Rather than compromise a key objective, parties should look for things which they could do for their opponent, activities that would benefit each party, rephrasing of position so others can also consider alternatives. Take a break before agreeing to compromise, a short period to relax or continue discussions informally can help free up the mind for other alternatives.

Obliging, accommodating and giving up (low assertiveness, high level of co-operation)

While one party gives up something, they receive nothing in return. Thoughts that motivate such action include 'there is little positive to be gained from engaging in the conflict' and 'the encounter will be stressful, emotional and uncomfortable'. Although such action may help short-term group relations, there is little benefit for the obliging party. Such behaviour results in increased pressure on the individual. Repeatedly failing to gain successful outcomes from conflicts may threaten resources and job security. Such action should only be used where something is gained in return.

Collaborating and integrating (high level of assertiveness and co-operation)

This style is characterised by assertive interaction that is used to increased participation, helping to ensure that individual and group objectives are maintained. Integrating strategies have a greater potential for win–win type outcomes. Through interaction, conflict, challenges and evaluation, parties explore a range of suggestions, other than just those initially proposed. The members search for solutions that have benefits for all. The process means that parities must explore the issues to identify underlying concerns and attempt to find mutually acceptable solutions. Such behaviour challenges immediate incompatible proposals. In the long-term, the parties learn from each other and have a better understanding of each other's perspectives and insights. Although the initial levels of emotional debate tend to be high, the process avoids stress that results from long-term disputes. The benefit of the solution tends to result in member satisfaction that reduces long-term tension and strengthens relationships.

Three dimensions of conflict management

While the grid developed by Kilmann and Thomas (1975) is useful, Gorse (2003) found that when conflict emerged and was managed in task groups members did not only balance concern for self and others, they also had to consider the task. Gorse proposed that there are three main dimensions to conflict that need to be balanced when attempting to manage conflict. Long lasting, strong working relationships would be developed by parties who have a high concern for others, high concern for the task and high concern for themselves (Figure 6.5). The group task needs to be achieved, people need to undertake their own activities and co-operate with others so that they can achieve their individual goals. By working together the individual goals of all of the members and the group goal is achieved.

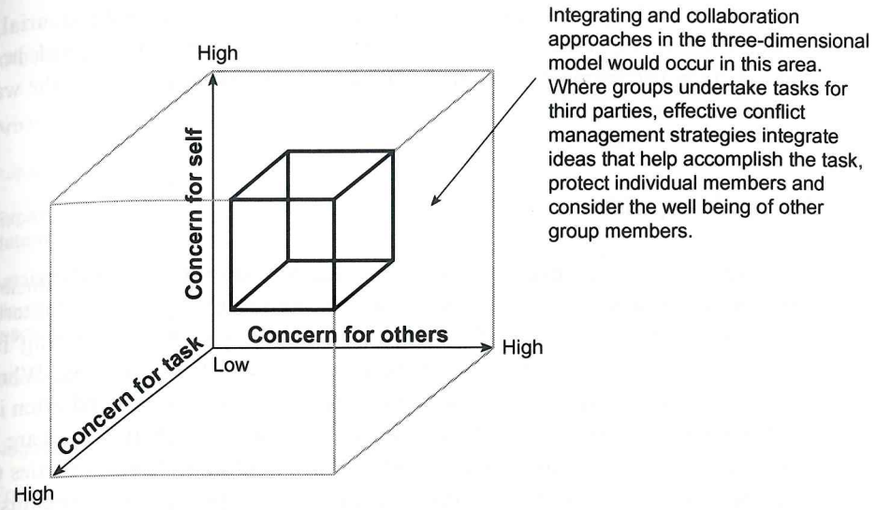


Figure 6.5 The three-dimensions approach of conflict management (Gorse, 2003, p. 180).

Conflict management and construction

Loosemore *et al.* (2000) claim that construction professionals should be encouraged to engage in functional conflict and that an indiscriminate attempt to reduce conflict in construction incurs an opportunity-cost for clients and professionals. Their research, which focused on the construction phase and conflict between the contractor and architect, and contractor and subcontractor, found that the contractors' attitudes were receptive to functional conflict, although not as strongly as they originally thought. The findings suggest that most conflicts were managed by exploring alternative solutions, different perspectives, and encouraging all participants to engage in discussions and co-operate. Such behaviours were believed to be most likely to result in win–win solutions. However, a considerable proportion of the conflict-handling style used by the construction managers was not considered to offer such positive benefits. Too much emphasis on compromising, and obliging by the site manager, restricted the potential development of mutually beneficial solutions. While site managers are often considered to be unco-operative and lacking in concern for others, the style of conflict management that was least used was the dominating style, which places concern for self before others.

