Chapter 15

Modelling approaches – 2

15.1 Learning objectives

When you have read this chapter you should be able to:

(a) understand more fully the role of modelling approaches;
(b) recognize and handle the problems of allowing for risk and uncertainty in carrying out evaluations;
(c) appreciate the contribution that non-financial modelling approaches – such as matrix models and Bonoma's MPA model – can make to evaluating marketing plans;
(d) see the applicability of programming approaches to the evaluation of marketing plans.

15.2 Introduction

In Chapter 14 we looked at the nature of models and modelling, with particular reference to short-run financial modelling (via cost–volume–profit analysis) and long-run financial modelling (using investment appraisal methods). In general, little attention was paid to the problems of risk and uncertainty. These will be dealt with in this chapter.

In addition, matrix models of a non-financial type will be covered as an extension of the discussion in Chapter 9. For example, the directional policy matrix, multifactor portfolio matrix, product positioning matrix and Bonoma's marketing performance assessment (MPA) model will be discussed and illustrated.

We will also extend the discussion (see Chapter 1) on marketing experimentation and introduce aspects of programming and network analysis that can be used to evaluate marketing programmes.

15.3 Allowing for risk and uncertainty

In dealing with risk and uncertainty we will draw heavily from management science. Management science is a method or approach to management problem solving rather than a discipline within its own right. The various techniques of management science offer managers an analytical, objective and (usually) quantitative basis for making better decisions.

The basic requirement in decision-making is information and a major branch of management science is concerned with the provision of information under conditions of risk and uncertainty. This is the role of *decision theory*.

Information should preferably be in quantitative form, and this presupposes some means of measurement. Furthermore, the information presented should relate to the objective of the decision – it is easier to make the correct decision when one keeps in mind what one is trying to achieve. If there exists more than one objective, the decision-maker must balance one against the other by making a *trade-off*. For example, the decision-maker may trade speed for quality in deciding on a particular means of distribution if this appears to reflect accurately the relative importance of multiple objectives.

Decisions are made in relation to objectives and they are well made if the objectives are achieved. However, doubts about the future mean that a choice can be wrong, and it also means that a single choice can have several possible outcomes. The sales of a new product, for instance, may be at any one of several levels estimated at the time of its launch. The systematic approach of decision theory allows good decisions to be made even in the presence of severe doubts about what the future may hold in store.

Views of the future are of four types:

1 *Ignorance*, where the future is seen as a blank
2 *Assumed certainty*, which is a pretence, for all practical purposes, that the future is known exactly and estimates become deterministic
3 *Risk*, where it is not known exactly what will happen in the future but the various possibilities are weighed by their assumed probability of occurrence
4 *Uncertainty*, where a variety of outcomes is possible but probabilities cannot be assigned.

There is little that can be done in cases of ignorance, other than following a systematic approach and attempting to delay making the decision until further information has been gathered. In cases of certainty, of course, there is no such need for delay. This covers situations in which the decision-maker has full knowledge.

In relation to decision-making under conditions of risk and uncertainty, the purpose of expressing an opinion about the likelihood of an event occurring is to facilitate the development of decision-making procedures that are explicit and consistent with the decision-maker's beliefs (see Illustration 15.1).

Illustration 15.1

Lou Gerstner, the chief executive of IBM, when asked about his vision of the company, said: 'The last thing IBM needs now is a vision for the future. What is required is to take control of the immediate problems before we can even consider what lies ahead.'

Allowing for risk

Risk describes a situation in which there are a number of actions or strategies that may be taken, a number of conditions or events that may be experienced (known as *states of nature* because they are beyond the decision-maker's control) and consequently a number of possible outcomes, each of which will depend on a particular combination of strategy and state of nature.

In the risk situation, *probability theory* is central in rational decision-making. The probability of a particular outcome of an event is simply the proportion of times this outcome would occur if the event were repeated a great number of times. Thus, the probability of the outcome 'heads' in tossing a coin is 0.5, since a large number of tosses would result in 50 per cent heads and 50 per cent tails.

By convention, probabilities follow certain rules, such as:

- The probability assigned to each possible future event must be a positive number between zero and unity, where zero represents an impossible event and unity represents a certain one
- If a set of events is mutually exclusive (i.e. only one will come about) and exhaustive (i.e. covers all possible outcomes), then the total of the probabilities of the events must add up to one.

The probability of an outcome is a measure of the certainty of that outcome. If, for instance, a sales manager is fairly confident that his division will be able to sell 10 000 units in the forthcoming period, he may accord a probability of 0.8 to this outcome (i.e. he is 80 per cent certain that 10 000 units will be sold). By simple deduction, there is a 20 per cent probability that the outcome will be something other than 10 000 units (i.e. $100 - 80 = 20$ per cent).

A development of this approach gives rise to the concept of *expected value*. This results from the multiplying of each possible outcome of an event by the probability of that outcome occurring, and this gives a measure of the *pay-off* of each alternative. An example should make this clear: Company XYZ has two new marketable products but only sufficient resources to manufacture and market one of these. The relevant estimates of sales, costs and profits are shown in Figure 15.1 for the various anticipated levels of sales activity.

	Sales £	Costs £	Profit £	Probability	Expected value £
Product A	1,000	500	500	0.1	50
	1,250	600	650	0.4	260
	1,500	700	800	0.3	240
	1,750	800	950	0.2	190
				1.0	£740
Product B	2,000	800	1,200	0.2	240
	2,300	950	1,350	0.4	540
	2,500	1,050	1,450	0.2	290
	2,700	1,150	1,550	0.1	155
	3,000	1,300	1,700	0.1	170
				1.0	£1,395

Figure 15.1 Decision information

The calculations are very simple. If sales of Product A amount to £1000, the associated costs – as shown in Figure 15.1 – are £500, and thus the profit is also £500. But there is only a probability of 0.1 that this outcome will eventuate, giving an *expected value* of £50 (i.e. £500 × 0.1).

This procedure is followed for the other possible outcomes of Product A sales, costs and profits, and the expected values of each outcome summated to give an expected pay-off of £740. (This is nothing more than a weighted arithmetic average of the data given in Figure 15.1.)

In contrast, Product B has an expected pay-off of £1395 and this choice is therefore the better one of the two, provided that profit is the desired objective, as measured by the pay-off computation.

Apart from the externally given economic and physical conditions surrounding a decision (i.e. the 'states of nature'), the decision-maker's own attitudes towards the alternatives must also be taken into account. His or her scale of values will determine the *desirability* of each possible course of action, whereas the conventional prediction systems merely assign probabilities. Desirability has connotations of 'best' that are unrelated to profit and may be measured in terms of utility, thus:

$$\text{Expected utility} = (\text{Probability of success} \times \text{value of success}) - (\text{Probability of failure} \times \text{value of failure})$$

As a result of their sense of values, decision-makers will have a general attitude towards risk that may cause them to act as either a *risk acceptor* or a *risk averter*. In the latter case, decision-makers will tend to request more and more information before they attempt to make a decision, and this will often mean that decisions are made too late to be optimal, whereas the risk acceptor makes rapid decisions that may not be the correct ones.

Risk attitudes are one of four essential elements to be ascertained in any decision, these being:

1. What are the available courses of action?
2. What are the relevant states of nature?
3. What are the possible outcomes?
4. What is important to the decision-maker?

Applying risk analysis

The application of simple risk analysis is best illustrated by means of an example. Let it be assumed that RST Ltd has two new products, A and B, but only has the resources to launch one of these. The relevant states of nature relate to competitive activity – no matter which product is launched, it may be assumed that the competition will:

- Do nothing, or
- Introduce a comparable product, or
- Introduce a superior product.

On the basis of past experience and current knowledge, the management of RST Ltd attach probabilities of 0.25, 0.5 and 0.25 respectively to these states of nature. In the light of these alternative conditions, the profit of each strategy can be shown in a *pay-off matrix* (Figure 15.2).

This matrix shows that if Product B is launched and a comparable competitive product is introduced, a profit of £20 000 will be made, and so forth for the other five possible outcomes. The best decision would *appear* to be to introduce Product B and *hope* that competitive action does not change. But is this so?

By using the concept of expected value it is possible to calculate the expected profit (or pay-off) from each strategy by multiplying the probability of each outcome by the profit from that outcome. Thus, for strategy A (the introduction of Product A), the expected pay-off is given by:

$$(40{,}000 \times 0.25) + (30{,}000 \times 0.5) + (20{,}000 \times 0.25) = £30{,}000$$

Similarly, for strategy B the expected pay-off is:

$$(70{,}000 \times 0.25) + (20{,}000 \times 0.5) + (0 \times 0.25) = £27{,}500$$

This analysis clearly shows that strategy A is to be preferred as it has a larger expected profit or pay-off. It is vital, however, that the distinction between the *expected* pay-off and the *most probable* pay-off is understood and attention focused on the former rather than the latter. The most probable pay-off for strategy A is that with the competitive introduction of a comparable product, which has a probability of 0.5 and a profit estimated at £30 000. The most probable pay-off for strategy B has the same state of nature, and a profit estimate of £20 000. But the most probable outcome cannot be used as the basis for decision-making because it ignores the other possible outcomes. It is thought to be 50 per cent certain that a comparable competitive product will be launched, which means that it is also 50 per cent *uncertain* that this will occur, and allowance for this eventuality should accordingly be made. The use of expected pay-off allows for this.

From the information contained in the above example, a *decision tree* can be constructed as in Figure 15.3.

Strategies and states of nature are represented by the branches of the decision tree, and at each fork there are as many branches as there are identified possibilities. Only if all of the possible courses of action have been observed and included will the tree be

	State of nature		
Strategy	Do nothing	Introduce comparable product	Introduce superior product
Launch A	£40,000	£30,000	£20,000
Launch B	£70,000	£20,000	£0

Figure 15.2 Pay-off matrix

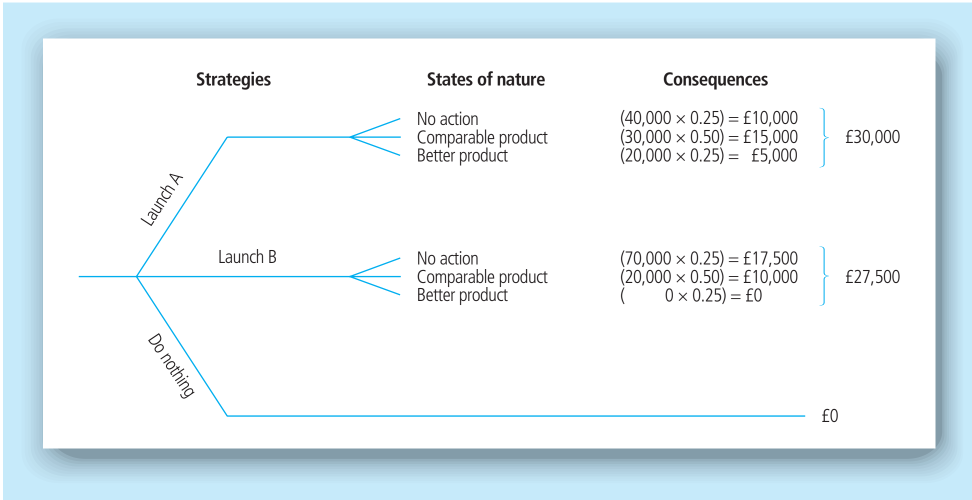


Figure 15.3 Decision tree

complete. For each alternative combination of strategy and state of nature the outcome can be computed, and the expected pay-off for each strategy derived.

A decision tree is a diagrammatic representation of the relationships between decisions, states of nature and pay-offs (or outcomes) that helps in structuring problems in a way that allows risk to be assessed at each stage. Further examples will show how a decision tree can be used. Imagine a research project that is in progress with a view to developing a new product for commercial launch. There are several aspects to this issue:

- The project may be aborted or it may be allowed to continue
- If it is continued it may or may not result in a potentially marketable new product
- If it does result in a marketable product, the organization may choose to launch it immediately or to postpone the launch
- Competitors may or may not be able to match the organization's endeavours.

Figure 15.4 spells out these aspects and specifies the two major decisions that need to be made. (The squares represent points at which decisions need to be made, while the circles represent subsequent events.) It can be seen that each decision, combined with the states of nature that are assumed to prevail, produces distinct outcomes.

The next step is to introduce quantitative data, so let us assume the following:

1. It will cost an estimated £50 000 to continue the project (which is itself probabilistic)
2. If the company decides to postpone the launch of the product (assuming the project is successful) and competitors enter the market, there will be a loss of current business amounting to £125 000
3. If the project is successful and an immediate launch is undertaken, the company will generate incremental cash flows of £450 000 if competitors stay out of the market but only £250 000 if competitors enter the market.

