



STRATHMORE BUSINESS SCHOOL
BACHELOR OF SCIENCE IN SUPPLY CHAIN AND OPERATIONS MANAGEMENT
END OF SEMESTER EXAMINATION
SCM 3105: QUALITY CONTROL SYSTEMS

Date: Tuesday, 26th July 2022

Time: 2 Hours

Instructions:

Question ONE is compulsory
Answer any other two questions

QUESTION ONE

(30 MARKS)

Kaizen Case Study: Siemens Oostkamp

Siemens Oostkamp produces electronic components such as relays, connectors, and coils. The combination of fewer orders from their parent company and increasingly intense global competition forced them to look for new markets.

On his first tour of the plant, the [kaizen consultant](#) asked the supervisors if specific information was available, such as failure rate or setup times, and the answer was always, “It’s in the computer.” But when asked to retrieve it, no one ever could. The first task was to get the management to understand the need to collect data and make this information visible and accessible. Without this data, there is no way to know where to start.



The management at Siemens Oostkamp overcame initial resistance to change with their hands-on approach. They knew that their place was in Gemba and continuously motivated their workers to collect data and review their work.

Within a few months, they had enough data to know where to start. To put the kaizen activities in motion, self-managed work teams were formed in which the goals of kaizen were carried out with methods that the teams developed themselves.

With each employee a part of a team, they became more conscious of problems on the line and were able to solve the problems themselves. With this new clarity, they suggested and implemented small, incremental changes. And using the newly collected data, they assigned themselves specific goals to shoot for.

5S, visual management, and just-in-time were the main kaizen tools utilized by the teams to achieve their goals. In areas where 5S was implemented, the machines and floors were spotless, and the machine layouts were changed for a more efficient process flow.

Visual management was evident everywhere. Large charts were displayed that showed plant goals with numerical data and trend charts for each item. Tools had specific, clearly marked homes, and floors were marked showing designated areas for supply carts and finished products.

The [just-in-time model](#) revealed that changeover times at the molding department were taking too long. They instituted a new procedure that minimized the batch size and the number of boxes of work-in-process, thus decreasing the changeover times.

So, did kaizen help Siemens Oostkamp?

→ They were able to reduce the cost of inventory by 30%. Lead time for their brake coils went from 12 days to half a day.

→ Before kaizen, they kept a three-month inventory of cable connectors; this is no longer necessary because the lead time has been reduced to three hours.

→ The number of product types has been reduced by 33%. Storage area was reduced by 10%.

→ The employees are now problem solvers. When a defective product was found, it used to take days to find the problem. Now they can see it right away and make adjustments.

Those are the tangible results. What the numbers don't show is a happier, more fulfilled staff that enjoys coming to work. That translates to fewer sick days, less employee turnover, and better safety. That's a success by anyone's standards.



Continuous Improvement

Empowerment is the realization of every individual's potential. This guide focuses on how to implement this principle into your organization's culture.



[Continuous Improvement can help your business thrive.](#)

This guide teaches you about continuous improvement and the benefits to implementing this Lean philosophy into your facility. Like any change, continuous improvement can feel daunting and overwhelming; this step-by-step guide gives you everything you need to implement continuous improvement successfully into your facility. Required:

1. Using this excerpt, explain any four (4) Kaizen Principles and how they relate to this case. **(4 Marks)**
2. Define the concept that relates to the statement “self-managed teams were formed” in the case. **(0.5 Mark)**
3. Using the case study of Siemens Oostcamp, differentiate between 5S and Kaizen. **(2 Marks)**
4. Explain any three (3) quality awards. **(1.5 Marks)**
5. Strathmore University is looking into best world practices to enhance its customer service experience. In addition, the institution is keen in aligning its internal functions for better customer satisfaction. Explain any seven (7) types of benchmarking that Strathmore University should consider in achieving its goal of enhancing the customer experience. **(7 Marks)**
6. In translating the voice of students, job market and that of parents, Strathmore University has put in place a variety of its supply chain capabilities to ensure a smooth flow between the voice of the customer and the voice of its designers. Using this information, develop a house of quality for Strathmore University’s Bachelor of Science in Supply Chain and Operations Management. **(9 Marks)**
7. It is the customer who defines quality (Armand Feigenbaum). Using three (3) points, demystify this statement. **(6 Marks)**

QUESTION TWO (20 MARKS)

1. You are starting up a new manufacturing plant in industrial area. Having heard about the cost of quality, you are so worried on what practices to implement to avoid the cost of quality. Your partner tells you about types of cost of quality. Looking into the discussion with your partner, outline any five (5) types of costs of quality and how they might affect operations. **(10 Marks)**
2. You have been selected as a quality expert in benchmarking for your organization. Required:
 - a. Define benchmarking. **(2 Marks)**
 - b. Discuss what benchmarking steps an organization need to follow to do proper benchmarking. **(8 Marks)**

QUESTION THREE (20 MARKS)

Box 18.4 : BPR Project at Ford Motor Company

The accounts department of Ford employed 500 people before reengineering and represented an opportunity for major improvement. Ford had formed a joint venture with Mazda and decided to benchmark their accounts payable department only to learn that Mazda had only five employees in accounts payable department. Even after accounting for the difference in sizes of the two companies, this could only be attributed to a much different process.

The process that was being used by Ford before reengineering started with the purchasing department issuing a purchase order to the supplier with a copy to accounts payable. When the merchandise was received from the supplier, a receiving document was sent to accounts payable. Later, the supplier sent an invoice to Ford accounts payable for the merchandise. If account payable could match the three documents, they would authorise payment to the supplier. Most of the time in accounts payable, however, was spent in mismatches among documents. A clerk would hold up payment until the source of the mismatch could be identified and the problem resolved.

Under the reengineered system, the purchasing department entered the purchase order into a database and did not send a copy to anyone. When the merchandise arrived, the receiving clerk would enter the database and determine whether the shipment agreed with the electronic purchase order. If it did, payment was authorised to be made at the appropriate time. If it didn't match, the merchandise would be returned or the Ford purchasing department would be notified to give the okay nod to receive the material. Ford also instituted "invoiceless purchasing" where the supplier did not need to send an invoice to be paid. This generally simplified the process for all concerned. As a result, Ford was able to reduce the work of its accounts payable department and the headcount by 75 percent.

Source : Roger G. Schroeder, *op. cit*, p. 121 & 122.

1. Using the excerpt provided above, discuss any seven (7) steps to business process reengineering and the relevance to the excerpt. **(14 Marks)**
2. Explain any three (3) principles of business process reengineering that are outlined in the excerpt above. **(6Marks)**

QUESTION FOUR (20 MARKS)

You have just been employed to accompany in manufacturing that is looking into venturing to markets in South and West Africa. To achieve this, it needs to have an enterprise wide kind of thinking, bringing on board all staff for discussions towards its achievement of its objectives.

Required:

1. Advise the company on any five (5) objectives of employing quality circles. **(10 Marks)**
2. Develop for the company a quality circle structure. **(10 Marks)**

QUESTION FIVE (20 MARKS)

With COVID-19 disruption, majority of organizations had to restructure and have a higher percentage of employees working from home. This means that there could be a possibility of lack of total productive maintenance. As an expert in quality with bias to total productive maintenance who has been called in a quality control summit;

1. Explain the metamorphosis of cleaning to high quality standards for organizations. **(10 Marks)**
2. Outline any four (5) pillars of total productive maintenance. **(10 Marks)**