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Creating Value through Operations

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Strategic Management & Leadership (SML)

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STRATEGIC MANAGEMENT

&

LEADERSHIP

CA - STRATEGIC LEVEL

Creating Value through Operations

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Creating Value through Operation – (12%)

	CONTENT	
1	Operations management and competitive advantage	✓
2	New product design and innovation	✓
3	Production methods	✓
4	Quality control	✓
5	Total quality management (TQM)	✓
6	Six Sigma	
7	Project management	
8	Project management techniques	
9	Location planning and analysis	

INTRODUCTION

A business organisation must have a sufficient quantity of threshold resources, and it must have threshold competences, to survive in a competitive market. It may also be possible to acquire unique resources and core competences to achieve a competitive advantage in areas such as new product development, quality and cost reduction, project management and location of operations.

This chapter looks at the aspects of operations management where value is created, and more value can be added.

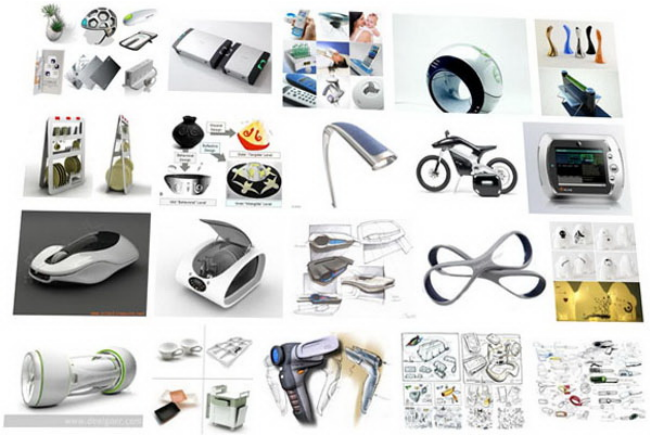
1. Operations management and competitive advantage

Operations management is the activity in the value chain that is concerned with making the product (or providing the service, in the case of service businesses). This chapter will focuses mainly in manufacturing businesses.

Operations are a key area where a manufacturing business creates value, converting raw materials into products for selling to customers. It is also a value activity where an organization may be able to create competitive advantage, through a unique resource or a core competence.

How Operations Can Create Value	How Operations Can Create Competitive Advantage
Producing a large quantity	Product Differentiation
Producing new products	Speed of New Product Development
Reducing operating costs	Cost Leadership

2. New Product Design & Innovation



Innovation and competitive advantage

Innovation can be a major source of competitive advantage. Companies that develop new products can, for a time, offer something to customers that competitors cannot offer. However, new product development can also be risky, because new product ideas may not be successful in the market. So to avoid unnecessary spending, there should be a programme of assessment for new product ideas.

Companies that develop innovative products can gain a competitive advantage by being the first in the market, and perceived by customers to be 'the best', although competitors usually catch up eventually.

Example: Apple Mobile / Sony Walkman

Product innovation can be a major source of competitive advantage.

a) When there may be no direct competitors for a new product.
b) When a company introduces a successful new product before its Competitors (Learning Curve)
c) Legal protection, such as patents.

However, being the first company to introduce innovative products also has particular problems:

a) Gaining regulatory approval where required
b) Uncertainty about sales demand
c) High levels of research and development (R&D) costs

Sometimes the most successful companies are not the ones that bring a new product to the market first, but those that follow on later. Companies that are first in bringing new products to the market may be called 'leaders' and those that copy them soon afterwards are called 'followers'.

New product strategies

Features of a "Leader"	Features of a "Follower"
High development costs	Lower development costs
Invest heavily on R & D	Less investment
Short lifecycles of products	Long lifecycles of products

Innovation strategies may be, depending on the nature of technological change and change in the market.