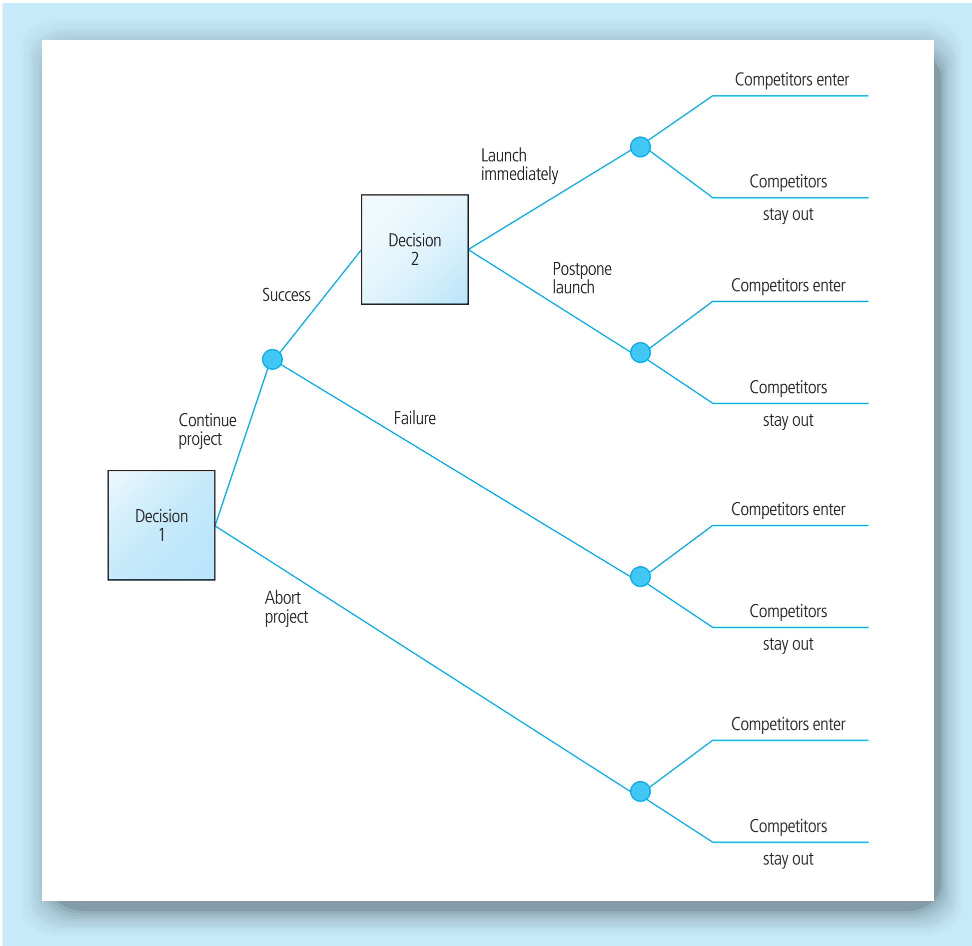


Figure 15.4 A basic decision tree

These figures are shown at the end of each branch of the decision tree in Figure 15.5. We now need to incorporate the probabilities of the events leading to the various possible outcomes, and these are also shown in Figure 15.5. By working back from the right-hand side of the decision tree, it is a simple matter to compute expected values. Taking the branch dealing with the immediate launch of a successful project as an example, the expected value is derived as follows:

£250,000 × 0.7 = £175,000
£450,000 × 0.3 = £135,000
Expected value £310,000

The figures show that an immediate launch is the better alternative if the project is successful than is postponing it (which has an expected value of −£112 500). But this only gives part of the picture, so the expected values need to be worked through to the next event in the tree (moving across from right to left). The logic in doing this is straightforward: if the project is successful and the launch is immediate, there will be a larger pay-off than if the

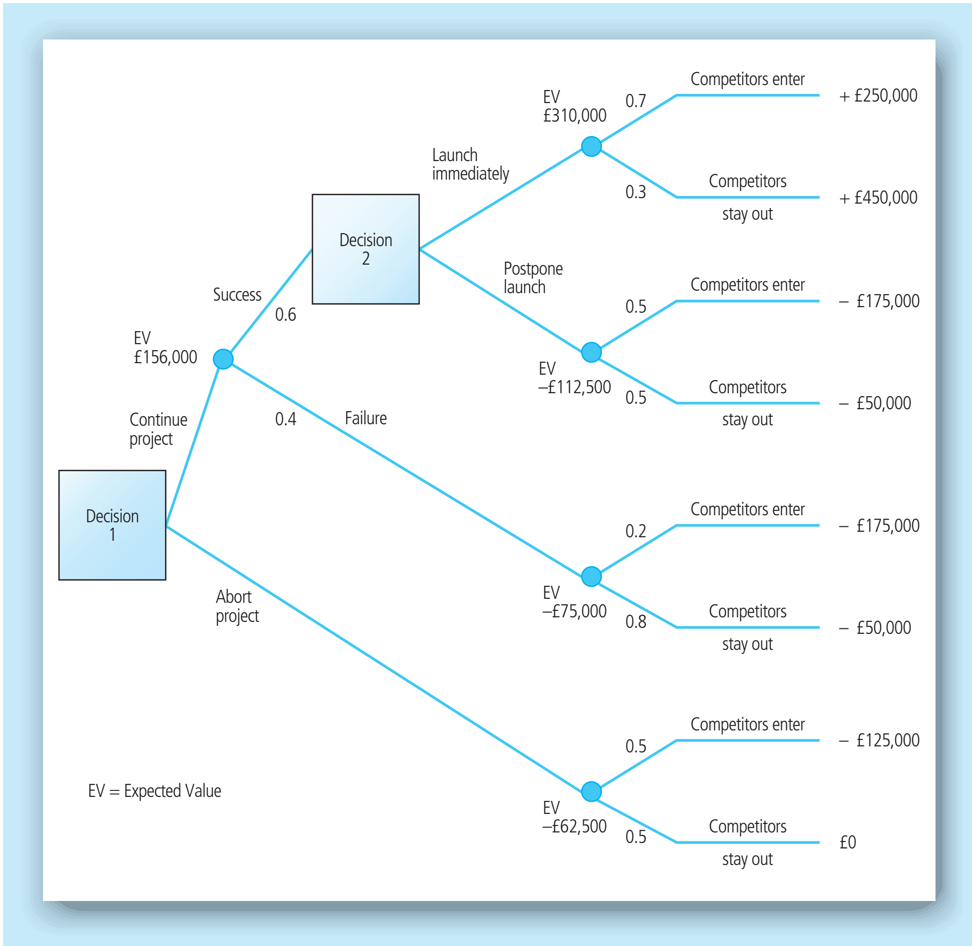


Figure 15.5 Decision tree with quantified outcomes

launch is postponed, so the latter branch can now be ignored. This gives an expected value for continuing the project of £156 000, calculated thus:

$$\begin{array}{rr} \text{£}310{,}000 \times 0.6 = & \text{£}186{,}000 \\ -\text{£}75{,}000 \times 0.4 = & \underline{-\text{£}30{,}000} \\ \text{Expected value} & \underline{\text{£}156{,}000} \end{array}$$

A comparison of this pay-off with the expected value of aborting the project (−£62 500) shows the desirability of continuing with the project.

Risk analysis is applicable to most pricing decisions, such as the situation in which a company can adopt one of three pricing policies for a new product:

1 Skimming pricing – P_1
2 Intermediate pricing – P_2
3 Penetration pricing – P_3

and in which three estimates of demand are available:

1 Optimistic forecast – Q_1
2 Most probable demand – Q_2
3 Pessimistic forecast – Q_3

and in which two sizes of plant are available:

1 Small plant – F_1
2 Large plant – F_2.

The various interrelationships of price, demand and capacity are illustrated in a decision tree format in Figure 15.6.

The pay-off is computed by taking the probability of each level of demand and multiplying it by the forecast level of demand, and then multiplying this by the price. Thus, for a penetration pricing policy (P_3) with a small factory (F_1) and a pessimistic sales forecast (Q_3), the pay-off is given by multiplying the P_3F_1 price of £4 by 0.2, which

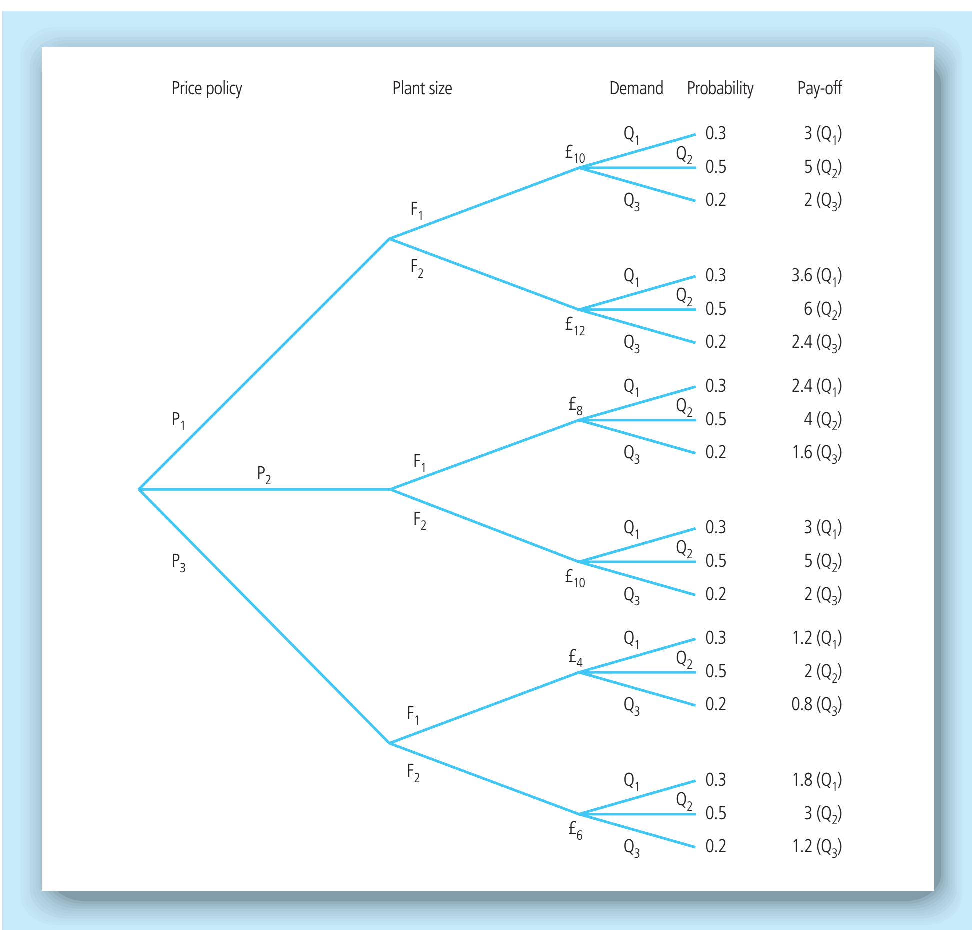


Figure 15.6 Pricing decision tree

3.0 × 50,000	=	150,000	3.0 × 50,000	=	150,000
5.0 × 40,000	=	200,000	5.0 × 40,000	=	200,000
2.0 × 30,000	=	60,000	2.0 × 30,000	=	60,000
Expected pay-off P_1F_1		£410,000	Expected pay-off P_2F_2		£410,000
3.6 × 50,000	=	180,000	1.2 × 50,000	=	60,000
6.0 × 40,000	=	240,000	2.0 × 40,000	=	80,000
2.4 × 30,000	=	72,000	0.8 × 30,000	=	24,000
Expected pay-off P_1F_2		£492,000	Expected pay-off P_3F_1		£164,000
2.4 × 50,000	=	120,000	1.8 × 50,000	=	90,000
4.0 × 40,000	=	160,000	3.0 × 40,000	=	120,000
1.6 × 30,000	=	48,000	1.2 × 30,000	=	36,000
Expected pay-off P_2F_1		£328,000	Expected pay-off P_3F_2		£246,000

Figure 15.7 Expected pay-offs

is the probability of Q_3 occurring, and expressing this in terms of Q_3. If values of 50 000, 40 000 and 30 000 are ascribed to Q_1, Q_2 and Q_3, the pay-off column in Figure 15.6 becomes Figure 15.7.

Clearly, strategy P_1F_2 has the highest expected pay-off because it has the highest price, but each expected pay-off must be related to objectives in order to select the most appropriate in a given situation.

There are several alternatives to the basic decision tree approach to allowing for risk that can be employed. It is not possible within the limits of this volume to cover them, but there is space to refer to *sensitivity analysis*. In its applied organizational setting, this has been broadly defined by Rappaport (1967, p. 441) as:

> “. . . a study to determine the responsiveness of the conclusions of an analysis to changes or errors in parameter values used in the analysis.”

Sensitivity analysis seeks to test the responsiveness of outcomes from decision models to different input values and constraints as a basis for appraising the relative risk of alternative courses of action. It is also possible to use sensitivity analysis for helping determine the value of information in addition to its role in strategic decision-making.

In effect, what sensitivity analysis allows management to do is to experiment in the abstract without the time, cost or risk associated with experimenting with the organization itself. This can be seen symbolically in the following expression:

$$V = f(X,Y)$$

where:

V = a measure of the value of the decision that is to be made;

X = the set of variables that can be directly regulated by the decision-maker (i.e. the decision variables);

Y = the set of factors (variable or constant) that affects outcomes but is not subject to direct regulation by the decision-maker (i.e. the states of nature);

f = the functional relationship amongst V, X and Y.

One can manipulate any element within X or Y and see the consequent impact on V.

Reference has been made in earlier chapters of this book to balancing the cost and value of information. The broad picture is given in Figure 15.8, from which it will be seen that the optimum amount of information in a given situation (OM) is to be found when the difference between the value and cost curves is greatest. For a number of reasons (including overload), the value of information starts to decline as more is made available, whereas the cost of providing information increases at an accelerating rate as more is made available (due to increasing accuracy, faster transmission, etc.).

In operational terms, how can we assess the value of information? We can readily grasp the principle that by evaluating the consequences of a particular decision based on a given amount of information on the one hand, and then evaluating the consequences of the same decision made with additional information on the other, the difference (in consequences) reflects the value of the extra information. This value gives the maximum sum that should be spent on generating the extra information. To apply this principle requires that we:

1 Enumerate the possible outcomes of future information collection efforts
2 Compute the probabilities of these outcomes
3 Indicate how the information will change the decision-maker's view of this choice.

These are demanding requirements!

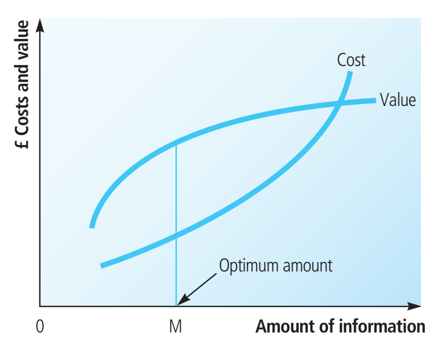


Figure 15.8 Cost and value of information

Allowing for uncertainty

Uncertainty arises from a lack of previous experience and knowledge. This results in the decision-maker's inability to assign probabilities to the elements within alternative strategies.

Inevitably, decision-making under conditions of uncertainty is more complicated than is the case under risk conditions. In fact, there is no single *best* criterion (such as expected pay-off) that should be used in selecting a strategy. Of the various available techniques, company policy or the decision-maker's attitude will determine that which is selected. Four possible criteria are given below.

1 Maximin – criterion of pessimism

The assumption underlying this technique is that the worst outcome will always come about and the decision-maker should therefore select the largest minimum pay-off. Referring back to Figure 15.2, this would mean that strategy A should be adopted; the worst outcome for A is £20 000 and the worst for strategy B is £0, which means that strategy A maximizes the minimum – hence maximin. The philosophy is that the actual outcome can only be an improvement in the majority of instances – the probabilities accorded to strategy A suggest that there is a 75 per cent chance that a better result than £20 000 will be obtained and a 25 per cent chance of its being £20 000.

2 Maximax – criterion of optimism

This is the opposite of maximin and is based on the assumption that the best pay-off will result from the selected strategy. Referring again to Figure 15.2, the highest pay-offs are £40 000 and £70 000 for A and B respectively. Strategy B has the highest maximum pay-off and will be selected under the maximax criterion.