The conflict management behaviour observed by Loosemore *et al.* is not uncommon in work groups. Work by Farmer and Roth (1998) who examined a range of student and work-groups found that the most common conflict management strategy used was collaboration (integration), followed by accommodation (obliging), compromise, competing and the least used style was avoiding. While

many anecdotal reports suggest that the construction industry is adversarial, much of the research suggests that the way conflict is handled is rather typical; however, the research also shows that there is considerable room for improving the way that conflict is managed.

Conflict and disputes

A distinction is often drawn between conflict and dispute. Conflict exists where parties have different understandings and perspectives, or differences of interest and opinion. In this context conflict can be managed, possibly preventing it from becoming a dispute. Disputes occur as a result of conflict escalation. Where differences are unresolved, matters often become adversarial, formal and often involve additional third parties (legal representation). In situations where parties are unable to resolve their differences they enter into a dispute. During disputes parties tend to communicate in a defensive manner, attempting to protect their organisation's interests. Disputes rarely result in a satisfactory outcome; in major disputes parties invest considerable time and resources defending their case, and legal and technical experts may be employed in an attempt to show who is right and who is wrong. Little time is devoted to moving practical matters forward or rebuilding relationships, and at the end of the dispute one or both of the parties will have to pay for any additional dispute services and methods used.

Emmitt and Gorse's (2003) model of conflict management strategies (Figure 6.6) illustrates the problem of not dealing with conflict early. As those engaged in conflict move from conflict management to the more extreme litigious methods of dispute resolution, the involvement of third parties increases and the potential cost of the original conflict escalates. Projects are delayed and costs increase as the dispute becomes more serious. The involvement of third parties does little for the performance of the project.

Figure 6.6 shows a number of methods for resolving disputes. The complex multidisciplinary nature of the construction industry has a reputation for being adversarial. A considerable number of cases are taken to Court every year. In recent years there has been increased emphasis on alternative dispute resolution (ADR) methods such as mediation and adjudication. With the introduction of the Housing Grants, Construction and Regeneration Act (1996) a process to refer disputes to adjudication should be written into all construction contracts. This has considerably increased the number of disputes being settled by adjudication rather than litigation.

The following list provides a brief outline of processes that can be used to resolve disputes.

- *Informal discussion*. An informal meeting can be useful to resolve many disputes. The lack of formality can encourage parties to talk openly.
- *Formal recorded meetings*. Formal discussions may be used to bring matters to a head. Holding a formal meeting lets the parties know that the situation is being taken seriously. However, when matters become formal and are recorded, parties are much more guarded about what they say.
- *Negotiation*. Rather than adopting a formal meeting, a forum may be set up so that the parties can attempt to find a way out of the problems, look for mutual benefits that can be gained from resolving the problem in a different way, or the parties may look for compromises in order to overcome the problem.
- *Mediation*. Where a relationship has broken down or experiences difficulties, a mediator can be brought in to help discussions. By listening to each side a mediator attempts to find a way out of the problems, looks for mutual benefits or helps the parties to rebuild the relationship. Having a third party to listen to one party, then transfer information to another party, helps to convey logical and rational information without negative emotion.
- *Expert determination*. If a dispute has arisen over a specialised or technical matter an independent expert can be appointed to make a decision or advise the parties on the matter.
- *Adjudication*. Under the Housing Grants, Construction and Regeneration Act (1996) all construction contracts have a clause that refers disputes to adjudicators. If a construction contract does not have an adjudication clause the Scheme for Construction Contracts applies, which means that disputes are referred to adjudication. Adjudicators are appointed under the terms of a contract to listen to the parties and make a decision within a short time (28 days in construction contracts). Generally, the costs of adjudication are considerably less than arbi-

