove the order cycle time for the Atom chip down from nine weeks to just two. As a result, the company achieved a supply chain cost reduction of more than \$4 per unit for the \$20 Atom chip—a far more palatable rate than the original figure of \$5.50.

- a) The automation of supply chain information system should not compromise the Conditions for valuable information at Intel. Explain five such conditions. 10 mks
- b) Analyze the supply chain activities that can be undertaken at the planning decision phase of Intel's supply chain. 10 mks
- c) Cooperation and trust in a supply chain relationship at Intel can lead to effective coordination of the supply chain. Describe the steps that can be followed by Intel when designing a partnership. 10 mks

QUESTION TWO

- a) The bullwhip effect is a distribution channel phenomenon in which forecasts yield supply chain inefficiencies. Evaluate the Consequences of Bull Whip Effect in a manufacturing firm. 10 mks
- b) A supply chain measurement of Shilohtec Company limited showed that a shorter cycle has been achieved by the supply chain cycle time metric. Explain the factors that might have contributed to a shorter cycle. 10 mks

QUESTION THREE

- a) As a consultant you have been tasked to measure the financial performance of a supply chain. Highlight the aspects that should be assessed during the exercise. 10 mks
- b) Explain the benefits of using Radio Frequency Identification Devices (RFIDs) over the use of bar codes. 10 mks

QUESTION FOUR

- a) Give an analysis of the supply chain risks which can be attributed to the ecological environment. 10 mks
- b) Companies which have mastered the art and science of managing supply chain risks can have a sharper competitive edge. Discuss the Strategies that can be adopted to minimize such risks 10 mks

QUESTION FIVE

- a) Discuss the implications of decoupling point in an organizational supply chain. 10 mks
- b) Despite the importance of supply chain performance measurement, it's faced by a number of Challenges. Explain such challenges. 10 mks