3 Criterion of regret

This criterion is based on the fact that, having selected a strategy that does not turn out to be the best one, the decision-maker will regret not having chosen another strategy when he or she had the opportunity.

Thus, if strategy B had been adopted (see Figure 15.9) on the maximax assumption that competitors would do nothing, and competitors actually did nothing, there would be no regret; however, if strategy A had been selected the company would have lost £70 000 − £40 000 = £30 000. This measures the *regret*, and the aim of the regret criterion is to minimize the maximum possible regret. A regret matrix (Figure 15.9) can be constructed on the above basis.

The maximum regret for strategy A is £30 000 and that for strategy B £20 000. The choice is therefore B if the maximum regret is to be minimized.

	State of nature		
Strategy	Do nothing	Introduce comparable product	Introduce superior product
Launch A	£30,000	£0	£0
Launch B	£0	£10,000	£20,000

Figure 15.9 Regret matrix

4 Criterion of rationality – Laplace criterion

The assumption behind this criterion is that, since the probabilities of the various states of nature are not known, each state of nature is equally likely. The expected pay-off from each strategy is then calculated and the one with the largest expected pay-off selected.

For strategy A the expected pay-off under this criterion is:

$$(40{,}000 \times 0.33) + (30{,}000 \times 0.33) + (20{,}000 \times 0.33) = £30{,}000$$

For strategy B it is:

$$(70{,}000 \times 0.33) + (20{,}000 \times 0.33) + (0 \times 0.33) = £30{,}000$$

By chance neither strategy in this example is preferable under this criterion, with the result that the choice must be made on another basis (e.g. in terms of desirability) or under another criterion (e.g. minimax).

Under conditions of risk or uncertainty the decision may appear to be to select one of the available courses of action or to accept none of them. However, another alternative is to postpone the decision and gather more information to aid in the selection process.

Perfect information is rarely available, so the decision-maker must be satisfied with imperfect data, which will reduce even if it does not eliminate the uncertainty. But there comes a point when it is unnecessary or pointless collecting further information, and at this point a decision must be made. An increasingly popular approach to determining this point is given by the Bayesian approach to statistical decision theory.

The theory of Bayesian inference is one that provides the basic rules whereby one set of probabilities can be mathematically (i.e. logically) determined from another. For example, the probability of heads in tossing a coin is 0.5, and Bayesian inference puts the probability of there being 10 heads in a row as 0.5^{10} (about 0.001). Bayesian inference is not restricted to accepting the input of observed data only: it will also accept the decision-maker's subjective probabilities.

The most common form of Bayesian inference is prior–posterior analysis, which involves the derivation of probabilities posterior to evidence by reweighing prior probabilities according to likelihoods indicated by this evidence. This procedure is an important one. However, since it is beyond the scope of this book to present a detailed exposition of Bayes' theorem, the interested reader is referred to Day (1964).

In general, the benefits of decision theory are that it requires the decision-making manager to make uncertainties and other judgements explicit in such a way that they can be incorporated into a formal analysis that will lead to the best decisions being made. This process need not be time-consuming, but it does prevent the hurried selection of the most obvious course of action and encourages creative thinking in seeking new solutions to problems.

This is the best way to determine the value of information prior to carrying out research. It differs from traditional statistical techniques by allowing the assignment of numerical probabilities to *unique* rather than to repetitive events, with probabilities being subjectively determined by the decision-maker. For example, in relation to a new product launch, Bayesian analysis argues that the manager has some idea of how well it will do based on his experience with other products, and that these expectations can be translated into quantitative terms by assigning probabilities to the various sales levels that may be achieved. The key concept is the 'opportunity loss', which represents either:

- ➡ The actual financial loss due to the new product failing to reach its break-even sales volume, or
- ➡ The potential loss of profit from failing to introduce the product when sales would have been profitable.

In Figure 15.10 the probabilities of the expected sales levels are shown in columns (1) and (2), and the profit/loss consequences are shown in column (3), with the break-even point being 1 400 000. At a sales level of 1 800 000, a profit of £450 000 is expected, and the opportunity loss of *not* introducing the product (if this level of sales could be achieved) is £450 000 (i.e. the profit of launching the product is foregone by not launching it). The *expected* opportunity loss is given by the product of the estimated probability and the opportunity loss. For a sales level of 1 800 000 the expected loss is (0.10 × £450 000) = £45 000. The same analysis can be applied to all the other possible sales levels, as shown in columns (4)–(7). The sums of columns (6) and (7) show the overall expected opportunity loss of each course of action – introduce the product on the one hand, or do not introduce it on the other. Since the 'introduce' choice has the lowest expected opportunity loss, it should be the chosen course of action, and £67 500 is the maximum value of research expenditure.

Although analytical methods can be applied to the evaluation of risk and uncertainty, management may prefer to take other courses of action to reduce these factors. Perhaps the best method is to increase the information available to the

Unit sales (1)	Estimated probability (2)	Profit/loss (3)	Opportunity loss: Introduced (4)	Opportunity loss: Not introduced (5)	Expected opportunity loss: Introduced (6)	Expected opportunity loss: Not introduced (7)
1,800,000	0.10	450,000	0	450,000	0	45,000
1,600,000	0.25	200,000	0	200,000	0	50,000
1,400,000	0.35	0	0	0	0	0
1,200,000	0.15	−150,000	150,000	0	22,500	0
1,000,000	0.10	−250,000	250,000	0	25,000	0
800,000	0.05	−400,000	400,000	0	20,000	0
Totals	1.00				£67,500	£95,000

Figure 15.10 Bayesian analysis for product launch

decision-maker prior to making a decision. For instance, marketing research can supply further information prior to new product launches via product testing or test marketing.

Alternatively, the scale of operations may be increased, or product diversification pursued. Figure 15.11 illustrates the case of two products, with Product A having a seasonal demand pattern that is the opposite of the pattern of Product B.

However, in combination, Figure 15.12 shows that the overall result is one of continuous profitability, whereas either product in isolation would result in a loss during part of its demand cycle.

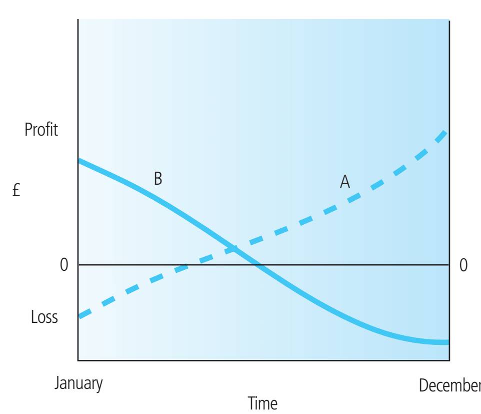


Figure 15.11 Diversified products

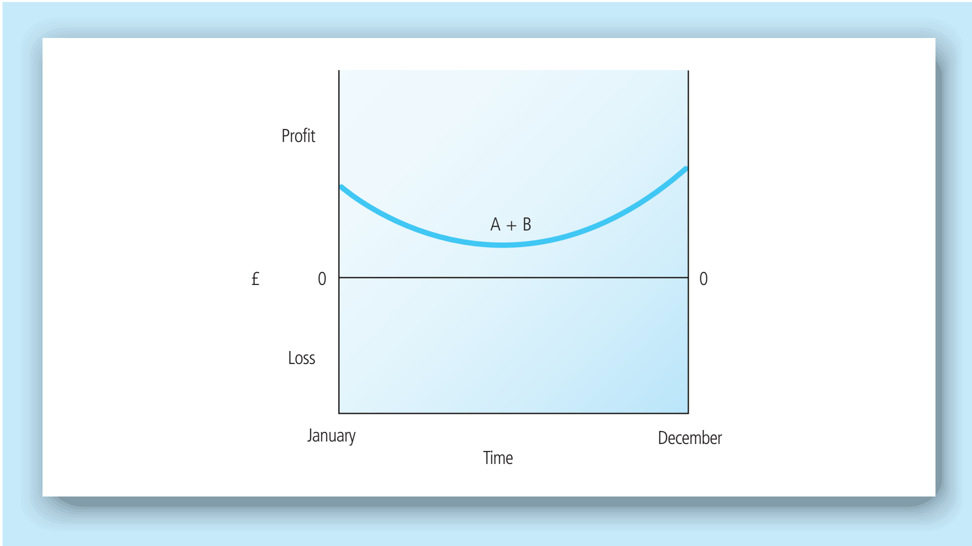


Figure 15.12 Combined profitability

15.4 Matrix models

A number of analytical matrix models were discussed in Chapters 9 and 10. In this section we will focus on three available models: the directional policy matrix, the multifactor portfolio matrix and the product positioning matrix.

Directional policy matrix

This was developed to help in identifying:

1. The principal criteria by which a business unit's prospects may be assessed
2. The criteria by which an enterprise's position in a particular market may be evaluated.

The criteria that emerge are useful in defining *business sector prospects* on the one hand, and the *enterprise's competitive capabilities* on the other. These can be used to label the axes of the matrix itself, as shown in Figure 9.8.

There are nine cells in this matrix. On the x-axis, business sector prospects increase in attractiveness as one moves from left to right. The strength of the enterprise's competitive capabilities increases as one moves down the scale on the y-axis. Locating an enterprise in any cell of the matrix implies different strategic actions, although the boundaries between cells are less precise than this might suggest: it is more helpful to consider zones rather than cells – even though the zones may be of irregular shapes. Strategies appropriate to the zones shown in Figure 9.8 are (after Cohen, 1988, pp. 36–7):

- Leader – allocate major resources to the product group
- Try harder – acceptable in the short run but may be vulnerable over the longer run

- Double or quit – major future sources of competitive advantage and profitability should be developed from this zone
- Growth – sufficient resources should be allocated to match market growth
- Custodial – maximize cash generation without any further commitment of resources
- Cash generator – a cash generator with little further need for finance or expansion
- Phased withdrawal – resources can be reallocated to better uses by withdrawing gradually
- Divest – withdraw immediately and redeploy resources elsewhere.

Among the criteria by which business sector prospects might be assessed are:

- Market growth rate – market growth is needed if profits are to grow
- Market quality, reflected in such factors as:
  - Whether profitability is high and stable
  - Whether or not margins can be maintained when demand falls below the level of normal capacity
  - Whether the market is supplied by a few or by many enterprises
  - Whether a small group of powerful consumers dominates the market
  - Whether the market offering is free from risks of substitution.
- Environmental aspects (e.g. regulations applying to distribution, marketing or manufacturing).

The criteria for assessing an enterprise's competitive capabilities include:

- Its market position (usually specified in terms of market share)
- Production capability (including location, number of plants, capacity, access to supplies, technological state of facilities)
- Product R&D (as a complete technological package to cover product range, quality, developments in applications, competence of technical service).

It is probably most beneficial if the enterprise in question reviews its competitive capabilities relative to those of significant competitors. Ratings are best determined by a team of relevant personnel attempting to reach a consensus. Alternatively, a more complex set of weights (see multifactor portfolio matrix below) may need to be devised when some criteria (or critical success factors) are deemed to be more important than others.

Multifactor portfolio matrix

This was developed jointly by General Electric and the consulting firm of McKinsey & Co. in order to overcome the limitations of the BCG's growth–share matrix. Like the directional policy matrix it has nine cells with the axes relating to similar notions: industry attractiveness (rather than business sector prospects) and business strengths (rather than the enterprise's competitive capabilities). Figure 9.7 illustrates the multi-factor portfolio matrix. There are three zones dealing with strategies relating to:

- Invest
- Manage selectively for earnings
- Harvest or divest

and these are more clearly defined than are the zones within the directional policy matrix.

Criteria that might be used in establishing industry attractiveness include:

- Market size
- Size of key segments
- Market growth rate
- Diversity of market
- Demand seasonality
- Demand cyclicity
- Sensitivity of market to price
- Opportunities
- Competitive structure
- Entry and exit barriers
- Extent of integration
- Degree of concentration
- Bargaining power of suppliers
- Bargaining power of distributors
- Capital intensity
- Capacity utilization
- Raw material availability
- Inflation vulnerability
- Environmental aspects
- Profitability
- Value added.

Measures that reflect business strength include:

- Market share
- Enterprise (or SBU) growth rate
- Breadth of product line
- Distributive effectiveness
- Sales effectiveness
- Price competitiveness
- Promotional effectiveness
- Facilities (location, age, capacity, etc.)

- ➡ Experience curve effects
- ➡ Investment utilization
- ➡ Raw material cost
- ➡ Relative product quality
- ➡ R&D capabilities
- ➡ Personnel skills
- ➡ Relative market position
- ➡ Relative profitability
- ➡ Value added.

An enterprise can select whichever measures of industry attractiveness or business strength best suit its circumstances when evaluating plans. The relative importance weightings of the selected measures will need to be determined in order to locate a plan within the matrix. This can be carried out in the following way (after Cohen, 1988, pp. 32–5):

1 Identify the major measures of industry attractiveness that are applicable. Let us suppose these are:
- ➡ Size of market
- ➡ Growth of market
- ➡ Ease of entry
- ➡ Favourable position in PLC.

2 Weights must be assigned to the chosen measures to indicate their relative importance. If the weightings are 0.30, 0.30, 0.25 and 0.15 respectively for the criteria shown in step 1 above, we can see the overall picture in Figure 15.13.

3 Figure 15.13 also shows the points that might be awarded to any given marketing plan in relation to the extent to which the selected criteria are seen to be met by that plan. Points might be awarded on the following basis:
- ➡ Very attractive 9
- ➡ Attractive 7
- ➡ Fair 4.5
- ➡ Unattractive 3
- ➡ Very unattractive 0

Industry attractiveness criteria	Relative importance weightings	Point ratings	Weighted scores
Size of market	0.30	9	2.70
Growth of market	0.30	4.5	1.35
Ease of entry	0.25	9	2.25
Favourable PLC position	0.15	0	0
Total weighted score			6.30

Figure 15.13 Weighted score for industry attractiveness

Business strength criteria	Relative importance weightings	Point ratings	Weighted scores
Image	0.40	9	3.60
Productivity	0.30	7	2.10
Product synergy	0.15	3	0.45
Price competitiveness	0.15	4.5	0.675
Total weighted score			6.825

Figure 15.14 Weighted score for business strength

4 A weighted score relating to industry attractiveness can be calculated for each alternative marketing plan – this is equal to 6.30 for the plan covered by Figure 15.13.