- Reformulation
- Replacement
- Remerchandising
- Improved products
- Product line Extension

- New Use

- Market Extension

- Diversification

Stages in the process of new product development

Idea Generation	
Idea Screening	
Concept Development & Testing	
Business Analysis	

Market Testing	
Technical Implementation	
Product Launch	
Post-Launch Review	

Research and development (R&D)

Product research is based on creating new products and developing existing ones.

Process research is based on improving the way, or efficiency, with which those products or services are made or delivered.

Product Research	Process Research

3. Production Methods

The production methods used by a company to manufacture its products may also be important for creating value. The most appropriate production method depends on what customers want and so what creates value most effectively.

Job Manufacturing	
Batch Manufacturing	
Chain Manufacturing	

Lean manufacturing

Lean manufacturing is an approach to manufacturing that seeks to eliminate all activities that do not add value, such as waste and holding inventory. It involves identifying and eliminating all 'non-value-adding activities'.
The aim of lean production is to eliminate waste, and to improve product flow and quality.

Following are the principles of Lean Manufacturing;

Specify Value	
Value Stream	
Flow	
Pull	
Perfection	

4. Quality Control

Quality is a feature in products or services that provides value for customers. Quality in manufacturing is concerned with standards of production, and trying to ensure that the costs of poor quality are minimized.

Traditional approaches to quality

Traditionally, 'quality' in manufacturing was seen as a requirement to identify defective items in the production process, and either:

- Correct the defective items, by re-working
- Getting rid of the defective items as scrap, or possibly by selling them as substandard items.

Quality costs

'Quality costs' consisted of four elements:

- Prevention Costs
- Inspection & Testing Costs
- Internal Failure Costs
- External Failure Costs

Traditionally, the aim was to minimize the total of these four elements of quality cost.

Alternative quality control systems

Business organizations have choice in the type of quality control system they use.

(a) They may spend large amounts on prevention costs, to reduce the amount of defective production. Spending more on prevention should reduce the need for inspection, and should also reduce failure costs.

(b) They may spend large amounts on inspection and testing, to minimize the risk that defective items will be sold to customers. For example, instead of checking samples of output for defective items, the organization may inspect or test 100% of output items.

(c) The organization may limit prevention and inspection costs and accept that there will be defective items and customer complaints.

A different approach to quality control management is to take the view that:

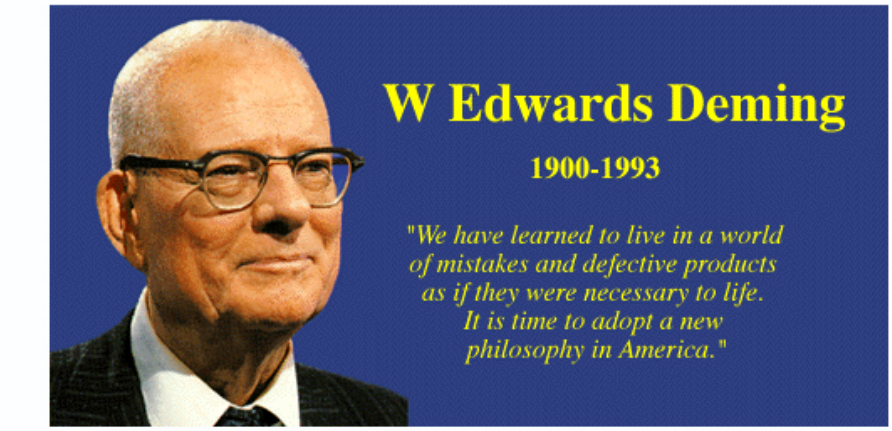
- Since inspection costs and costs of correcting errors do not add value, they should be avoided entirely
- The aim should be to achieve zero defects in production. This approach is applied in lean manufacturing and total quality management.

5. Total Quality Management (TQM)

Total quality management (TQM) is an integrated and comprehensive system of planning and controlling all business functions so that products or services are produced that meet or exceed customer expectations.

TQM is the process of applying a zero defects philosophy to the management of all resources and relationships within an organization as a means of developing and sustaining a culture of continuous improvement that focuses on meeting customers' expectations.

