



## FACULTY OF BUSINESS

### FINAL EXAMINATION

Student ID (in Figures) : 

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Student ID (in Words) : \_\_\_\_\_  
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Course Code & Name : **MGT5104 Operations Management & Decision Science**  
 Semester & Year : September-December 2020  
 Lecturer/Examiner : Dr Smitha Geetha  
 Duration : 3 Hours

1. This question paper consists of 2 parts:
  - PART A (34 marks) : Answer ONE (1) compulsory case study question. Answers are to be written in the Answer Sheet provided.
  - PART B (66 marks) : Answer TWO (2) out of THREE (3) case study questions. Answers are to be written in the Answer Booklet provided.
2. Candidates are not allowed to bring any unauthorized materials except writing equipment into the Examination Hall. Electronic dictionaries are strictly prohibited.
3. This question paper must be submitted along with all used and/or unused rough papers and/or graph paper (if any). Candidates are NOT allowed to take any examination materials out of the examination hall.
4. Only ballpoint pens are allowed to be used in answering the questions, with the exception of multiple choice questions, where 2B pencils are to be used.

**WARNING:** The University Examination Board (UEB) of BERJAYA University College regards cheating as a most serious offence and will not hesitate to mete out the appropriate punitive actions according to the severity of the offence committed, and in accordance with the clauses stipulated in the Students' Handbook, up to and including expulsion from BERJAYA University College.

**Total Number of pages = 5 (Including the cover page)**

**PART A****: CASE STUDY QUESTION (34 MARKS)****INSTRUCTION(S)**

: Answer **ONE (1)** compulsory case study question. Write your answers in the Answer Booklet(s) provided.

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**Question 1**

Read the small case study about the process design of Boeing's 777 aircraft and answer the following questions:

Arguably the most innovative new passenger aircraft to enter service over the last few years was the Boeing 777, a new twin-engine aircraft, in the 300-plus seats category, to compete with established models from McDonnell and Airbus. The existence of established competitor products is important. When Boeing developed the 747 'Jumbo' jet aircraft, it had no direct competitors. The company's customers either wanted the product or they didn't. Not so for the 777; Boeing knew that it must consider its customers' requirements. The company had to take a new course – to understand its customers' needs and then to transform that knowledge into an aircraft that could best meet those needs.

Boeing has always maintained close involvement with its customers, but this project called for a new depth of listening and understanding. Initially, eight large potential customers (including British Airways, Japan Airlines and Qantas) were invited to participate in creating the design concepts. It soon became clear that the customers did have important requirements, the most vital of which was that the aircraft should be around 25 per cent wider than the 767. In fact Boeing had originally hoped to lengthen the 767 fuselage to give the extra capacity, so avoiding some of the costs involved in a completely new fuselage. The customers also wanted much more flexibility in the configuration of the passenger space. Conventionally, cabin space had been divided up into sections, separated by fixed galleys and toilets at predetermined positions, fixing the ratio of passenger capacities of each class. However, the airlines all indicated that they wanted to be able to configure the cabin to their own requirements. Finally, the airlines insisted that the new design should be free of the usual level of minor, but irritating, faults which had bugged the early operations of some of the other aircraft. Boeing did meet its customers' requirements and even improved upon them in some ways. They achieved this by using design/build teams, and by a particularly powerful computer-aided design (CAD) system. Customers were closely involved right from the start of the design. They even came up with some good suggestions. For example, one airline suggested a new layout for the rear galley which allowed an extra 12 seats to be included in the aircraft.

**Required:**

- a. Discuss the problems that you think might be associated with bringing customers together in the way that Boeing did. (16 Marks)
- b. Examine why that Boeing's customers wanted the flexibility to configure passenger space. (18 Marks)

**[Total: 34 marks]**

**PART B****: CASE STUDY QUESTIONS (66 MARKS)****INSTRUCTION(S)**

: Answer **TWO (2) out of THREE (3)** Case Study questions. Write your answers in the Answer Booklet(s) provided.

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**Question 2**

Inventory management in some operations is more than just a part of their responsibility; it is their very reason for being in business. Flame Electrical, South Africa's largest independent supplier and distributor of lamps, is such a business. It stocks over 2900 different types of lamp, which are sourced from 14 countries and distributed to customers throughout the country.

'In effect our customers are using us to manage their stocks of lighting sources for them,' says Jeff Schaffer, the Managing Director of Flame Electrical. 'They could, if they wanted to, hold their own stock but might not want to devote the time, space, money or effort to doing so. Using us they get the widest range of products to choose from, and an accurate, fast and dependable service.'

Central to the company's ability to provide the service its customers expect is its computerized stock management system. The system holds information on all of Flame's customers, the type of lamps they may order, the quality and brand of lamps they prefer, the price to be charged and the location of each item in the warehouse. When a customer phones in to order, the computer system immediately accesses all this information, which is confirmed to the customer. This leaves only the quantity of each lamp required by the customer to be keyed in. The system then generates an instruction to the warehouse to pick up and dispatch the order. This instruction includes the shelf location of each item. The system even calculates the location of each item in the warehouse which will minimize the movement of stock for warehouse staff.

