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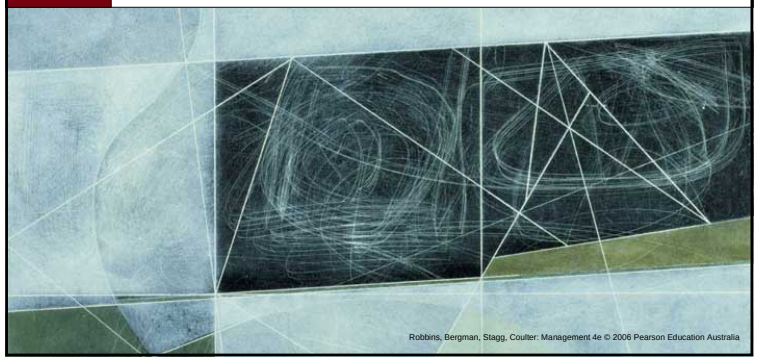
Chapter 9

Planning Tools and Techniques



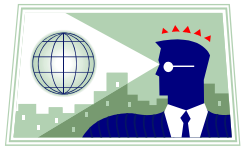
Planning tools and techniques

Assessing the environment

- **Environmental scanning**
  - The screening of large amounts of information to anticipate and interpret change in the environment.
  - **Competitor Intelligence**
    - The process of gathering information about competitors—who they are?; what are they doing?
      - Is not spying but rather careful attention to readily accessible information from employees, customers, suppliers, the Internet, and competitors themselves.
    - May involved ***reverse engineering*** of competing products to discover technical innovations.

Assessing the environment (cont'd)

- **Environmental scanning (cont'd)**
  - Global Scanning
    - Screening a broad scope of information on global forces that might affect the organisation.
    - Has value to firms with significant global interests.
    - Draws information from sources that provide global perspectives on world-wide issues and opportunities.



Assessing the environment (cont'd)

- **Forecasting**
  - The part of organisational planning that involves creating predictions of outcomes based on information gathered by environmental scanning.
    - Facilitates managerial decision making.
    - Is most accurate in stable environments.

Assessing the environment (cont'd)

- **Types of forecasting**
  - Quantitative forecasting
    - Applying a set of mathematical rules to a series of hard data to predict outcomes (e.g., units to be produced).
  - Qualitative forecasting
    - Using expert judgments and opinions to predict less than precise outcomes (e.g., direction of the economy).
- **Collaborative planning, forecasting, and replenishment (CPFR) software**
  - A standardized way for organisations to use the Internet to exchange data.

Forecasting techniques

- **Quantitative**
  - Time series analysis
  - Regression models
  - Econometric models
  - Economic indicators
  - Substitution effect
- **Qualitative**
  - Jury of opinion
  - Salesforce composition
  - Customer evaluation

Making forecasting more effective

1. **Use simple forecasting methods.**
2. **Compare each forecast with its corresponding "no change" forecast.**
3. **Don't rely on a single forecasting method.**
4. **Don't assume that the turning points in a trend can be accurately identified.**
5. **Shorten the time period covered by a forecast.**
6. **Remember that forecasting is a developed managerial skill that supports decision making.**

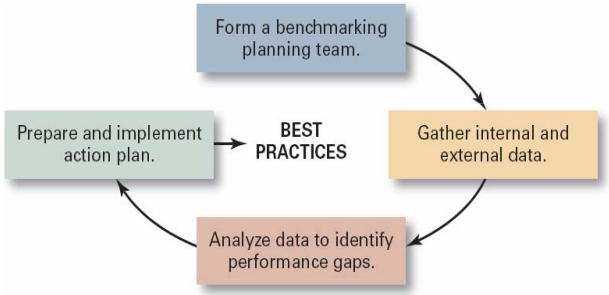
Benchmarking

- The search for the best practices among competitors and non-competitors that lead to their superior performance.
- By analysing and copying these practices, firms can improve their performance.

The benchmarking process

1. Form a benchmarking team.
   - Identify what is to be benchmarked, select comparison organisations, and determine data collection methods.
2. Collect internal and external data on work methods.
3. Analyse data to identify performance gaps and the cause of differences.
4. Prepare and implement an action plan to meet or exceed the standards of others.

Steps in benchmarking



Source: Based on Y.K. Shetty, "Aiming High: Competitive Benchmarking for Superior Performance," *Long Range Planning*. February 1993, p. 42.