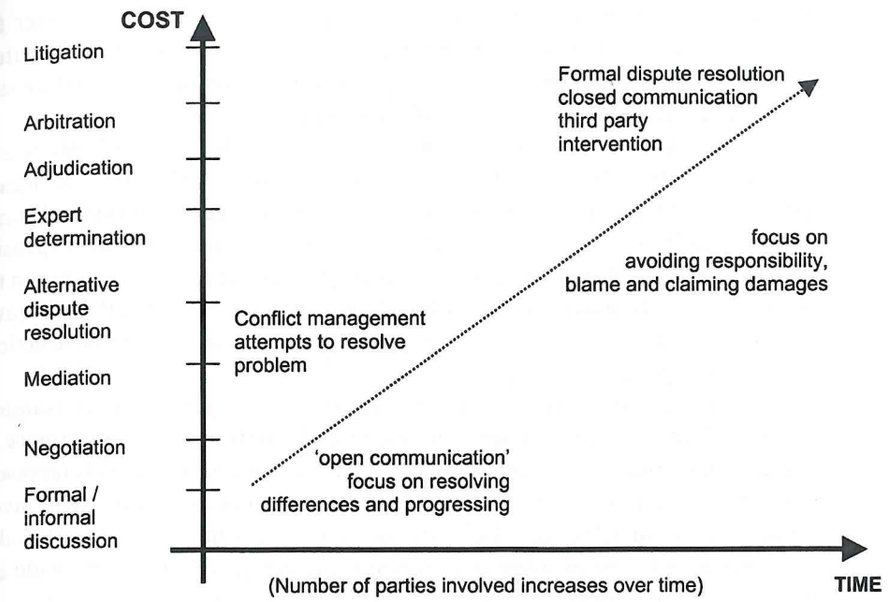


Figure 6.6 Conflict management strategies against time and cost (Emmitt and Gorse, 2003, p. 167).

tration or litigation. The decision of the adjudicator is enforceable under the terms of the contract. The process is private and information about the dispute is not reported to the general public. Adjudicators' decisions are binding and enforceable, at least until they are referred to Court.

- *Arbitration*. Arbitration is governed by the Arbitration Act 1996. Where disputes are referred to arbitration the processes governed by the Act are legally enforceable. During the arbitration process, which can last a considerable time, experts and lawyers can represent the parties. Arbitration can be an expensive process, but it is a private process and information about the dispute is not in the public domain. One advantage of arbitration over litigation is that the arbitrator can be appointed from a technical profession (e.g. engineering or construction) rather than a legal profession.
- *Litigation*. Referring matters to Court can be very costly and time consuming. Judges adopt strict procedures and ensure each party has an opportunity to present and defend their case. Lawyers, solicitors and barristers will represent most parties and experts may be called and cross-examined. Third party involvement is considerable and the costs associated with litigation are often disproportionate to the problem first presented; however, the decisions made are final, subject to appeal.

Summary

Within highly complex industries such as the construction industry, conflict needs to be embraced and managed. Conflicts should be exploited so that benefits are gained, but must also be managed so that relationships do not suffer. In the event that conflict results in a dispute, consideration should be given to the type of dispute resolution process that is most appropriate. In order to obtain a satisfactory resolution the parties involved in the process should be selected with care. Issues such as legal and technical expertise required and the extent of third party involvement must be properly considered before entering any such process.

Conflict management exercise

There are a number of factors that should be considered when engaging in conflict management. Different situations require different approaches. Using the conflict management profiles (Figure 6.8) each member of a team or group can complete the charts to provide an indication of how they believe they and other members behave in groups when dealing with conflict. The charts cover such things as aggression, assertiveness, intuition, support, relationships, etc. The charts can be used to provide two different perspectives of a person's conflict management techniques: a self perception and perceptions from other members of the group. Once the charts are completed, the individual self perceptions can be compared

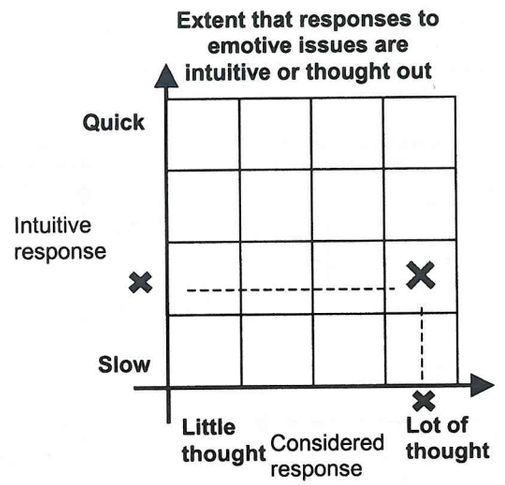


Figure 6.7 Example of completed conflict management profile.

and cross-examined against the perceptions that other members provided for the same person.