Deming



W Edwards Deming is one of the originators of the quality movement. His views were adopted in Japan, and were based on the following ideas.

(1) A business should continually seek to improve is products and services.

(2) Eliminate all waste. Eliminate defective production.

(3) Do not rely on inspection procedures to achieve quality. Inspection uses up resources without creating value.

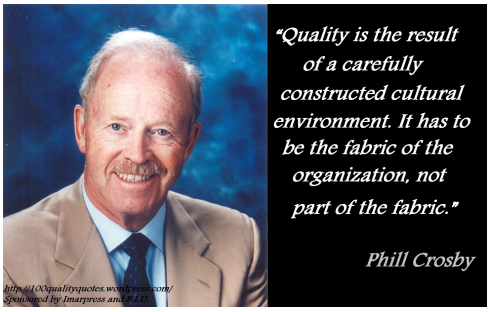
(4) When selecting suppliers, price should not be the only consideration. Quality and reliability of supply are also important.

(5) Improve production systems. This reduces waste and improves quality.

(6) Train employees so that they become better at doing their job.

In order to stop relying on inspection procedures, it is necessary to prevent defective output from happening. This means achieving high standards in the production process.

Crosby

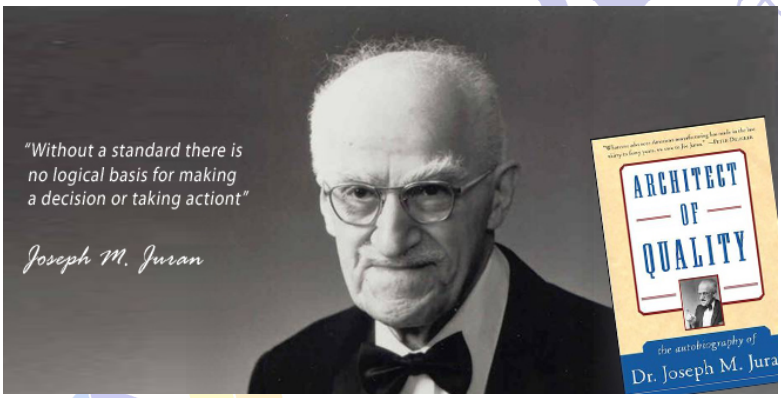


Philip B Crosby is known mainly for two concepts in TQM:

(1) **Zero defects**. There should never be any defects in a product. Although this may seem an impossible ideal in practice, the aim nevertheless should be to eliminate all defects and achieve 100% quality.

(2) **Get it right the first time**. A product should not have to be corrected once it has been made. 'Right first time' is consistent with the idea of 'zero defects'. Each worker should take full responsibility for their work: **quality is everyone's responsibility**.

Juran



Juran was concerned with identifying **specific improvements for enhancing quality**. Here are some of his ideas.

• The best approach to enhancing quality is to 'identify specific opportunities; evaluate their viability by using conventional methods such as return on investment; plan the selected project carefully; monitor the results'.

• Juran defined quality as 'fitness for use', which includes two elements:

– **Quality of design**, which can include the customer satisfactions built into the product.

– **Quality of conformance**, in other words, a lack of defects in the finished goods.

Kaizen

Kaizen means 'continuous improvement'. It is a philosophy that seeks additional small improvements continually; finding new improvements can never come to an end.

There are two basic approaches to improving quality.

- One approach is to make major changes to the production process
- A second approach is to look continuously for small ways in which processes and methods can be improved

Over time, a continuous stream of small improvements will add up to major improvements in quality.

5S

5S is an approach to achieving and maintaining a high-quality work environment, and it is underpinned by the idea that there is 'a place for everything, and everything goes in its place'.

The name '5S' comes from the fact that there are five elements that combine to create a high-quality working environment, and each of these (converting Japanese into English), begins with the letter S.