Figure 9.1

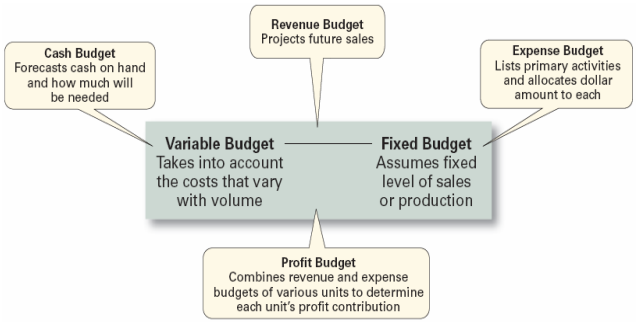
Allocating resources

- **Types of resources**
  - The assets of the organisation
    - **Financial:** debt, equity, and retained earnings
    - **Physical:** buildings, equipment, and raw materials
    - **Human:** experiences, skills, knowledge, and competencies
    - **Intangible:** brand names, patents, reputation, trademarks, copyrights, and databases
    - **Structural/cultural:** history, culture, work systems, working relationships, trust, and policies

Allocating resources: budgeting

- **Budgets**
  - Numerical plans for allocating resources to specific activities
    - Used to improve time, space, and use of material resources.
    - Are the most commonly used and most widely applicable planning technique for organisations.

Types of budgets



Source: Based on R.S. Russell and B.W. Taylor III. *Production and Operations Management* (Upper Saddle River, NJ: Prentice Hall, 1995), p. 287.

Figure 9.3

Suggestions for improving budgeting

- **Be flexible.**
- **Goals should drive budgets—budgets should not determine goals.**
- **Coordinate budgeting throughout the organisation.**
- **Use budgeting/planning software when appropriate.**
- **Remember that budgets are tools.**
- **Remember that profits result from smart management, not because you budgeted for them.**

Allocating resources: scheduling

- **Schedules**
  - Plans that allocate resources by detailing what activities have to be done, the order in which they are to be completed, who is to do each, and when they are to be completed.
  - Represent the coordination of various activities.

Allocating resources: charting

- **Gantt Chart**
  - A bar graph with time on the horizontal axis and activities to be accomplished on the vertical axis.
  - Shows the expected and actual progress of various tasks.
- **Load Chart**
  - A modified Gantt chart that lists entire departments or specific resources on the vertical axis.
  - Allows managers to plan and control capacity utilization.

A Gantt Chart

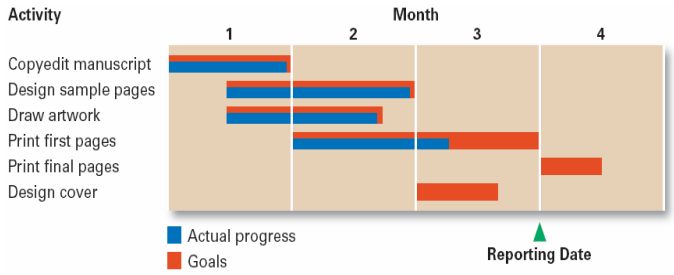


Figure 9.5

A Load Chart

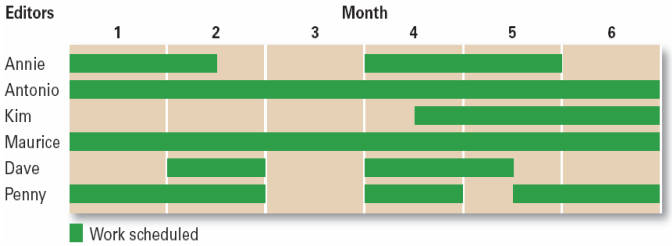


Figure 9.6

Allocating resources: analysis

- Program Evaluation and Review Technique (PERT)
  - **A flow chart diagram that depicts the sequence of activities needed to complete a project and the time or costs associated with each activity.**
    - **Events: endpoints for completion.**
    - **Activities: time required for each activity.**
    - **Slack time: the time that a completed activity waits for another activity to finish so that the next activity, which depends on the completion of both activities, can start.**
    - **Critical path: the path (ordering) of activities that allows all tasks to be completed with the least slack time.**

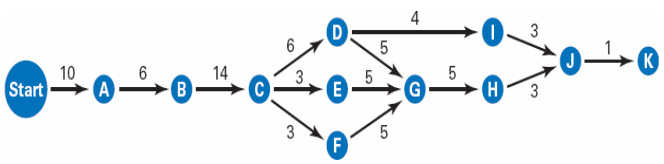
Steps in developing a PERT network

1. Identify every significant activity that must be achieved for a project to be completed.
2. Determine the order in which these events must be completed.
3. Diagram the flow of activities from start to finish, identifying each activity and its relationship to all other activities.
4. Compute a time estimate for completing each activity.
5. Using the network diagram that contains time estimates for each activity, determine a schedule for the start and finish dates of each activity and for the entire project.

