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Question 1: Critically discuss using the benefits and limitations of lean operations providing an example (35 marks):

The objective is double of lean operation: to create value for the customer and eliminate waste. Indeed, lean operation allows you to manage an organization by focusing on customer satisfaction while using the least amount of resources possible. You have to do more with less, which creates value and increases profits.

The Toyota company, creator of TPS ("Toyota production system"), discovered three families of waste:

- Muda: task that does not add value to the business, but is accepted
- Muri: these are excessive or absurd tasks, which are too difficult, impractical, impossible which are imposed. This brings bad results to the business.
- Mura: these are tasks without coherence, which bring irregularity and therefore fluctuations to the final results.

Among these three families, we find between 7 and 8 origins of this waste:

- overproduction
- overstocking or unnecessary stock
- unnecessary transportation and travel
- overprocessing or unnecessary processing
- unnecessary movements
- errors, faults and rejects
- waiting times and deadlines
- under use of skills.

Through an example, we will analyze the advantages and limits of lean operation. For this we will use a method developed by Toyota: the 5S method. It is an optimization practice, easy and quick to set up.

The example: we are going to take a transport company, which, over the years, has kept the documents. The problem currently met is that employees no longer find the right documents on time. This leads to a waste of time and an unorganized workplace.

There are 5 steps:

- SEIRI: Eliminate : This is the first priority of the 5S. Start by getting rid of everything you don't need. It's essential to know what should be kept or thrown away. In the case of the example, it is necessary to throw away the papers, documents or objects that are no longer necessary to advance the business.
- SEITON: Tidy: the goal of this step is to place something in a specific place so that you can find it immediately when you need it and thus avoid wasting time searching. In the case of the example, we can use binders to sort and organize documents properly. In some cases, we could scan them and put them away in a folder in a computer. The employees in this case will waste less time finding the necessary documents.
- SEISO: Clean: In this stage, the cleaning of offices, workplaces and means of production is at the center of concerns. We can see when cleaning the anomalies that we could not see. In the case of the example, cleaning brings well-being and therefore additional motivation to employees. We can also see for example that the storage was damaged and did not favor storage.
- SEIKETSU: Standardize: it is at this stage that the rules are defined by which the workplace will remain free of unnecessary objects, put away, cleaned. We can use the visual management visual for example. There are 3 principles: see, understand and act. The goal is to streamline internal communication in order to help decision-making and speed up the processing of information. Indeed, it is necessary that the office stay clean for a long time.
- SHITSUKE: Respect: respect the previously established rules and therefore encourage staff to adhere to these rules. It's about making 5S a habit, a corporate culture.

In conclusion, we can say that the advantages of the lean operation with the method of 5S: improved storage and cleanliness on workstations and their environment, improved flow, better working conditions, elimination of waste of time and material in everyday life, Better image of the site for visitors, General improvement of the environment, question your habits, Establish standards (rules) ... But the limits can be to put pressure on the employees in

order to have better results. Indeed, in certain cases the human can be replaced by the machine. This brings pressure and stress to the human who risks losing his job.

Question 2: Critically discuss the project management role, techniques, tools and computer-based systems for successful project management (35 marks)

A project corresponds to an objective to be achieved with actors, within a defined deadline and means.

Project management corresponds to an embodiment of a project. With a set of management techniques during the life of the project, we will be able to successfully achieve desired objectives. According to AFNOR, project management is a set of tools, techniques and methods which allow a more or less large team to lead, coordinate and harmonize the different tasks which, within the framework of the project, make it possible to meet the needs for a successful project.

At the start of the project, it is often difficult to know all the parameters that we will encounter. Risk taking is necessary in some case, there is a lot of uncertainty. To limit the risks, it is necessary to identify the potential risks, provide the means, anticipate through group and team meetings with the various players in the project. In a meeting, different points are to be taken into account:

- Define the project
- Specify the objectives
- Determine its feasibility
- Evaluate the budget
- Write specifications
- Appoint a project manager
- Validate the results

Project management involves the formalization of a certain number of tools for analysis, organization, monitoring. There are a wide variety of project management tools. Indeed we can use project management software, which aims to facilitate the work. The job of project management software is to automate tasks. A large part of software projects deal with project planning. Several methods can be used:

- the method PERT : Method used in project management, it makes it possible to describe, represent, analyze and logically follow the tasks and the network of tasks to be carried out within the framework of a project to be followed. The PERT diagram

represents the work schedule by a graph. Each task is linked by links. This graph shows the critical paths (shortest path). The earliest and latest start and end dates are indicated for each task. The goal is to find the best organization so that the project is completed as soon as possible. and to identify the tasks at risk (tasks which should not be delayed at the risk of delaying the whole project).