5 Steps 1–4 need to be repeated for business strength in relation to each marketing plan. Let us assume that the applicable criteria are image, productivity, product synergy and price competitiveness, with weights of 0.40, 0.30, 0.15 and 0.15 respectively. The assessment of points to indicate the extent to which any given plan meets the applicable criteria would be carried out as outlined in step 3 above, with the results being shown in Figure 15.14.

6 Having calculated weighted scores of 6.30 for industry attractiveness and 6.825 for business strength, it is now possible to locate these scores within the matrix. Using the scales shown in Figure 9.7 it is apparent that the coordinates interesect in the top left-hand cell within the *invest* zone of the matrix.

7 Similar plots can be made for alternative marketing plans and an appropriate choice made in accordance with strategic priorities.

It will be evident that the weightings and scoring within this procedure involve considerable subjective judgement. This makes it important that all underlying assumptions should be made explicit to facilitate peer review.

Product positioning matrix

Among the many other available matrix approaches that can be used for evaluating marketing programmes is that of Wind and Claycamp (1976). This focuses on product line strategy and is comprehensive in that it deals with all the major measures (sales, market share, profitability) that are essential in positioning products by segment.

The first step involves defining:

1 The product (including its subcategories at both the enterprise and industry levels)
2 The strategic market for the product and the key segments within it
3 The appropriate forms of measurement (e.g. sales in value or volume terms, sales per capita, quarterly time periods).

Following the establishment of suitable definitions the analysis can be undertaken. This will involve the generation of:

- Sales position for the given product within the strategic market, showing enterprise and industry sales along with an indication of when the product is expected to reach each stage within the product life cycle. For this purpose the PLC can be characterized as having three stages:
  - Growth (when sales are expected to increase by more than 10 per cent year on year)
  - Maturity (where sales are expected to increase in the range of 0–10 per cent year on year)
  - Decline (when sales growth is expected to be negative).
- Market share position, which can also be characterized by means of a set of decision rules such as:
  - Marginal (if market share is likely to be less than 10 per cent)
  - Average (if market share is likely to be within the range 10–24 per cent)
  - Leading (if market share is expected to be over 25 per cent).
- Profit position, which can be characterized by distinguishing among:
  - Above par (where profit from a given segment is expected to be greater than from the rest of the enterprise's business when expressed as a rate of return)
  - Par (where the profitability expected from the segment is comparable to that from other segments)
  - Below par (where the profitability of the segment is expected to fall below that of other segments).

The expectations relating to product sales, industry sales, market share and profitability can then be plotted on to the comprehensive product evaluation matrix, as shown in Figure 15.15.

It is possible to plot the anticipated positions of the product in question under different assumptions regarding sales, market share and profitability. A time dimension can be built in as suggested in Figure 15.15.

Figure 15.15 shows for two products – A and B – the current position (i.e. A as at 20 × 1 and B as at 20 × 1) and projections into the future. Such projections are built up from estimates of each constituent element (sales, market share, profit outcome) for each alternative marketing programme. We can see, for example, that Product A is a poor performer as at 20 × 1: it is in a declining industry with declining sales, has only an average market share and is achieving a profit performance that is below par. If no change occurs it is anticipated that Product A's position will get worse. In an attempt to improve the position of Product A, two alternative marketing plans are proposed: plan A^1 is predicted to reposition Product A in an improved situation in 20 × 2 by moving it from its 20 × 1 position to a position offering stable sales and profits at par, although it is not expected that the decline in industry sales can be changed.

An alternative to plan A^1 is given by plan A^2, which anticipates an improvement in the profit performance but a continuing decline in sales and also in market share between 20 × 1 and 20 × 2.

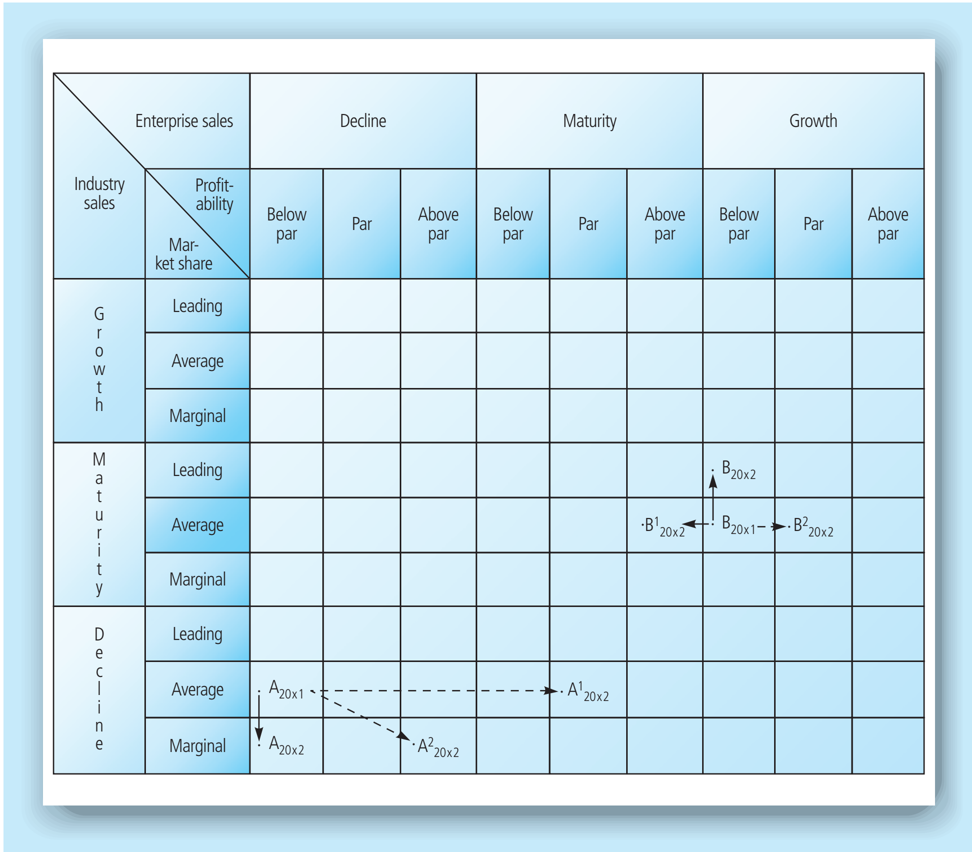


Figure 15.15 Product positioning matrix (adapted from Wind and Claycamp, 1976)

Product B is in a much stronger position in 20 × 1. It is increasing its sales level within a mature market, thereby increasing its market share, but showing poor profit performance. If no changes occur in the marketing plan for B, the expectation is that, by 20 × 2, it will have achieved a leading market position with profit performance continuing to be below par. Two alternative marketing plans are proposed for Product B. The first, B^1, will lead to a stable level of sales and an improvement in profit performance from below par to above par. Plan B^2 is expected to produce continuing growth and a better profit position.

For Product A, management must consider the trade-off between a modest improvement in profit with an increase in sales, and a large improvement in profit with a decrease in sales. In the case of Product B, the choice is between taking profits in the near future (plan B^2) or investing for the longer term in increased market share.

15.5 The marketing performance assessment model

Bonoma and Clarke (1988) set out to develop a means of assessing the performance of marketing programmes in a way that avoids the limitations of measures that focus narrowly on either economic issues or efficiency. They do this by relating programme results to management's expectations, thereby focusing on effectiveness via a measure of satisfaction. Efficiency is assessed by means of the effort that needs to be expended to achieve a given level of satisfaction. The effort comprises the skills that must be exercised by a marketing programme's managers and the support structures that are provided for the programme.

Finally, Bonoma and Clarke allow for those factors that are beyond the enterprise's control but that affect the performance of the marketing programme – such as competitors' actions, changes within distribution channels, or in legal, economic or demographic variables. It is possible to determine programmes that succeed (or fail) on the basis of luck rather than effort by utilizing these factors.

In summary, they seek to offer an approach to marketing performance assessment that measures:

1. The degree to which a marketing programme satisfies strategic requirements
2. The effort that is necessary to produce the satisfaction in point 1 above
3. The effect of uncontrollable variables on the programme.

The approach is operationalized via a testable model of *marketing performance assessment* (MPA), which is defined as the adjudged quality of marketing programmes, directed by strategy, as these programmes are executed in the marketplace. The model seeks to combine elements of efficiency and effectiveness in assessing marketing performance. In addition, it incorporates managers' judgements in an explicit way.

The motivation behind this work was a concern to identify whether a set of principles exists that explains 'quality marketing practice' (i.e. the *doing* of marketing in an effective and efficient way rather than just the *planning* of marketing). In part, this motivation stemmed from the following dissatisfactions that Bonoma felt with the literature on marketing practice:

- There is a widespread tendency to ignore the role of managers, and hence their values, etc., which implies that all managers act in similar ways – something we know is not the case
- It is implicit in the advice offered to guide marketing practice that the causal link is strategy–causes–practice, whereas there is good reason to believe that the reverse causal link exists (i.e. practice–causes–strategy) in some circumstances, which is akin to ex post-rationalization.

Bonoma conceives of marketing practice as an attempt by managers with particular skills (relating to organizing, allocating, interacting and monitoring), values and expectations to achieve specified results. The managers in question operate within an organizational context characterized by particular ways of doing things – whether through particular programmes, systems or policies – which collectively represent a structure for guiding marketing actions. In turn, the organization is located within its environment, with its array of threats, opportunities and constraints, and the link between the organization and its environment is found via the marketing strategy of the organization.

These relationships are portrayed in Figure 15.16, which represents a rudimentary model of marketing implementation.

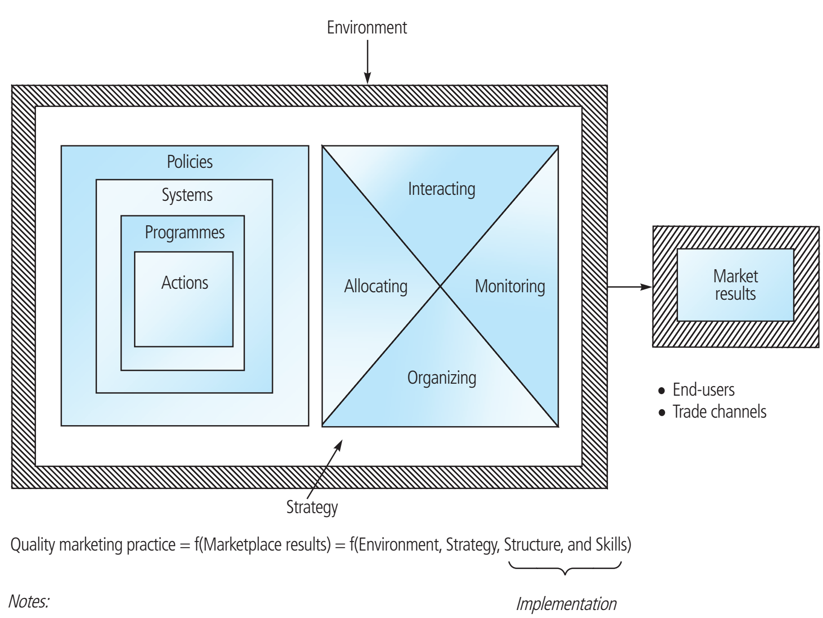
It is suggested by Figure 15.16 that:

Quality marketing practice = f(market results)

and

Market results = f(environment, strategy, structure, skills)

The combination of structure (in the form of programmes, systems and policies) and skills on the part of individual managers allows strategies to be implemented – within the organization's environment – and results achieved. The extent to which



Notes:

Structural variables

Actions relate to low-level execution issues (e.g. selling, NPD, distributor management, etc.).

Programmes deal with integrated sets of actions (e.g. a specific marketing mix tailored to a particular segment).

Systems focus on formal controls and decision aids (e.g. decision-support systems, order processing systems, etc.).

Policies are broad rules of conduct promulgated by top management to guide marketing operations (e.g. segments to develop, technology to use in NPD).

Skills

Interaction skills focus on how managers deal with each other and with staff, customers, etc., in order to influence events.

Allocation skills relate to an ability to assign resources to tasks in an effective and efficient way.

Monitoring skills concern the design and use of feedback mechanisms to measure and control marketing activities.

Organizing skills deal with 'networking' behaviour by which a manager copes when the formal organization is not relevant.

Figure 15.16 A rudimentary model of marketing implementation (source: Bonoma and Clarke, 1988, p. 59; notes adapted from Bonoma and Crittenden, 1988) the results represent an effective level of marketing performance will depend on managerial expectations, but Bonoma's contribution is significant in that he builds into his model the idea of effort expended in achieving results as well as the level of satisfaction that managers derive from the results of their efforts, plus an explicit recognition that results are influenced by events outside the enterprise, over which managers have no direct control. These elements are brought together in the following expression:

$$MP = \frac{SAT}{EFF} \times EXT$$

where:

MP = marketing performance;

SAT = managers' satisfaction with the results of effort expended in marketing programmes;

EFF = effort expended to achieve the results;

EXT = the impact of external events on marketing effort.

A variety of implications concerning the relationship between satisfaction and effort stem from the discussion above. These are summarized in Figure 15.17 and indicate

Management's perceived effort is

Management's perceived satisfaction with results is	Low	High
High	Maximum performance Achieving the most results with the least effort, in complete contravention of the Protestant ethic. By definition, low effort is more easily achieved through systematized or routinized procedures than through 'exception management'.	Adequate performance High satisfaction is the 'due consequence' of high effort. Effort, however, is costly, resulting in only adequate performance because much was expended to produce the results. Usually, effort is high when routinized systems and procedures cannot be delegated to do the job 'automatically'.
Low	Adequate performance There is little to be satisfied with, but little effort was expended in achieving the low performance. The lack of effort is seen as justifying or explaining the lack of performance.	Low performance Much effort was expended to little avail in terms of results. This is the worst possible state.

Figure 15.17 Marketing performance: satisfaction and effort (source: Bonoma and Clarke, 1988, p. 65)

Management's expectations for results are	Results from marketing efforts are: Poor	Results from marketing efforts are: Good
High	**High dissatisfaction** Results achieved do not live up to expectations. Management is unhappy with performance given prior expectations and promise.	**Moderate satisfaction** Results match goals – which, after all, is only what should have happened. There are no surprises, either pleasant or unpleasant.
Low	**Moderate dissatisfaction** Poor results match the low expectations held for the programme. The poor results are only moderately unsettling because of the low expectations.	**High satisfaction** Good results far exceed what was hoped or planned. Top management loves these kinds of surprises, despite its suspicion about being sandbagged.

Figure 15.18 The determinants of satisfaction: results and expectations (source: Bonoma and Clarke, 1988, p. 66)

how the MPA model predicts optimal marketing performance when a low level of effort is associated with a high level of satisfaction.

