

LOCATION: SWANSEA

LLEOLIAD: ABERTAWE

LEVEL 6

LEFEL 6

EXAMINATION PERIOD

CYFNOD ARHOLIADAU

MAY 2020

MAI 2020

MODULE CODE: M6X01290

Operations Analysis

TIME: 6 HOURS

ANSWER ALL THREE QUESTIONS

Equipment or materials required – None

Adnoddau neu ddefnyddiau sydd eu hangen -

Question 1

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

Lean operation is a method developed in the goal to eliminate wastes in order to develop a faster and dependable operation, produces higher quality product and services and, mostly, operates at low cost. This method is also about creating flow within the process and continuously improve operations. The first tool created for lean management was created in Japan in Toyota's company by the Chief Executive Officer. It is called the 5S method: Seiri (sort), Seiton (set in order), Seiso (shine), Seiketsu (standardize), Shitsuke (sustain). But a lot of other tools were created to improve lean operations in companies: Kanban; 5S; 7 wastes; Six sigma; Value Stream Mapping; Muda, mura, muri...

In order to better understand lean management and more precisely the 5S method, we will use an example of a car workshop, we encounter a problem of inventory, products are missing and can't be use to fix cars and some products are not sort so people tend to buy the product again and again and at the end we have too much of the product so they lost money.

The first step is to identify which are the products that encounter no or too much stocks, focus on these products, and setting objectives to reach. In the case of the study, we have noted a lost of money on some products because of urgent buying that are more expensive or not well sort product that nobody can find so they are ordered again even if there are still products in stock.

Seiri: The idea is to get rid of all the superfluous things in the workspace. What is not use regularly is classified depending on their frequency of use. For the study, get rid of all the superfluous things in the car workshop, every product that is not used anymore or packaging that were not sort in ladders need to be sorted. Ladders can be reorganised to regroup same types of products and having the products that used daily in a space that is accessible for everyone and close to workspace.

Seiton: Seiton is use to allows people working on a post to gain time thanks to a well organised and visual storage. The visual help need to be clear and understandable by everyone to save time and energy. Products need to be sorted by frequency of use. Products that are rarely used can be far away and in upper and lower ladders. Products that are used everyday need to be close and at arms level. Some visual labels can be used to facilitate the research of pieces and need to be clear to be the most useful and easy to read and understand. One thing at one place.

Seiso: Seiso means « shine ». Once the worker has a well organised environment without useless things bulky the post, it's important to keep it clear from useless objects. The post needs to be clean and stay clean to be able to find any errors that can occur. Every tool that is used during the fixation of a car need to be sorted after usage, packaging of pieces used need to go directly to the trash can, if someone take one of the last products of a category, it's important to say it for the person that order products to know what is missing.

Seiketsu: It means that after cleaning and storing everything it's important to make this a standard. It permits to have a framework.

Shitsuke: This last step is the most important step; the goal is to gain workers' hearts and mind to install a sustainable change and good work habits. All the things made before need to be easy to do and reproduce and to put in place some worksheets and things that will help make these actions a habit.

The problem is that people don't like change and have difficulties changing habits even if they are bad habits. Putting in place some changes and some improvement can be very challenging for the company because it takes time before it's operational and workers can not be satisfied about new ways of working. Also, the implementation of a new way of working drives in the necessity to train workers and to have a slowed production because of the time it takes to the worker to adapt to the new way of working.

Question 2

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

A project is temporary, it has a defined beginning and end. A project is also unique, it's not a routine operation, it's a specific set of operations designed to accomplish a single goal. Project management is the application of knowledge, skills, tools and techniques to project activities to meet the project requirements. Project management techniques and planning tools are useful for any tasks that produce risks or problems and failures so it requires planning, assessing options, organizing activities and resources to deliver a successful result. First, it's important to define the seven primary characteristics of the project: Objective, Schedule, Complexity, Size and Nature of Task, Resources, Organizational Structure, Information and Control Systems.