The charts do not provide an answer to how conflict should be managed – they provide an insight into different approaches that can be used. Through group discussion and evaluation the charts can be used to uncover the perceptions and observations of conflict management behaviour. Group discussions that follow the completion of the charts can be used to enquire as to the reasons why people behave the way they do and what they believe they will achieve by their actions.

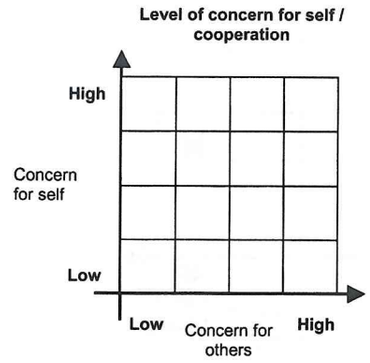
In addition to the charts that look at conflict, there are also some charts which collect information about the nature of the group and the relationships. These factors should also be used to promote discussion. Conflict and conflict management may be context dependent and a cross-examination of behaviour and context may reveal that different techniques are more or less likely to work in different situations.

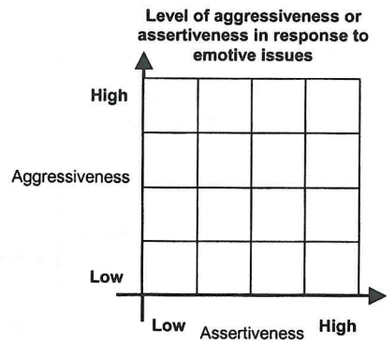
The charts can be used following a particular group experience where a level of conflict or disagreements emerged. It may also be useful to consider groups where conflict did not emerge as members of the group may believe that personal and group management techniques were used to such effect that conflict did not manifest.

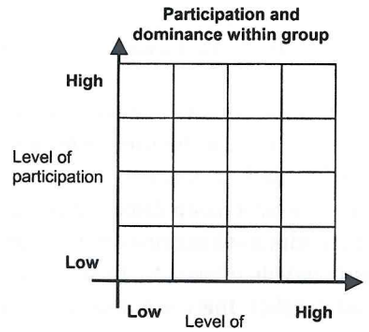
An example of how to complete the charts when doing a self perception (how you think you behave) or perception of the behaviour of others.

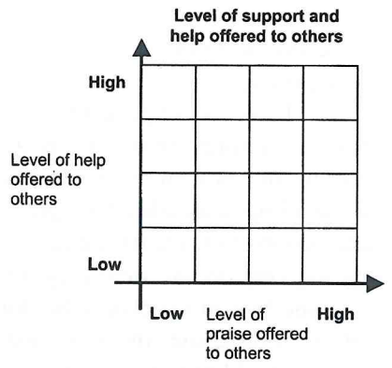
1. Read the statement at the top of the chart
2. Read the statement on each axis (Fig. 6.7).
3. Place a mark in the position that relates to your behaviour or the person being observed (see crosses in Fig. 6.7).

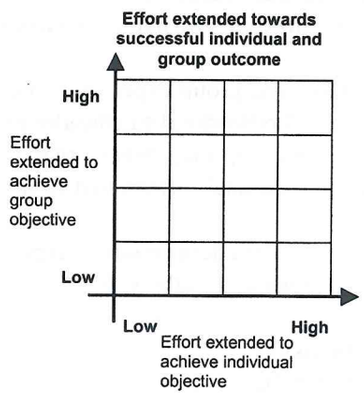
Group member name or ID _____
Self perception Yes / No.
Charts completed for group member (Name or ID)_____