The determinants of satisfaction are seen as being expectations and results: if expectations are not met, the consequences can be high satisfaction (when expectations are exceeded) or high dissatisfaction (when expectations are not realized). Figure 15.18 shows how the lowest level of satisfaction occurs when poor results and high expectations interact, and the highest level of satisfaction arises when low expectations interact with good results.

Within any organization the quality of marketing skills will depend on the availability of suitably trained and motivated staff. The application of marketing skills through the organization's marketing structure (i.e. programmes, systems, policies) will determine the effort that is to be expended in order to achieve results. Skills might be strong or weak, and structures might be flexible or rigid. As shown in Figure 15.19, there are various combinations of skills and structure that determine the effort available, and the way in which that effort might be applied.

15.6 Some other approaches to modelling

In this section we will reinforce earlier coverage of marketing experimentation as a modelling approach by which marketing plans might be assessed. In addition, we will look at programming and networking as further approaches to modelling by which alternative plans can be evaluated.

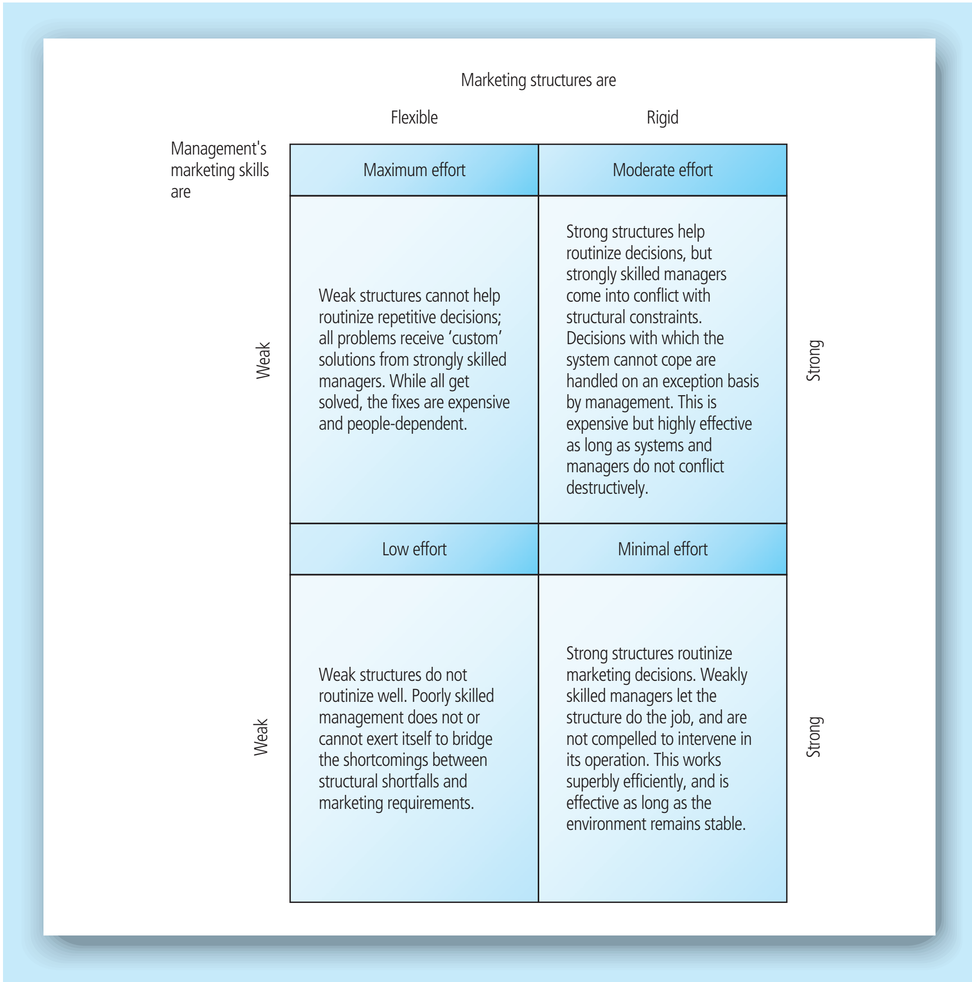


Figure 15.19 The determinants of effort: management skills and marketing structures (source: Bonoma and Clarke, 1988, p. 70)

Marketing experimentation

In an experiment, attempts are made to identify all the factors that affect a particular independent variable, and these factors are then manipulated systematically (in so far as it is within the firm's power to do so) in order to isolate and measure their effects on the performance of the dependent variable.

It is not possible to plan or control all the conditions in which an experiment is conducted – for example, the timing, location and duration of an experiment can be predetermined, but it is necessary to measure such conditions as the weather and eliminate their effects from the results.

The independent variable that is the subject of marketing experimentation may be the demand for one of the company's various products or one of the environmental factors it faces, and the dependent variable may be one of the company's objectives. Profit is a dependent variable of both the particular marketing strategy adopted and of the external conditions prevailing at the time that strategy is executed.

Because experiments are concerned with the deliberate manipulation of controllable variables (i.e. such variables as prices and advertising effort), a good deal more confidence can be placed in conclusions about the effects of such manipulation than if the effects of these changes are based purely on historical associations or vague projections rather than on the basis of experimentation.

Ideas for experiments can result from marketing cost studies. The following questions are fairly representative of those that can be answered as a result of experimentation (as we saw in Chapter 3):

1 By how much (if any) would the net profit contribution of the most profitable products be increased if there were an increase in specific marketing outlays, and how would such a change affect the strategy of competitors in terms of the stability of, say, market shares?
2 By how much (if any) would the net losses of unprofitable products be reduced if there were some decrease in specific marketing outlays?
3 By how much (if any) would the profit contribution of profitable products be affected by a change in the marketing effort applied to the unprofitable products, and vice versa, and what would be the effect on the total marketing system?
4 By how much (if any) would the total profit contribution be improved if some marketing effort were diverted to profitable territories or customer groups from unprofitable territorial and customer segments?
5 By how much (if any) would the net profit contribution be increased if there were a change in the method of distribution to small unprofitable accounts or if these accounts were eliminated?

Only by actually carrying out properly designed marketing experiments can management realistically predict with an acceptable degree of certainty the effects of changes in marketing expenditure on the level of sales and profit of each differentiated product, territory or customer segment in the multi-product company.

Experiments must be conducted under conditions that resemble the real-life conditions of the marketplace in so far as this is possible. It is pointless, for example, carrying out an experiment to prove that the sale of £1's worth of Product X in Southampton through medium-sized retailers contributes more to profit than does the sale of £1's worth of Product Y through small retailers in Leeds, if the market for Product X is saturated and no reallocation of marketing resources can change the situation. This points to the danger of confusing what is happening now with what may happen in the future – ascertaining that Product X is more profitable than Product Y may be the right answer to the wrong question.

The style of question should be 'What will happen to the dependent variable in the future if the independent variables are manipulated now?' If the concern is with the allocation of sales effort, the aim of an experiment may be to show how changes in the total costs of each sales team can be related to changes in the level of sales. In such a simple case, where only one type of marketing effort is being considered, this effort should be reallocated to those sales segments where an additional unit of effort will yield the highest contribution to profits.

The experiment can be designed to show which sales segment produces the highest value when the following equation is applied to each:

(Additional sales − additional variable costs)/additional expenditure

If an additional budget allocation of £1000 to the London sales force results in extra sales of £5000 with additional variable costs amounting to £2000, then the index of performance is (5000 − 2000)/1000 = 3. It may happen that the same index computed for the Midlands sales force has a value of 4, in which case selling effort should be reallocated to the Midlands *provided* due consideration has been given to the expected level of future demand.

As a result of the high costs involved, experiments must usually be conducted with small samples of the relevant elements. This is generally valid so long as the samples are properly determined and representative. However, it is believed by some that marketing experimentation is not a feasible means by which information can be obtained as a basis for making important decisions.

There are certainly a lot of difficulties to be overcome in planning and executing experiments, and the need to keep special records and make repeated measurements is both expensive and time-consuming. The risk is always present that the results of an experiment will not be of any value because they may not be statistically significant. A further risk is that even temporary and limited experimental variations in the marketing mix may damage sales and customer relationships both during and after the experiment.

Other problems that are involved in marketing experimentation include:

➡ The measuring of short-term response when long-term response may be of greater relevance
➡ Accurate measurements are difficult to obtain – apart from the high expense involved
➡ It is almost impossible to prevent some contamination of control units by test units, since it is difficult to direct variations in the marketing mix solely to individual segments
➡ Making experiments sufficiently realistic to be useful is hindered by such difficulties as the national media being less flexible than may be desired, and the fact that competitors may not react to local experimental action in the same way as they would to a national change in policy.

These problems and difficulties, while discouraging, are insufficient to discount completely the use of experimentation as a valuable means of obtaining information to increase the efficiency of marketing operations. Indeed, it is likely that the use of experimental techniques will become increasingly widespread, as has been the case with test marketing, which is the best-known form of experimentation in marketing.

Programming

Programming is a form of analytical modelling that is useful in allocation problems. The most widely-used technique is *linear programming*, which aims to determine the optimum allocation of effort in a situation involving many interacting variables: in other words, it produces that solution which maximizes or minimizes a particular outcome in accordance with given constraints (e.g. how should sales effort be allocated among regions to maximize the level of sales subject to a maximum availability of 10 000 units of product per period, or what product mix should be sold – subject to demand – in order to give the maximum profit?). Other forms of programming include integer programming, which is concerned with optimizing subject to the constraint that the solution must be in the form of whole numbers, and dynamic programming, which is applicable to problems involving a series of interdependent decisions.

In all cases the marketing manager will be interested in making the best use of his limited resources and the constraints that exist will set the upper limit to the level of performance that is possible. The company cannot spend more on advertisng each product than it has in its advertising appropriation, thus:

$$a_1(W) + a_2(X) + a_3(Y) + a_4(Z) \leq A$$

where:

$\leq$ means 'equal to or less than';
A is the total advertising appropriation;
$a_1(W)$ is the amount spent on advertising Product W;
$a_2(X)$ is the amount spent on advertising Product X;
$a_3(Y)$ is the amount spent on advertising Product Y;
$a_4(Z)$ is the amount spent on advertising Product Z.

Similarly, a constraint exists in relation to every fixed budget or limited resource, such as sales force time and warehouse space:

$$b_1(W) + b_2(X) + b_3(Y) + b_4(Z) \leq B$$

where:

B is the total available sales force time;
$b_1(W)$ is the time devoted to selling Product W, etc.

And:

$$c_1(W) + c_2(X) + c_3(Y) + c_4(Z) \leq C$$

where:

C equals the available warehouse space;
$c_1(W)$ is the space occupied by the inventory of Product W, etc.

The basis on which resources are allocated is the *marginal response*. If the expenditure on advertising of £100 000 produces sales amounting to £500 000, then the *average response* is 5/1; and if an increase in advertising expenditure of £1000 produces additional sales totalling £10 000, this gives the measure of marginal response, which is equal to 10/1. Marginal response can thus be seen to be a measure of the value of opportunities presented.

If a company's advertising budget is set at £100 000 for a period, the optimal allocation to each of the company's products (A, B and C) is given by equating the marginal responses, because this gives the situation where it will not be beneficial to reallocate funds from one product to another. The requirement is to find the best solution to the equation:

$$a_1(A) + a_2(B) + a_3(C) = £100,000$$

where $a_1(A)$ is the advertising budget for product A, $a_2(B)$ that for product B and $a_2(C)$ that for product C. This is given when:

$$dYA/dXA = dYB/dXB = dYC/dXC$$

where dYA/dXA is the marginal response for product A measured as change in sales/change in advertising outlay, and so on for products B and C.

Linear programming must be applied in the absence of uncertainty, which means that uncertainty must be eliminated before variables are incorporated into a linear programme. Moreover, all the relationships of problems put into a linear programming format are assumed to be linear, and this may not apply under all possible conditions. For example, costs rarely rise in direct proportion to increases in sales. But even with this discrepancy linear programming is able to indicate the best direction for allocating resources to segments. This technique can be used to determine the best (i.e. optimal) solution to allocation decisions in the following circumstances:

1. Where there is a clear, stated objective
2. Where feasible alternative courses of action are available
3. Where some inputs are limited (i.e. where constraints exist)
4. Where conditions 1 and 2 above can be expressed as a series of linear equations or inequalities.

Let us consider the application of linear programming to a short-run product selection problem in which the decision-maker's objective is to maximize profits (this illustration is adapted from Dev, 1980). The products in question both offer positive contributions, and market demand is buoyant and likely to be sustained, but there are insufficient resources in prospect to allow for unlimited output. The problem is therefore to choose that allocation of available resources which leads to maximized profits.

Boam Brothers produce two products, M and S, and the following data reflects estimated prices, variable manufacturing costs, and contributions for each product for the following financial year:

			Product M			*Product S*
Selling price per unit			£22.20			£14.00
Less avoidable costs:						
Material A @ £1.00 per kilo						
	12 kilos	12.00		4 kilos	4.00	
Labour @ £3.00 per hour						
	1 hour	3.00		2 hours	6.00	
			15.00			10.00
Contribution per unit			£7.20			£4.00

It is assumed that the material and labour input requirements per unit and the contribution per unit are constant no matter what the level of output. This emphasizes the 'linear' aspect of linear programming.

Available inputs for next year are expected to be subject to possible constraints, as suggested below:

Material A	1,200,000 kilos
Labour	400,000 hours

Fixed costs have been budgeted at £560 000. Assume that there are no opening or closing inventories of M, S or A, and that the selling price will stay constant irrespective of the level of sales.

Three possible situations can be envisaged:

1. *No resource constraints*, in which case Boam Brothers would produce as much of M and S as they are able (since both make a positive contribution).
2. *One resource constraint*, which we might take as material A being limited to 1 200 000 kilos. The solution is derived via the limiting factor – priority will be given to the product generating the highest contribution per unit of the limiting factor. We can see that this is product S from the following computation:

	Product M	*Product S*
Contribution per unit	£7.20	£4.00
Kilos of A per unit	12	4
Contribution per kilo of A	£0.60	£1.00

With the available amount of A the maximum output would be:

$$\frac{1,200,000}{12} = 100,000 \text{ units M}; \quad \frac{1,200,000}{4} = 300,000 \text{ units S},$$

and the maximum contribution would be:

M: 100,000 × £7.20 = £720,000
S: 300,000 × £4.00 = £1,200,000
(or 1,200,000 × £0.60 = £720,000 for M; and 1,200,000 × £1.00 = £1,200,000 for S)

The optimal choice is to produce 300 000 units of S and to give up producing M. If, on the other hand, the scarce resource was labour hours, the analysis would show the following:

	Product M	*Product S*
Contribution per unit	£7.20	£4.00
Labour hours per unit	1	2
Contribution per labour hour	£7.20	£2.00

The maximum output with 400 000 labour hours available would be:

$$\frac{400{,}000}{1} = 400{,}000 \text{ units M}; \quad \frac{400{,}000}{2} = 200{,}000 \text{ units S}$$

and their respective contributions would be:

M: 400,000 × £7.20 = £2,880,000
S: 200,000 × £4.00 = £800,000

The optimal output is to produce 400 000 units of M and no units of S.