The role of the project management is to plan and manage change in an organization, but a project can also be something unrelated to business like in a domestic situation. It's the application of tools and techniques to direct the use of diverse resources to accomplish a unique and complex task within time, cost and quality constraints.

Project management has 5 steps:

- Initiation, creation of a project and definition of lines of authority.
- Planning, it's a very important step because if it's well done it can avoid a lot of problems. It's also welcomed to communicate the project management plan to everyone, internal and external, on how the project will be managed.
- Executing, the tasks assigned to each individual or group of individuals.
- Monitoring & Controlling, all the tasks need to be controlled to be sure that it's well done.
- Closing, a project closure report including the final budget is delivered with all the details on how the project has been led.

Some tools and computer-based systems have been created to lead the project to its end:

- Gantt charts, it's a visual tool that is very useful to represent the progress of activities within a project, it allows in one look to know the different tasks to do, the beginning and end of the tasks, the duration of every task, the beginning and the end of the project.
- CPM (Critical Path Method), it demonstrates the activities that can not be delayed, because any delay in the critical path causes the delay of all the project. The goal is to draw all the connections between the tasks that are following each other and precise the duration that the tasks need to be done and the moment at the earliest when all project can be finished.
- PERT (Project Evaluation and Review Technique), its network formalism focuses on the interconnection of the tasks to be performed and on the calculation of critical path too. A dependence graph is used.
- Fishbone diagrams, also called cause-and-effect diagram, this diagram identifies many possible causes for an effect or problem. It immediately sorts ideas into useful categories.
- ...

The possible issue of project management can be a bad leader, every project needs a leader to make things work and for the project to continue. Also, a project can be very expensive at the end, most companies spent more money than what they allowed to the project at the beginning.

Question 3

Comparatively discuss Total Quality Management (TQM) versus Six Sigma **(30 marks)**

Quality became a competitive advantage and a characteristic of differentiation. So, companies began to create tools to help them improve their quality. Total quality management (TQM) and Six Sigma are 2 tools to improve the quality of products or services of a company.

Total Quality Management is when a company improve the quality of all the process. Quality of the organisation, of the production, of management and of products and services. TQM goes through the perpetual improvement at every level of the company. These actions have the only goal of satisfying clients. The constant improvement is constituted by:

- The elimination of waste and an excellent inventory management,
- Optimisation of work times and conditions,
- Constant improvement of products and services.

Six Sigma method rests on 2 axes:

- Customer reviews, by survey and questionnaire
- Indicator data, sales, fidelity, statistics.

The objective is to reduce costs and wastes, optimize work conditions and inventory management and increase the quality, the turnover, client's satisfaction and the company's image. Six Sigma has been created to improve the process or when it's not possible create a new and better process by using 5 steps: define, measure, analyse, improve and control.

Differences

TQM uses collaborative and cultural approach whereas six sigma is data and statistical driven and utilizes many department's effort.

The main difference between TQM and Six Sigma is that TQM is focused on delivering superior quality products by the continuous effort of the employees to ensure high quality product whereas Six Sigma focuses on better results by incorporating small changes in the systems to ensure effective results and better customer satisfaction.

In one hand, TQM wants to improve existing policies and process to ensure high quality, in the other hand, six sigma focuses on improve the quality by minimising and eliminating defects from the system.

TQM is easier to use than six sigma, indeed six sigma need specially trained individuals whereas TQM can be used by any worker. Six sigma can only be implemented by dedicated and well trained professionals. However, six sigma is known to deliver better and effective results by using customer feedbacks compared to total quality management.

For six sigma, the definition of quality is when there is the least number of defects in the process whereas for TQM is when the product of service meets the company standards. While, Six sigma focuses on setting minimum standards and acceptance requirements, TQM try to increase levels of performance.

TQM is a concept associated with the improvement of the process by reducing defaults, errors and wastes within the organisation whereas six sigma is a concept to reach almost the perfection by limit the number of possible defaults at less than 3,4 defaults per million.

Fundamentally, hat differentiate TQM and six sigma is their approaches of quality control.

Diwedd/End