- Sort (Seiri)
- Set in Order (Seiton)
- Shine (Seiso)
- Standardize (Seiketsu)
- Sustain (Shitsuke)

6.0 Six Sigma

Six Sigma is an approach to eliminating defects from products and operations, and achieving near perfection. It was originally applied to manufacturing operations and defects in products, but it can also be applied to any product, process or transaction. There is a focus on the customer, and achieving levels of performance that are acceptable to the customer.

Six Sigma originated in statistical analysis and, in general, it means that there should be no more than 3.4 defects in every 1 million items, for any product or process to which the Six Sigma methodology is applied.

The Six Sigma approach to making incremental **improvements in existing processes** is in five steps, known as DMAIC.

Define an Opportunity	
Measure Performance	
Analyze the Opportunity	
Improve Performance	
Control Performance	

The Six Sigma approach to **designing a new process or major re-design of an existing process** is also in five steps, known as DMADV.

Define the goals for the new process	
Match performance requirements with these goals	
Analyze the performance requirements	
Design & Implement the process	
Verify performance	

7.0 Project Management

Efficient project management can create value, by ensuring that the project's objectives are achieved, within the budgeted amount allowed for cost and within the timescale for completion that has been set. In other words, project management can add value by ensuring that projects are completed to specification, within cost and on time.

The Features of a Project

A project has certain characteristics.

- It is established to achieve a specific purpose.
- A project team is established, consisting of individuals from different departments and with different skills and experience. A project manager is appointed to lead the team.
- During the project, the project manager reports to a project committee, consisting of senior management, whose responsibility is to monitor the progress of the project.
- The project manager is expected to lead the team in completing the project. When the project is completed, the project team is disbanded.

The objective of project management is to deliver a successful project. A project is successful if it is completed at the ***specified level of quality***, ***on time*** and ***within budget***.

Difference between Project & Normal Operations

Project Life Cycle

Project Definition	
Cost Benefit Analysis	

Developing project Team	
Project Plan	
Implementation	

Responsibilities of a Project Manager

1.

2.

3.

4.

5.

6.

7.

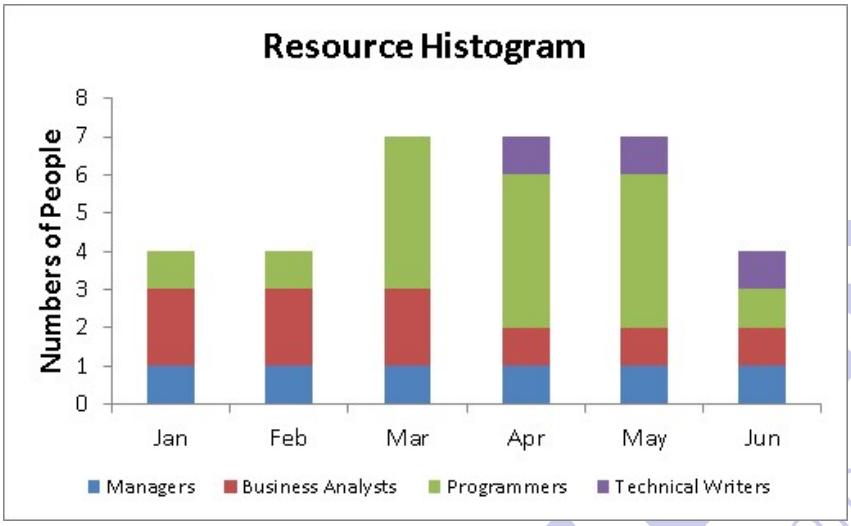
8.0 Project Management Techniques

A project manager may use several different methods or techniques to help with the task of completing the project within the budgeted expenditure limit and by the final target date for completion.