3 *Two resource constraints*. This is a more difficult situation than point 2 above, since the material constraint favours production of S and the labour constraint favours the production of M. Four logical alternatives present themselves:

- Produce M but no S
- Produce S but no M
- Produce some combination of M and S
- Produce neither M nor S.

The last alternative can be discarded because the contributions of both products are positive. A choice from the remaining alternatives can be made by formulating the problem as follows:

$$\begin{aligned} &\text{Maximize } C = 7.20Q_m + 4.00Q_s \\ &\text{Subject to } 12Q_m + 4Q_s \leq 1{,}200{,}000 \\ &\qquad\qquad Q_m + 2Q_s \leq 400{,}000 \\ &\qquad\qquad Q_m \geq 0;\ Q_s \geq 0 \end{aligned}$$

where:

C = total contribution;
Q_m = units of product M to be produced;
Q_s = units of product S to be produced.

The resource constraints are expressed as inequalities (i.e. 'less than or equal to') because it may not be necessary to use all 1 200 000 kilos of A or all 400 000 labour hours. In addition, a non-negativity constraint is included in the problem formulation to show that negative quantities of either M or S are not desired.

A solution can be derived either by algebraic or graphical methods (and can easily be handled by standard computer programs). Figure 15.20 shows a graphic approach to the solution. Units of M and S are shown on the x- and y-axes respectively, with line AB showing the maximum output of each under the labour constraint and line CD showing the maximum output of each under the material constraint. AB connects all the possible combinations of M and S within the labour constraint, while CD connects all the combinations that are feasible within the material constraint. However, when we take both constraints into account the combinations of M and S within the triangles ACE and DBE are not feasible because they require more labour and material respectively than is available. This leaves OAED as a *feasible region* within which all the combinations of M and S can be achieved. But which is the best combination (in terms of maximizing profit)?

To determine the answer we need to move from quantities to relative contributions. Let us take a contribution figure of, say, £1 800 000. This can be generated by:

$$\frac{1,800,000}{7.20} = 250,000 \text{ units M} \quad \text{or} \quad \frac{1,800,000}{4.00} = 450,000 \text{ units S}$$

A curve showing these limits is superimposed on the graph in Figure 15.20, but none of the possibilities suggested by this line is within the feasible region. By moving back towards the origin with parallel contribution lines we arrive at point E, which is

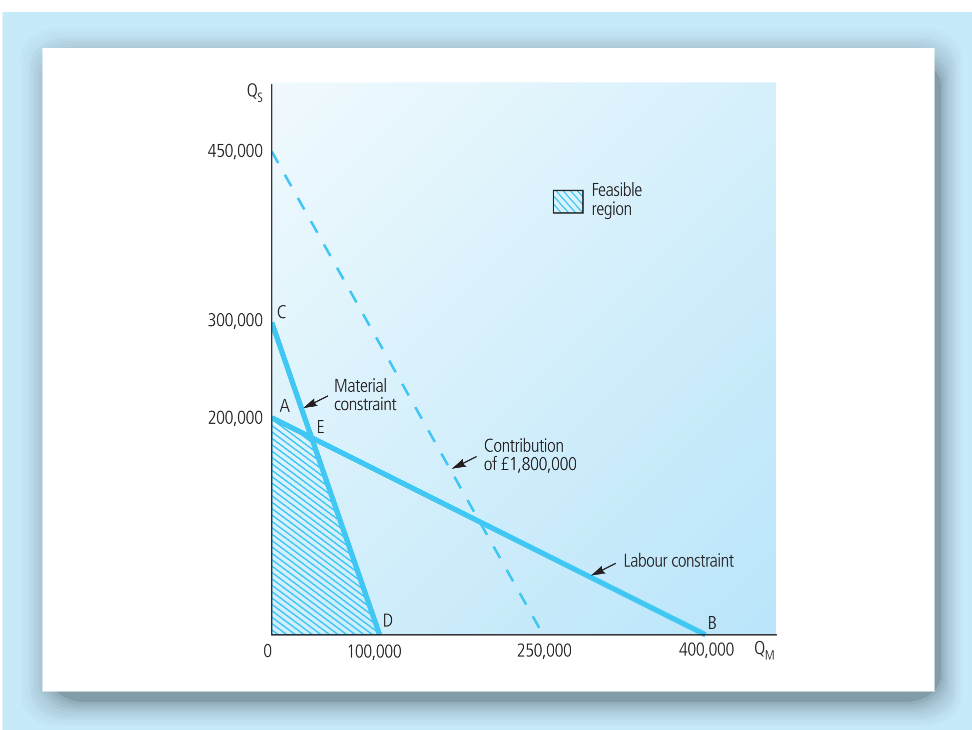


Figure 15.20 Graphical presentation of solution

within the feasible region, and this gives us the optimal combination of M and S. (The lines will be parallel because the contribution per unit of M and S will be the same regardless of the level of output.) It should be apparent that the closer the contribution line is to the origin, the lower will be the total contribution (since the smaller will be the output), so the best point is at a tangent to the feasible region: point E.

The output levels at this point (from the graph) are 40 000 units of M and 180 000 units of S, with the following financial outcome:

Contribution:	
M 40,000 × £7.20	288,000
S 180,000 × £4.00	720,000
Total contribution	1,008,000
Fixed costs	560,000
Net profit	£448,000

You may care to manipulate the combination of M and S represented in this solution to see if any marginal change could improve the profit outcome. (For example, if five units less M were produced, this would free 60 kilos of A and five hours of labour, which could be used to produce two more units of S – with one hour of labour and 52 kilos of A left over. However, the contribution gained from S would only be £8.00, whereas the contribution lost by M would be £36.00, so it would be a suboptimal change.)

Networks

Network analysis is a method of problem solving that is based on analysing systematically and logically the relationships and time factors involved in carrying out a particular project. An appropriate project is any activity that can be considered as having a definable beginning and end, and this includes:

- ➡ Developing and launching a new product, which involves coordinating many complex and interrelated factors, along with the need to be able to assess quickly the effects of changes in order to show where corrective action can best be taken
- ➡ Product modification
- ➡ Large-scale promotional campaigns
- ➡ Many smaller activities that would benefit from a more rigorous approach, such as catalogue preparation; planning exhibitions, sales conferences and training courses; carrying out market research studies; and the building of models.

Network analysis is made possible by two techniques developed during the late 1950s: critical path analysis (CPA) and the programme evaluation and review technique (PERT). Networks developed by these techniques show the relationships among all the activities that must be performed in terms of time in completing the project in question. Three estimates of time are characteristically used for each activity – an optimistic, a pessimistic and a 'most likely'. The expected time for each activity can then be calculated on a probability basis, and since some activities must be completed before others can be commenced, the various activities can be laid out along a diagrammatic time scale.

Figure 15.21 relates to the launching of a new washing-up liquid and shows that a network diagram is a graphical representation of a project, indicating how the activities are linked. It is drawn by using three basic symbols:

1. A solid line represents an *activity*
2. A circle represents an *event* or intersection between activities
3. A dashed line represents a *dummy* activity, which is a means of showing logical relationships that are not physical activities – they may be thought of as transfers of information between events.

When the network is first drawn it is usual to omit duration times for reasons of simplicity in ascertaining the correct sequences and dependencies. After times have been incorporated it is possible to find the overall project time that is determined by those activities in sequence – the critical path. A certain amount of time ('float') will usually be available on those activities that are not on the critical path to permit flexibility in executing the project.

Basic networks only cover the time dimension, so further analysis requires the introduction of a cost dimension. This is the role of the PERT/cost technique. Both PERT and PERT/cost are designed for use in single large-scale projects, and resource allocation and multi-project scheduling (conveniently abbreviated to RAMPS) has been

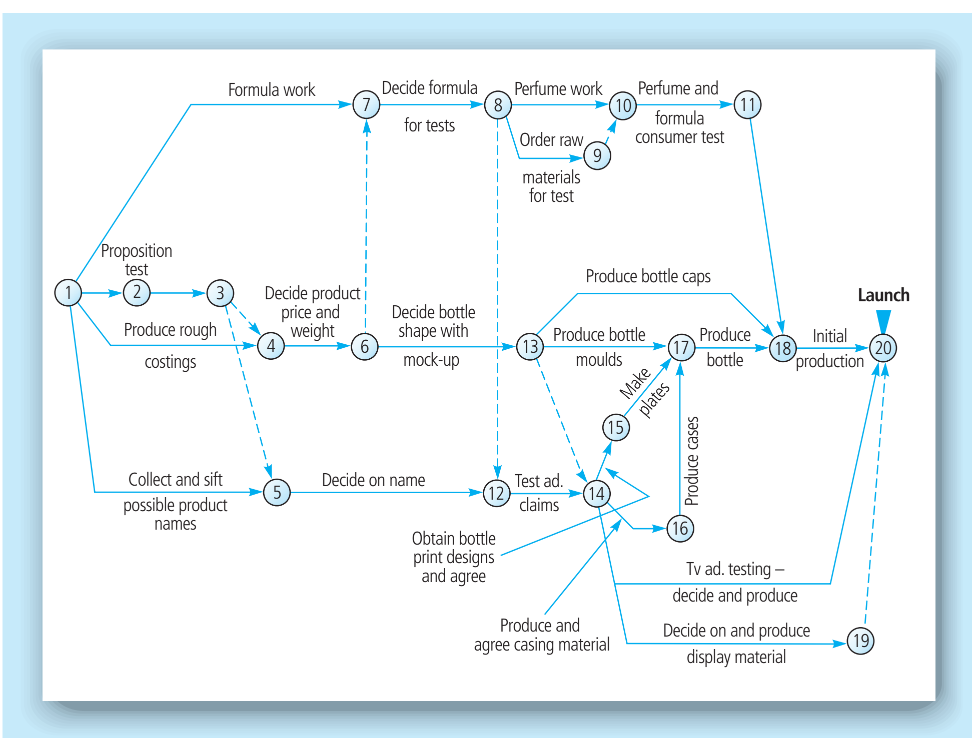


Figure 15.21 Network for launching a new product

developed to deal with the problem of allocating resources to several projects when a number of projects are being undertaken simultaneously but there is a restriction in the availability of resources.

Although drawing up a valid network for a project is difficult, the procedure demands thorough and systematic analysis, and this discipline means that relationships that might otherwise have been overlooked are included. Furthermore, it specifies the decisions that must be made and thus provides a framework for control, as well as permitting planning and scheduling.

Network analysis can fail in practice for such reasons as lack of top management support, the use of excessive detail, bad presentation, a failure to update, and the absence of feedback.

A different type of network is shown in Figure 15.22. This relates to the development of new products, which was discussed in Chapter 11.