Orders for the replenishment of stocks in the warehouse are triggered by a re-order point system. The re-order point is set for each stocked item depending on the likely demand for the product during the order lead time (forecast from the equivalent period's orders the previous year), the order lead time for the item (which varies from 24 hours to four months) and the variability of the lead time (from previous experience). The size of the replenishment order depends on the lamp being ordered. Flame prefers most orders to be for a whole number of container loads (the shipping costs for part-container loads being more expensive). However, lower order quantities of small or expensive lamps may be used. The order quantity for each lamp is based on its demand, its value and the cost of transportation from the suppliers. However, all this can be overridden in an emergency. If a customer, such as a hospital, urgently needs a particular lamp which is not in stock, the company will even use a fast courier to fly the item in from overseas – all for the sake of maintaining its reputation for high service levels.

'We have to get the balance right,' says Jeff Schaffer. 'Excellent service is the foundation of our success. But we could not survive if we did not control stocks tightly. After all we are carrying the cost of every lamp in our warehouse until the customer eventually pays for it. If stock levels were too high we just could not operate profitably. It is for that reason that we go as far as to pay incentives to the relevant staff based on how well they keep our working capital and stocks under control.'

**Required:**

- a. Critically evaluate the five performance objectives for an operation such as Flame Electrical.  
(15 marks)
- b. Analyze what seems to influence the stock replenishment policy of Flame Electrical.  
(18 marks)

**[Total: 33 marks]**

### Question 3

Read the small case study about Xerox and answer the following questions.

Possibly the best-known pioneer of benchmarking in Europe is Rank Xerox, the document and imaging company, which created the original market for copiers. The virtual monopoly the company had in its sector almost became its undoing, however. Spurred by the threat from the emerging Japanese copier companies, an in-depth study within the company recognized that fundamental changes were needed. To understand how it should change, the company decided to evaluate itself externally – a process which became known as competitive benchmarking. The results of this study shocked the company. Its Japanese rivals were selling machines for about what it cost Xerox to make them. Nor could this be explained by differences in quality. The study found that, when compared with its Japanese rivals, the company had nine times more suppliers, was rejecting 10 times as many machines on the production line and taking twice as long to get products to market. Benchmarking also showed that productivity would need to grow 18 per cent per year over five years if it was to catch up with its rivals.

Rank Xerox sees benchmarking as helping it achieve two objectives. At a strategic level it helps set standards of performance, while at an operational level it helps the company understand the best practices and operations methods which can help it achieve its performance objectives. The benchmarking process developed by Rank Xerox has five phases.

Its experience of using this approach has led Xerox to a number of conclusions:

- The first phase, planning, is crucial to the success of the whole process. A good plan will identify a realistic objective for the benchmarking study, which is achievable and clearly aligned with business priorities.
- A prerequisite for benchmarking success is to understand thoroughly your own processes. Without this it is difficult to compare your processes against those of other companies.
- Look at what is already available. A lot of information is already in the public domain. Published accounts, journals, conferences and professional associations can all provide information which is useful for benchmarking purposes.
- Be sensitive in asking for information from other companies. The golden rule is: 'Don't ask any questions that we would not like to be asked ourselves.'

#### Required:

- a. Analyze on what kind of information did Xerox discover in its benchmarking study. (16 marks)
- b. Critically evaluate which of the five performance objectives (quality, speed, dependability, cost, flexibility) you think are the most difficult to discover about your competitors' performance. (17 marks)

**[Total: 33 marks]**

#### Question 4

One of the best known examples of how an organization can use its supply chain to achieve a competitive advantage is the Benetton Group. Founded by the Benetton family in the 1960s, the company is now one of the largest garment retailers, with stores which bear its name located in almost all parts of the world. Part of the reason for its success has been the way it has organized both the supply side and the demand side of its supply chain.

Although Benetton does manufacture much of its production itself, on its supply side the company relies heavily on 'contractors'. Contractors are companies (many of which are owned, or part-owned, by Benetton employees) that provide services to the Benetton factories by knitting and assembling Benetton's garments. These contractors, in turn, use the services of sub-contractors to perform some of the manufacturing tasks. Benetton's manufacturing operations gain two advantages from this. First, its production costs for woollen items are significantly below some of its competitors because the small supply companies have lower costs themselves. Second, the arrangement allows Benetton to absorb fluctuation in demand by adjusting its supply arrangements, without itself feeling the full effect of demand fluctuations.

On the demand side of the chain, Benetton operates through a number of agents, each of whom is responsible for their own geographical area. These agents are responsible for developing the stores in their area. Indeed, many of the agents actually own some stores in their area. Products are shipped from Italy to the individual stores where they are often put directly onto the shelves. Benetton stores have always been designed with relatively limited storage space so that the garments (which, typically, are brightly coloured) can be stored in the shop itself, adding colour and ambience to the appearance of the store. Because there is such limited space for inventory in the stores, store owners require that deliveries of garments are fast and dependable. Benetton factories achieve this partly through their famous policy of manufacturing garments, where possible, in greggio, or in grey, and then dyeing them only when demand for particular colours is evident. This is a slightly more expensive process than knitting directly from coloured yarn, but their supply-side economies allow them to absorb the cost of this extra flexibility, which in turn allows them to achieve relatively fast deliveries to the stores.

#### Required:

- a. Analyze the major operations objectives of Benetton's retail operations, Benetton's physical distribution operation and Benetton's factory and its suppliers (18 Marks)
- b. Critically evaluate how well these three interconnecting sets of operations fit together do. (15 Marks)

**[Total: 33 marks]**

**END OF EXAM PAPER**