Techniques of Controlling Cost	***Techniques of Controlling Time***
Project Budget	Critical Path Analysis
Resource Histogram	PERT Analysis
Gantt Chart	Gantt Chart

Resource Histogram

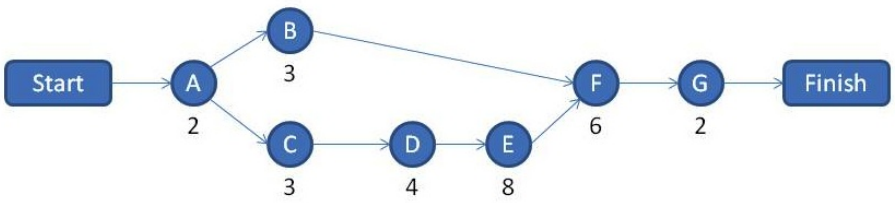
A resource histogram is a chart or diagram for planning the amount of resources, typically people, that will be needed for each week (or day or month) of a project. It should be consistent with the detailed cost estimates in the budget. It shows both the amount and the timing of the required resources. (A histogram is a form of bar chart.)



- If in any week or month there will be fewer resources available than required, the project manager can make plans to deal with the problem, either by acquiring additional resources, or by bringing forward or deferring some tasks so that the total resources required in any week does not exceed availability.

- If in any week or month there will be more resources available than required, the project manager can think of ways to make productive use of the spare resources, for example by starting some tasks earlier than necessary.

Critical Path Method (CPM)



The **critical path method (CPM)**, also called network analysis, is a technique for planning the completion of a project within the scheduled time.

A project consists of many different tasks. Some tasks cannot begin until others have been completed. For example, a new process cannot be tested until its development has been completed.

All the tasks in the project should be put in order of which can start immediately, and which cannot start until others have been completed. This logical sequence of starting and completing tasks can be shown in a **critical path diagram**.

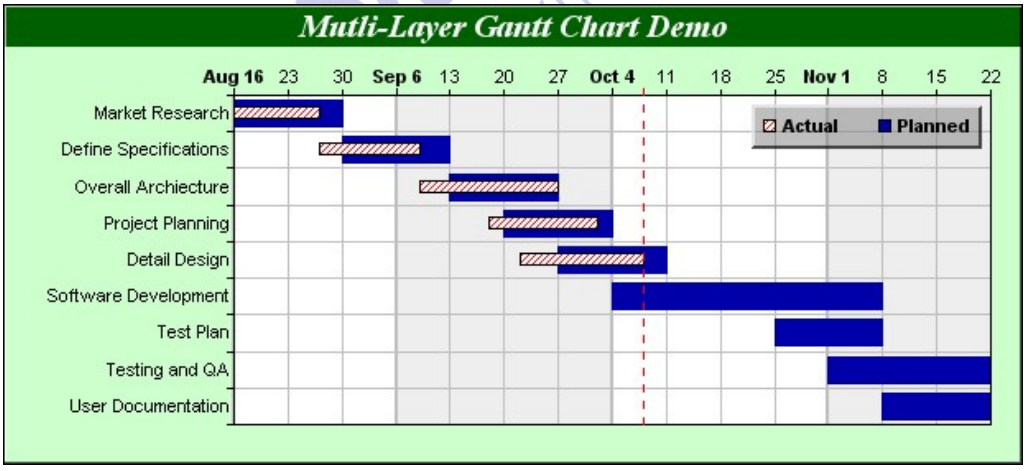
PERT Analysis

Task	Optimistic (O)	Most Likely (M)	Pessimistic (P)
Task A	2 Wks	4 Wks	5 Wks
Task B	1 Wks	2 Wks	3 Wks
Task C	2 Wks	3 Wks	4 Wks
Task B	3 Wks	5 Wks	8 Wks
Completion	**8 Wks**	**14 Wks**	**20 Wks**

Project evaluation and review technique (PERT) is similar to the CPM method, except that it allows for some uncertainty in expected completion times for each task in the project.

Typically, there is a most likely completion time, a shortest expected time and a longest expected time for each task. This allows the project manager to analyse some of the uncertainty about estimated completion times, when these cannot be estimated with confidence.