A PERT network for constructing an office building

Event	Description	Expected Time (in weeks)	Preceding Event
A	Approve design and get permits.	10	None
B	Dig subterranean garage.	6	A
C	Erect frame and siding.	14	B
D	Construct floor.	6	C
E	Install windows.	3	C
F	Put on roof	3	C
G	Install internal wiring	5	D.E.F.
H	Install elevator	5	G
I	Put in floor covering and paneling.	4	D
J	Put in doors and interior decorative trim.	3	I.H
K	Turn over to building management group.	1	J

A PERT network for constructing an office building



Allocating resources: analysis (cont'd)

- **Breakeven analysis**
  - Is used to determine the point at which all fixed costs have been recovered and profitability begins.
    - Fixed cost (FC)
    - Variable costs (VC)
    - Total Fixed Costs (TFC)
    - Price (P)
- **The break-even formula:**

$$Breakeven: \frac{Total\ Fixed\ Costs}{Unit\ Price - Unit\ Variable\ Costs}$$

Breakeven analysis

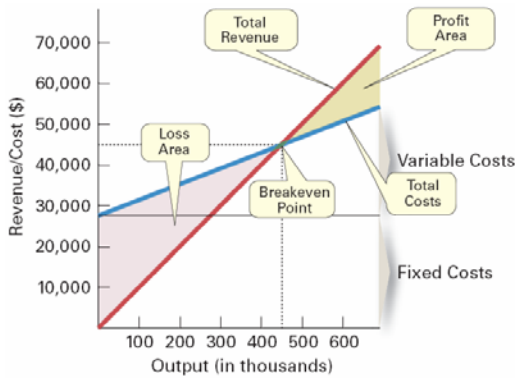


Figure 9.9

Allocating resources: analysis (cont'd)

- **Linear programming**
  - A technique that seeks to solve resource allocation problems using the proportional relationships between two variables.

Production data for cinnamon-scented products

	Number of Hours Required (per unit)		
Department	Potpourri Bags	Scented Candles	Monthly Production Capacity (in hours)
Manufacturing	2	4	1,200
Assembly	2	2	900
Profit per unit	$10	$18	

Table 9.3

Graphical solution to linear programming problem

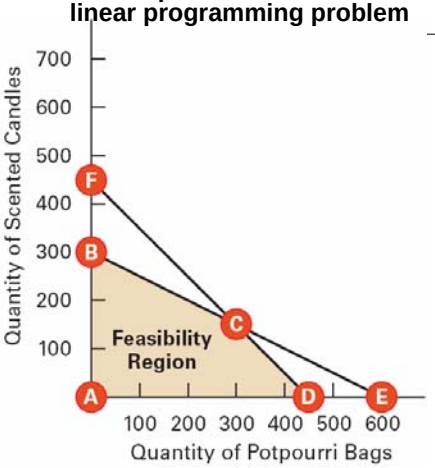


Figure 9.10

Contemporary planning techniques

- **Project**
  - A one-time-only set of activities that has a definite beginning and ending point time.
- **Project management**
  - The task of getting a project's activities done on time, within budget, and according to specifications.
    - Define project goals
    - Identify all required activities, materials, and labor
    - Determine the sequence of completion

Project planning process

Source: Based on R.S. Russell and B.W. Taylor III, *Production and Operations Management* (Upper Saddle River, NJ: Prentice Hall, 1995), p. 287.

Figure 9.11

Contemporary planning techniques

- **Scenario**
  - A consistent view of what the future is likely to be.
- **Scenario planning**
  - An attempt not try to predict the future but to reduce uncertainty by playing out potential situations under different specified conditions.
- **Contingency planning**
  - Developing scenarios that allow managers determine in advance what their actions should be should a considered event actually occur.

Preparing for unexpected events

- **Identify potential unexpected events.**
- **Determine if any of these events would have early indicators.**
- **Set up an information gathering system to identify early indicators.**
- **Have appropriate responses (plans) in place if these unexpected events occur.**