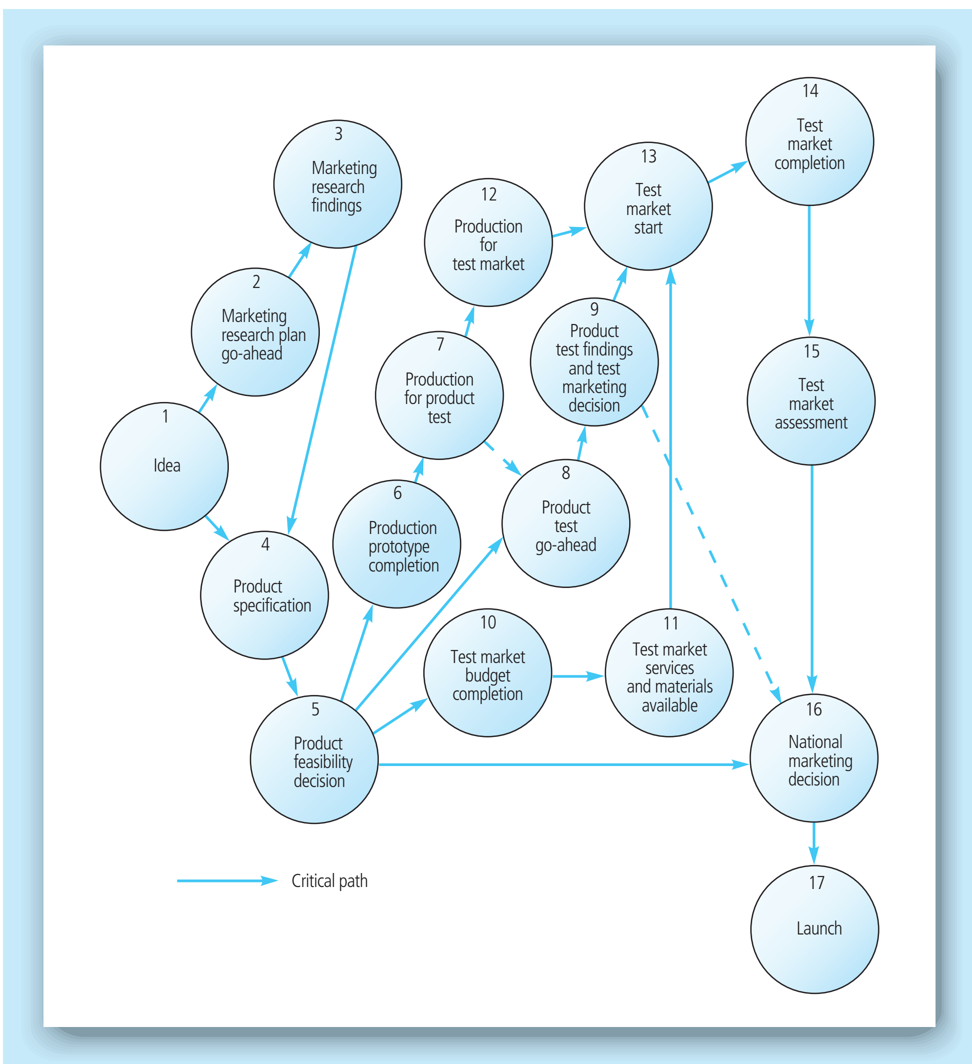


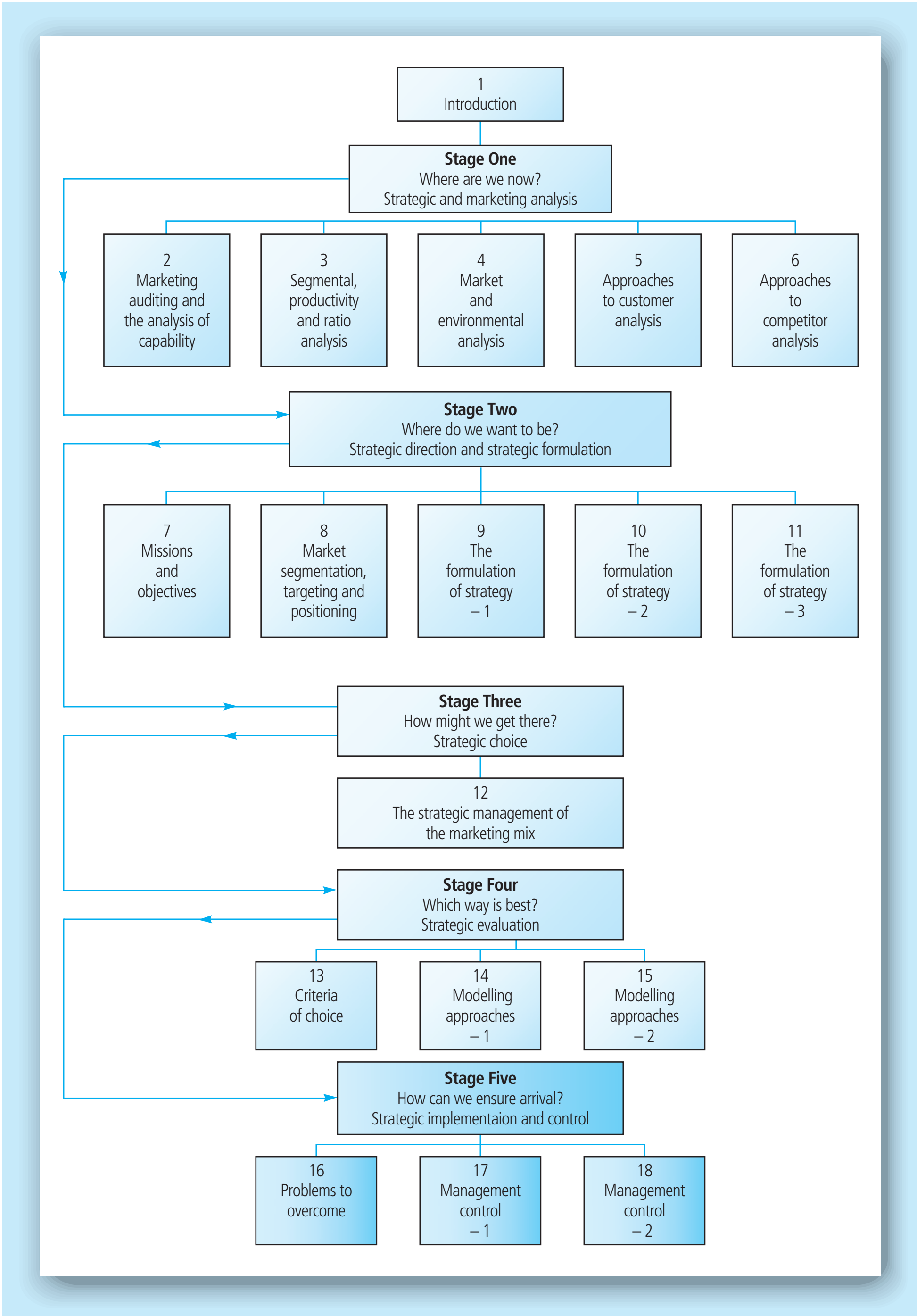
Figure 15.22 New product development network

15.7 Summary

Risk and uncertainty are inevitably present whenever choices need to be made among alternative claims on scarce resources. A variety of ways of accommodating risk and uncertainty have been discussed and illustrated, including probability analysis, sensitivity analysis, decision trees and, briefly, Bayesian analysis.

Some alternative matrix models were covered – the directional policy matrix, the multifactor portfolio matrix and the product positioning matrix – and their application to evaluating marketing plans illustrated.

Bonoma's MPA (marketing performance assessment) model warranted special attention as the most ambitious approach considered. It is still in the development phase, but holds great promise for the future. Finally, brief coverage was given to some further modelling approaches that can be used to test the robustness, feasibility and desirability of marketing plans: marketing experimentation, networking and programming.



1
Introduction
Stage One
Where are we now?
Strategic and marketing analysis
2
Marketing auditing and the analysis of capability
3
Segmental, productivity and ratio analysis
4
Market and environmental analysis
5
Approaches to customer analysis
6
Approaches to competitor analysis
Stage Two
Where do we want to be?
Strategic direction and strategic formulation
7
Missions and objectives
8
Market segmentation, targeting and positioning
9
The formulation of strategy – 1
10
The formulation of strategy – 2
11
The formulation of strategy – 3
Stage Three
How might we get there?
Strategic choice
12
The strategic management of the marketing mix
Stage Four
Which way is best?
Strategic evaluation
13
Criteria of choice
14
Modelling approaches – 1
15
Modelling approaches – 2
Stage Five
How can we ensure arrival?
Strategic implementaion and control
16
Problems to overcome
17
Management control – 1
18
Management control – 2

Stage Five: How can we ensure arrival? Strategic implementation and control

This stage of the book focuses on implementation and control. In this endeavour there are many problems to be overcome (e.g. relating to organizational as well as to environmental matters), which are discussed in Chapter 16.

Management controls to help in ensuring arrival are dealt with in Chapters 17 and 18. Some of these are social/behavioural in character, while others are analytical.

The successful implementation of strategy is neither easy nor widely discussed in the marketing literature. If implementation is left to compete with the internal pressures of coping with crises, reacting to competitors' actions, company politics, personal career needs, and so forth, it is likely to be swamped or disrupted.

The implementation of plans poses a fundamental dilemma, since to be effective it requires the reconciliation of two opposing forces: forces leading to organizational integration must be reconciled with forces leading to organizational segmentation (see Lawrence and Lorsch, 1967). In seeking to achieve this balance, it is helpful if:

1. The messages contained in the plan are communicated so that there is clear recognition of what the plan says
2. The plan is understood, so that all who need to play a role in its implementation are aware of what their roles are
3. There is consensus about the wisdom of pursuing the plan in order to secure commitment to its accomplishment.

A flow chart showing how a strategic marketing plan might be implemented is shown in Figure S5.1. This suggests that a number of key elements within the organization need to be matched with the plan. These elements are:

- ➡ Leadership
- ➡ Organizational culture
- ➡ Organizational structure
- ➡ Functional policies
- ➡ Resources
- ➡ Evaluation and control procedures.

There is a logical sequencing of the key elements, although in practice some may occur simultaneously or in a different order. Feedback loops are shown linking the elements in an iterative process (see McNamee, 1988, pp. 323–35).

No matter how competent the analysis behind the formulation of plans and strategies, it is only possible to outperform one's competitors if those plans and strategies are executed effectively.

This requires, inter alia, an overriding concern for quality. Japanese success in the post-war period is a clear testimony to the pursuit of quality, as reflected in the

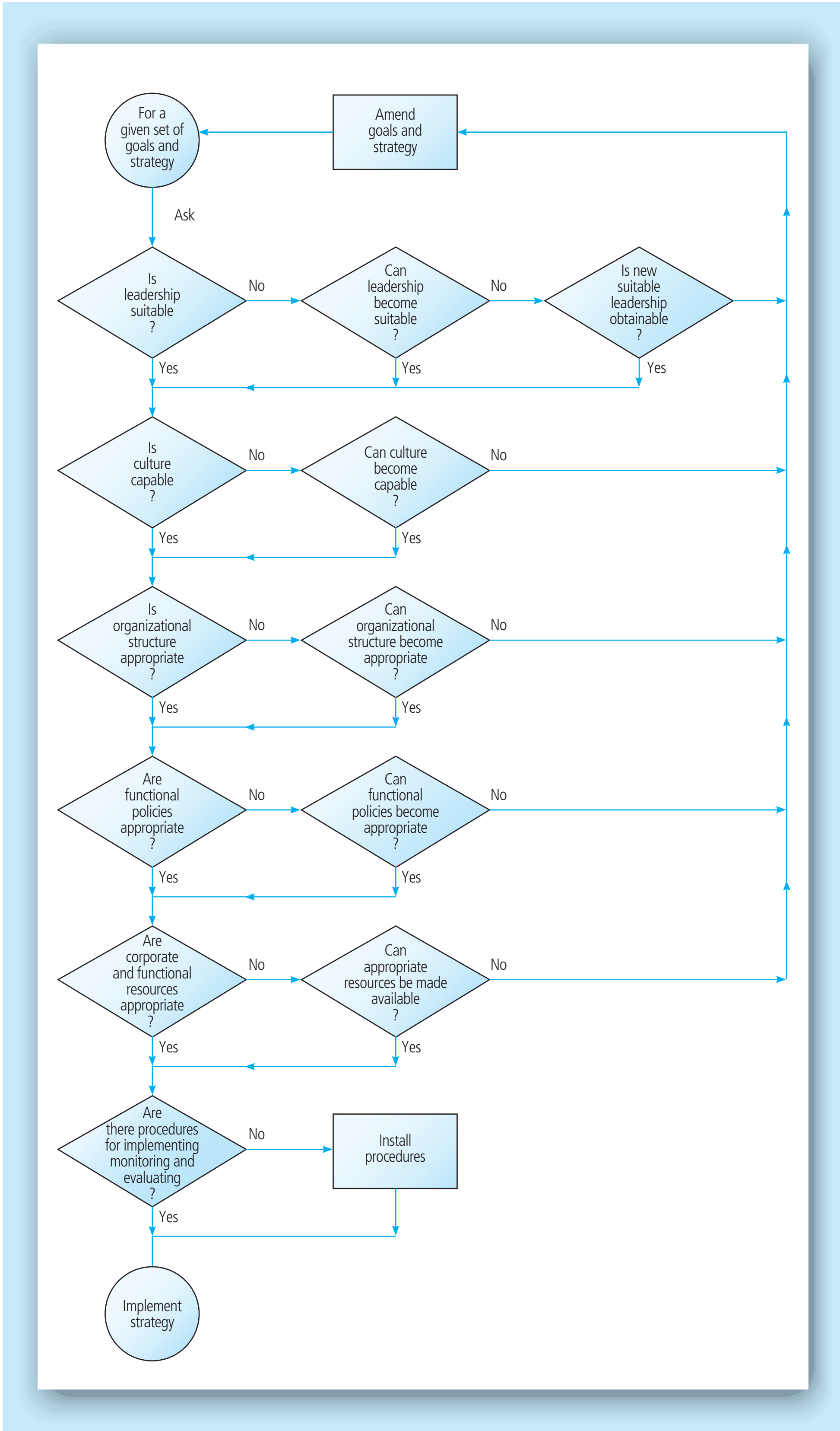


Figure S5.1 A flow chart showing schematically how a strategy may be implemented (source: McNamee, 1988, p. 323) pioneering work of W. Edwards Deming (see, for example, Mann, 1989). This success is built upon the notion of being 'right first time', which is much more than a catchy slogan: it implies providing exactly what is required by those using an organization's outputs. The *total quality management* (TQM) approach is built around this ideal.

Oakland (1989, pp. 14–15) defines TQM as:

> ". . . an approach to improving the effectiveness and flexibility of businesses as a whole. It is essentially a way of organizing and involving the whole organization; every department, every activity, every single person at every level. For an organization to be truly effective, each part of it must work properly together, recognizing that every person and every activity affects, and in turn is affected by, others."

A slightly different emphasis is offered in the definition put forward by Atkinson and Naden (1989, p. 6). They see TQM as being:

> ". . . a strategy which is concerned with changing the fundamental beliefs, values and culture of an organization, harnessing the enthusiasm and participation of everyone . . . towards an overall ideal of 'right first time'."

As Figure S5.2 shows, a variation on TQM can be used in a marketing context to attain BS 5750: Marketing Quality Assurance (or MQA).

In the task of implementing plans, it is helpful to consider the core skills that are needed if sustainable competitive advantage is to be achieved. These core skills are the critical capabilities that the organization must possess as distinct from the skills of individuals within the organization. This is not a trivial distinction, since individuals may come and go, but the organization needs to have core skills (such as effective training programmes, clear performance guidelines, well-designed information systems, and incentive schemes that generate high levels of motivation) to link planning and the successful implementation of plans.

A vivid example is that of Marriott Hotels. As with many hotel chains, the basic strategy is to go after business travellers with a level of service that is consistently excellent. However, the success of Marriott (as reflected in an occupancy rate that is some 10 points above the industry average) is to be found in its ability to implement the strategy in a superior way. This is achieved by institutionalizing among its 200 000 employees a fanatical eye for detail (e.g. maids follow a 66-point guide in making up bedrooms). The outcome is that Marriott Hotels is invariably at the top in customer surveys: the core organizational skill of excellent service gives a sustainable competitive advantage.

Another example can be taken from the fast-food sector. In 1968, both Burger King and McDonald's had less than 1000 outlets. By 1990, despite backing from its parent company, Burger King had increased its outlets to a total of only 5500 or so, while McDonald's had emerged as the clear industry leader with over 10 000 outlets and with sales growing at 13 per cent per year. The explanation is to be found in the core skills (see Figure S5.3). McDonald's had the competitive edge on all counts.

There are good examples to be found in the manufacturing sector as well as in the service sector, such as the VF Corporation (which makes Lee and Wrangler jeans,

Marketing needs new sales pitch

British companies need to wake up to what the customer wants. Staying ahead when hundreds of others are going under means taking a new look at quality and service, says **Ian Griffith**. ●

AT A TIME when the newspapers are full of stories about companies closing, there are two developments that encourage optimism.

First, there is a call from a number of chief executives for better performance in the market-place. This is a clear sign that the improvement of marketing and sales is accepted as a priority for business.

Second, quality is shaping up as one of the most important ways of staying ahead of competitors in the 1990s. Many leading companies are already on the road to total quality, where the need to identify and satisfy customer needs is given the highest priority.

The customer has not always been paramount in British business. Products have failed, not necessarily because they were poorly made but because they were not what people wanted.