Gantt chart

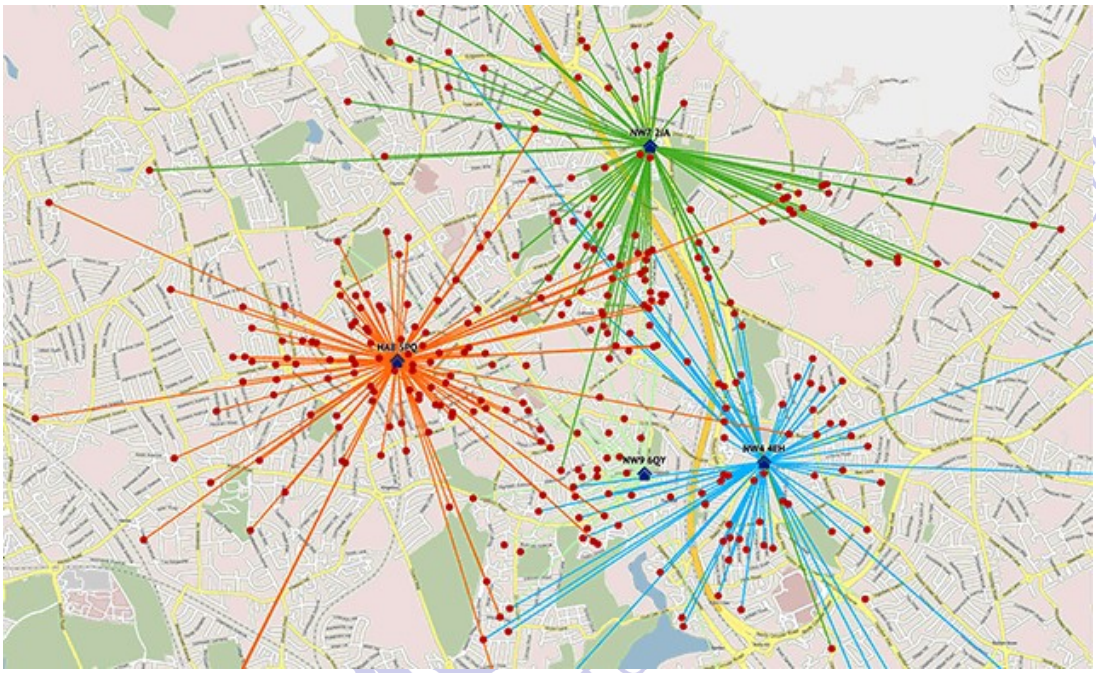


A **Gantt chart**, named after the engineer Henry Gantt who pioneered the procedure in the early 1900s, is a horizontal bar chart used to plan the **time scale** for a project and to estimate the **resources** required.

The Gantt chart displays the time relationships between tasks in a project. Two lines are for each task, to show:

- The planned time allocated for each task
- The actual time taken

9.0 Location Planning & Analysis



The location of operations is another aspect of operations where value can be created. In particular, there may be a competitive advantage in locating operations close to a key supplier or close to target customers.

Some global companies have chosen to locate production operations 'offshore' in countries with low labor costs, in order to benefit from low production costs.

Decisions about where to locate operations may involve:

- **Moving existing operations to a new location**, which may be close to the location of existing operations, or in a different part of the country, or in a different country

- **Setting up operations at a new location, in addition to existing operations** at the current Location

- The **choice of a site** for operations within the selected town or area

Methods of Choosing a Location

a) Location cost-volume-profit (CVP) analysis

b) Centre of gravity method

c) Factor rating method

Factors that are likely to influence the choice of location for manufacturing operations include:

- Availability of energy supplies and water
- Closeness to sources of raw materials
- Transportation/distribution costs

Factors that are likely to influence the choice of location for service operations include:

- Closeness to markets
- Location of competitors

KNOWLEDGE IN PRATICE – TESTED AREAS