- the method PDM (Precedence diagram method). This method is used by most project planning software. This method is of the AON (Activity On Nodes) type. Each task is represented by a box. The activities are linked to each other by links represented by arrows. Each arrows represent a logical relationship between the activities. They are constructed from left to right in order to represent the chronology of the project.
- the GANTT method: it is a technique and graphic representation which allows to inform and place in time the different phases and activities. It is a double entry graph. On line, we write the tasks and in column the time (hours, days, weeks, months...). The tasks are represented by bars whose length corresponds in proportion to the estimated duration. Method still much used today, it is a visual method that allows everyone to understand it.

Many project management software exist. We can take the example of Microsoft project (MSP), or Project Management Workbench (PMW) ... These software are available in several forms to facilitate dissemination. For example, we can have software installed on a workstation (individual work), on a server of a company to allow a use in group or online (Software As A service - SaaS).

We can see that there are several methods to facilitate the success of a project. It is still important to communicate and correct each other if we see that the planning does not correspond to the objectives of the project.

Question 3: Comparatively discuss Total Quality Management (TQM) versus Six Sigma (30 marks)

"Quality is the ability of a set of intrinsic characteristics of a product, a system, a process to meet customer requirements." The two tools that we are going to study both make it possible to improve the quality of products and services. There are two many similarities between the two, but they remain different.

TQM:

Total quality management (TQM) is a quality management approach with the objective of mobilizing and involving the entire company to achieve perfect quality by eliminating waste. It is based on a strategic approach that focuses on maintaining quality standards as well as gradually improving quality. There are several objectives concerning the TQM method:

- Reducing waste: value analysis
- Process control: having zero machine and equipment breakdowns (process improvement)
- Focus on the customer (no delay or delay): a good customer-supplier relationship
- Have continuous process improvement: Continuous progress
- The membership and motivation of men: empowering employees

In the process, the TQM approaches several operational excellence approaches such as 6 sigma.

6 sigma:

The 6 sigma method is a customer-oriented industrial management method.

6 sigma is at the origin a quality approach born in the heart of Motorola. First limited to SPC techniques (Statistical Process Control MSP Statistical Process Control), it quickly became a real management method encompassing all the functions of the company. Indeed, this method considered as an operational exclusivity approach. The approach offers a method and tools to significantly improve the capacity of processes while reducing defects and waste. The goal is to achieve perfection, in the end, 6 Sigma does not allow more than 3.4 faults per million for each product or service. It is long-term work. Used for continuous improvement.

The method is based on 5 steps (DMAIC): define, measure, analyze, improve and control or DMADV: define, measure, analyze, design and verify.

Define: to pose the problem, to identify on which products the defects are. Then select the measurable faults, limiting the field of work and setting the objectives.

Measure: collect, collate and categorize available information about the current situation (customer surveys). Collect representative data, measure performance, identify areas of progress. Assessment of current performance and its variation (trend, cycle, etc.).

Analyse: study the extent of faults, research the probable causes of these, make hypotheses and make quantitative analysis of the data. Use of analytical and statistical tools to identify the causes of problems.

Improve: find one or more appropriate solutions for each of the causes of the faults.

Control: follow the evolution of the new situation, analyze the results and measure the effectiveness of the solutions applied. Monitoring of the solutions implemented. It is important to avoid going backwards.

What is the difference between TQM and Six Sigma?

We can see that TQM focuses more on customer satisfaction while Six sigma focuses on continuous improvement. The Six Sigma method can be used in TQM.

In addition, TQM is a concept associated with improving processes by reducing faults, errors and waste. While Six Sigma is working on continuous quality improvement to reach almost perfection (limit of 3.4 faults per million products).

The two tools are not managed by the same people, in fact, TQM is managed by the quality control department, and the Six sigma tool by "black belts" who have undergone official training.

In more Six sigma corresponds better to projects aiming to reduce costs, in fact it is motivated by a focus on cost reduction. While TQM focuses on customer satisfaction and the strategic approach.

The advantage of Six Sigma is that once implemented, we will still have results, because the goal is to change the culture of the company in the long term.