The Japanese, on the other hand, have understood only too well for the past 20 years that the customer comes first. Before entering a market, they take pains to make sure they have a full understanding of customer needs and expectations. They also weigh up the competition. The Americans and the Germans have not ignored the Japanese lesson; they too are customer-conscious. If Britain is to maintain healthy businesses after 1992, it will also have to become much more market and customer focused.

The only way that this can be achieved is for companies to concentrate on improving marketing and sales effectiveness. Responsibility for this should lie with marketing departments, which not only have to represent the needs of the customer but also ensure that the company has the capability and commitment to satisfy demand with quality goods and services.

How well prepared are marketing and sales people to meet this challenge? In my experience, they are often not. Marketing is still treated by too many companies as a tactical discipline that is involved with publicity and promotion as opposed to a business philosophy that is concerned with how the whole company deals with its customers.

When competition is intensifying, this is a serious issue. Marketing must represent the customers' viewpoint as well as interests in the company boardroom.

However, reforming attitudes, ideas and quality within companies raises the questions of how people achieve such goals, how they measure that achievement and how they can maintain those standards.

The British Standard BS 5750 set out the principles for product quality a decade ago, but it did not lay down how companies should identify and meet customer needs and expectations. Could those standards, which have attracted about 12,000 registrations from British companies, be applied to marketing? It was with all this in mind that the concept of Marketing Quality Assurance (MQA) was developed.

MQA, launched last October, is a third-party certification body that assesses the quality of marketing, sales and customer service in companies. It awards a certificate of excellence, and the right to use the MQA mark, if companies achieve the required standard. This is a way of signalling that the certified company is one that has independent recognition, and is a sign of marketing excellence to customers, competitors, employees and potential employees.

The specification, which is an international first and based on good practice, took five years to research and develop. An important consideration in drafting the 58 requirements in the specification was to ensure that companies were aware of the need for high-quality marketing and sales people and also understood their aspirations.

Findings showed that the most successful people are those who are able to provide a disciplined and well-planned approach based on a real understanding of the market-place and competition. They are good communicators who are able to co-ordinate the work of all parts of the organisation concerned with meeting and satisfying customer needs.

Perhaps most important, they are people who can provide a creative and innovative approach, which has become vital in differentiating one organisation from another.

MQA has captured all of these needs through its specification which covers: business plans; review of market needs; marketing and sales planning; marketing and sales operations; customer assurance; purchasing of marketing and sales services; resources, personnel, training and organisation structure; quality policy, systems, control and procedures, records and audit.

MQA's specification is an associated document to the International Quality Standard ISO 9000 and therefore – as a third-party certification organisation – can grant registration to ISO 9001, EN 290012 and BS 5750 Part 1 for a company's marketing, sales and customer-assurance activities.

So the stage is set for another big step forward as the marketing enlightenment of the 1980s becomes the quality assured marketing of the 1990s.

Early indications would suggest that many chief executives acknowledge the considerable extent to which MQA registration moves their companies towards the ultimate goal of total quality, as well as providing improved marketing effectiveness.

More than 25 companies have applied for registration, with organisations such as Kodak, Sorbus, Newcastle Breweries and Southern Electric already well down the track.

There are those, however, who imagine that a formal set of standards would bring too much bureaucracy to the essentially creative business of marketing. This is not so, for marketing is more than coming up with bright ideas; it is putting those ideas into practice and making sure they work.

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Figure S5.2 Marketing quality assurance (source: *The Sunday Times*, 7 July 1991, p. 4.13)

Core skills	McDonald's	Burger King
Site selection	'Penchant for finding the *plum*'	'Generally good locations'
High-quality service	'*Unparalleled* consistency'	'Suffers from operational sloppiness'
Product innovation	'A *knack* for product development'	'Spotty record with new products'
Communications	'Surrogate man'	'Comes off as aggressive, masculine and distant'

Figure S5.3 Contrasting execution of core skills (source: Irvin and Michaels, 1989, p. 7)

Jantzen swimsuits and Vanity Fair lingerie). The strong position of this company over the last 10 years is largely due to:

- High quality at competitive prices, thus offering superior value to consumers;
- Accurate forecasting, which means lower inventories, fewer stockouts and less plants than most competitors
- Managing the risk that is inherent in the clothing industry by means of a focused and disciplined approach to the development of new lines.

It is important to recognize that identifying and creating core skills is far from easy. Both organizations and individuals develop particular ways of doing things, and managing the process of change may require that the behaviour of thousands of people be changed in dozens of different locations. If success depends on it, then this nettle must be grasped. The approach adopted in grasping it will influence how effective the outcome is likely to be. For example, employees are more likely to show a willingness to accept change if they have a clear understanding of what is required of them, coupled with the assurance that there is some latitude for them to exercise judgement. This can be built in to the following steps en route to developing core skills:

1. Establish a clear link between the chosen strategy and the required core skills, such as quick delivery requiring excellent distribution facilities
2. Be specific as well as selective in defining core skills, so that employees will know what to do and how to do it, but in a focused way (e.g. covering no more than five core skills)
3. Clarify the implications for pivotal jobs (hence recruitment and training requirements, support systems, reward schemes, etc.)
4. Provide leadership from the top, since the single most powerful discriminating factor between success and failure in developing core skills is the degree of top management involvement
5. Empower the organization to learn, which requires that individuals within the organization have scope for learning by doing – thereby seeing what works and what fails to work in building core skills through which strategies can be successfully implemented.

While a number of authors have written on the implementation of strategy (e.g. Lorange, 1982; Bourgeois and Brodwin, 1984; Nutt, 1987, 1989; Reed and Buckley, 1988; Reid, 1989), or more specifically on the implementation of marketing strategy (e.g. Spekman and Grønhaug, 1983; McTavish, 1989; Piercy and Morgan, 1989a, b, 1990), as pointed out earlier there is relatively little guidance available on this important theme. Outstanding strategies are worthless if they cannot be put into effect, as Piercy and Morgan (1990, p. 20) state:

"In short, the . . . reality the marketing executive faces is that implementing plans and strategies successfully is often dependent on managers and employees who are far removed from the excitement of creating new marketing strategies – people like service engineers, customer service units . . . field sales personnel, and so on."

The same authors (1989a) give examples of a museum failing to deliver a theme park strategy because employees cannot change from being 'policemen' to 'entertainers'; marketing strategies that rely on customer service failing because of employees' negative attitudes at the point of sale; and strategies based on integration and divisional cross-selling foundering because nobody recognized the human costs of change. It is not enough to develop marketing plans by focusing exclusively on customers, competitors and distributors (all *outside* the company) and ignoring those *within* the company. Almost all plans involve substantial human and organizational change: this requires 'internal marketing', which has goals such as to:

- Gain the support of key decision-makers and facilitators
- Change attitudes among those employees who deal with customers
- Obtain employees' commitment to making the marketing plan work by involving them in the 'ownership' of the plan and by rewarding them on the plan's attainment
- Train staff to allow them to develop new skills that will contribute to the effective implementation of plans.

Training (or management development) has been enthusiastically promoted (e.g. Hussey, 1985; Brache, 1986) as a means of implementing plans. It was suggested by Hussey (1985, p. 32) that training can contribute to some of the problems of strategy implementation identified by Alexander (1985). Of the ten most frequently encountered strategy implementation problems in US organizations, training can probably help with the top six (Figure S5.4).

Bonoma and Crittenden (1988) have put forward a well-considered case showing that the successful implementation of marketing plans results from the interaction of structure and skills. In this context, *structure* is seen to consist of:

- Actions
- Programmes

Problem	Percentage of enterprises reporting problem
1 Implementation took more time than originally allocated.	76
2 Major problems surfaced during implementation that had not been identified beforehand.	74
3 Coordination of implementation activities was not effective enough.	66
4 Competing activities and crises distracted management from implementing decisions.	64
5 Capabilities of employees involved were insufficient for the task.	63
6 Training and instructions given to lower-level employees were inadequate.	62

Figure S5.4 Implementation problems (adapted from Alexander, 1985)

- ➡ Systems
- ➡ Policies

as portrayed in Figure 15.16. Managerial *skills* embrace:

- ➡ Interacting
- ➡ Allocating
- ➡ Monitoring
- ➡ Organizing.

Through a series of discussions with managers involved in implementing marketing plans, Bonoma and Crittenden derived an interesting set of propositions concerning the relationship between structure and skills. These propositions are as follows:

1. There is normally a tension rather than a synergy between the enterprise's marketing structures and the skills of its managers. Whether this tension is productive or harmful depends on environmental factors.
2. The interaction between marketing structures and management skills is partially predictable using the rate of market change.
3. In low-change markets, structures and their associated systems dominate skills. Quality marketing practices result more often, and more cheaply, when strong systems and weak management skills are combined.
4. In high-change markets the reverse is true. Enterprises with weak structures and highly skilled managers get more desirable marketplace results, more cheaply, than do enterprises having strong structures.
5. The complexity of tasks that marketing faces suggests whether structure or skills should dominate.

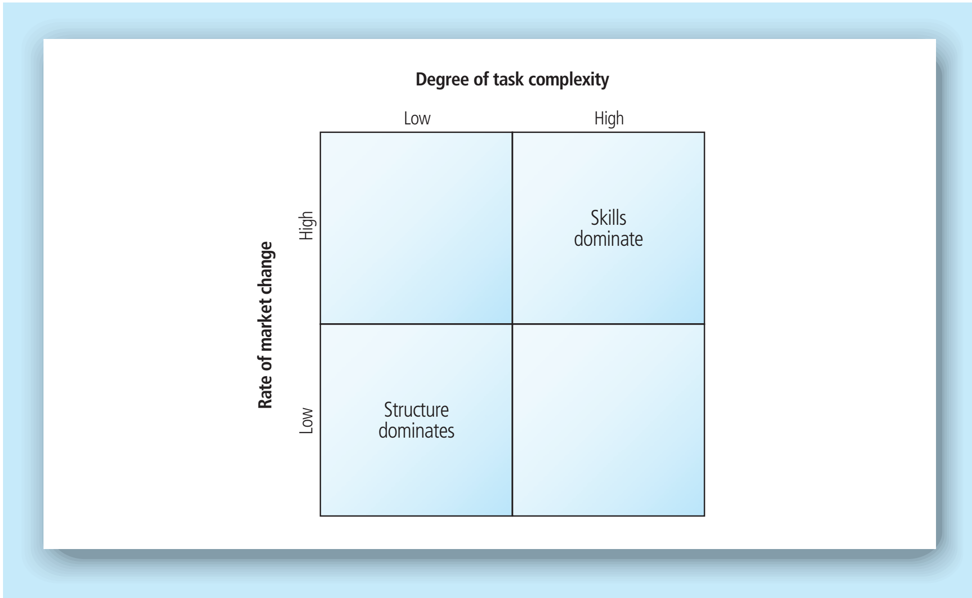

Figure S5.5 Structure/skills dynamics (adapted from Bonoma and Crittenden, 1988, p. 12)

6 Routine, repetitive tasks (i.e. low complexity) are done more efficiently under strong structures with less strong execution skills.

7 Highly complex tasks require stronger execution skills and a weaker structure.

Propositions 1–7 can be portrayed diagrammatically (see Figure S5.5). If strong structures exist in circumstances characterized by rapidly changing markets and complex tasks, it is likely that the enterprise's ability to adapt quickly to market needs will be constrained by rules and procedures. Conversely, if skills are dominant in a situation involving low market change and low task complexity, the enterprise will be unable to increase its efficiency by relying on standard operating procedures.

Propositions 2–4 can be linked to phases of the PLC via a further proposition:

8 In the turbulent periods of the PLC (e.g. introduction, rapid growth and, subsequently, maturity/decline), management skills will dominate execution structures in

External marketing – strategy and tactics	Internal marketing – operations
External focus: setting direction	Internal focus: attaining direction
Effectiveness: doing the right thing	Efficiency: doing things right
Designing the plan	Executing the plan
Commits resources	Uses resources

Figure S5.6 Strategy/tactics and operations (adapted from Kotler et al., 1985, p. 245)

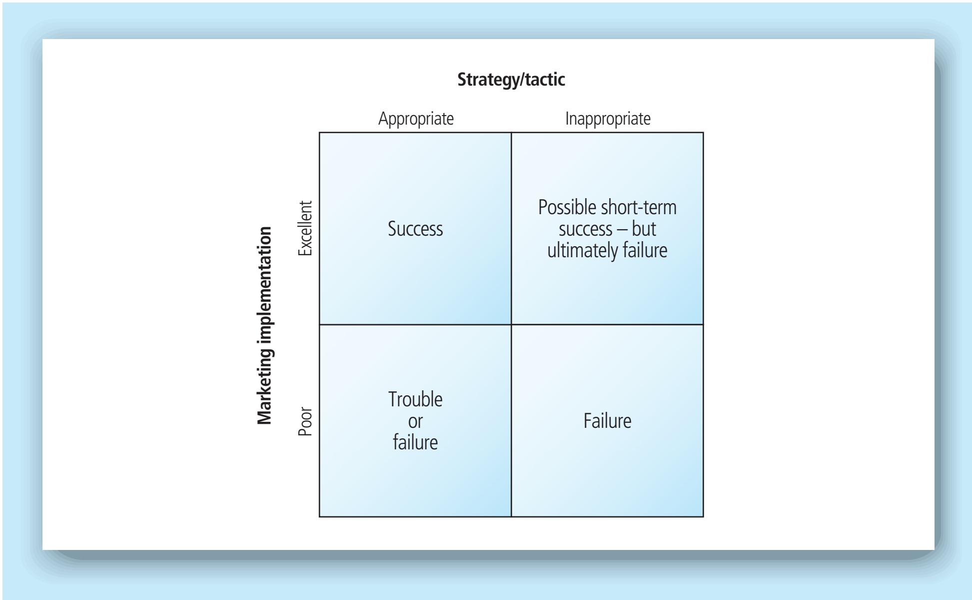

Figure S5.7 Consequences of strategic and tactical implementation (adapted from Bonoma, 1984, p. 72)

those enterprises performing better than average. In the more stable phases of the PLC, structures will dominate skills.

The idea of balancing 'external' and 'internal' marketing in the implementation of marketing plans is portrayed in Figure S5.6. This shows the distinction between strategy and tactics (developed with an external focus) and their implementation (via operations). However, part of the strategic thinking must be to ensure that those who will be responsible for carrying out operations are properly equipped for their tasks. If this is not the case then implementation will be poor, and failure is likely to result. Figure S5.7 offers the logical possibilities. Failure will follow whenever either the strategy/tactics are inappropriate or the implementation is poor.