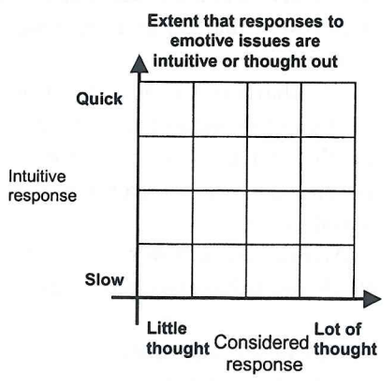
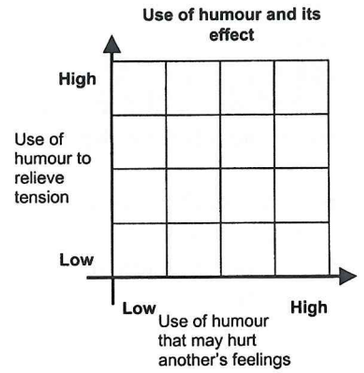
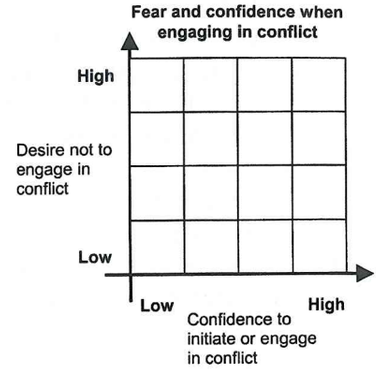
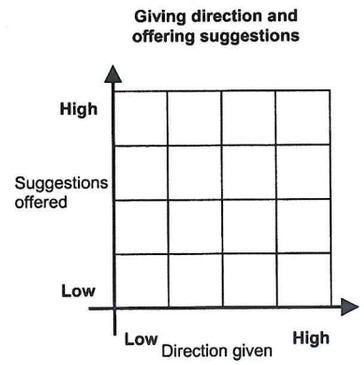
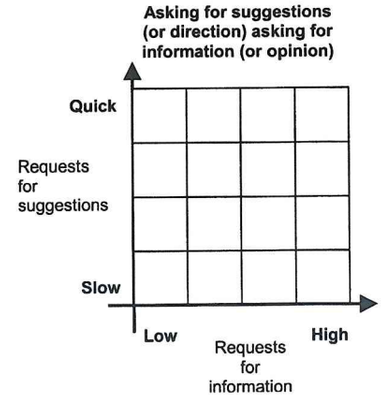


Figure 6.8 Conflict management profiles.

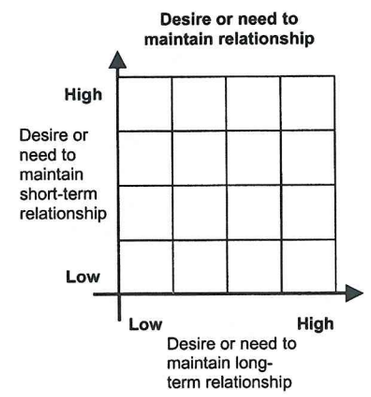








CHARTS THAT RELATE TO CONTEXT AND RELATIONSHIP



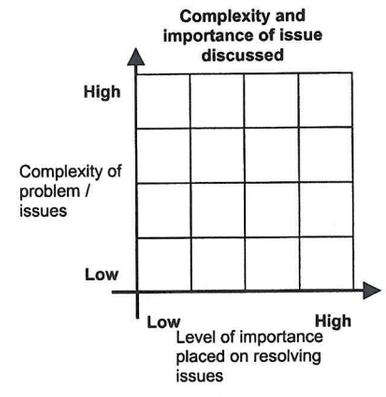


Figure 6.8 Conflict management profiles (*continued*).

4. Each person should complete the charts based on their perceptions of themselves and other members in the group.
5. It is expected that perceptions may vary.
6. Once all the charts have been completed, collect them together.
7. The differences between self perception and other members' perceptions can be discussed.
8. Then the positive and negative aspects that each person may bring to engaging and managing a conflict episode should be discussed.
9. The discussion should then consider whether the effectiveness of the techniques uncovered would vary depending on context.

Chapter 7
Individual/Group Behaviour and Teamwork

Personality and individual behaviour

The manager needs to understand what affects people's behaviour and performance at work: why people are sometimes hard working, lazy, trusting, miserable or content.

This behaviour is partly determined by *personality*, the set of characteristics by which we recognise a person's uniqueness. These characteristics are relatively enduring, but aspects of an individual's personality may change as a result of experience or circumstances.

We tend to label people as types – friendly, hostile, domineering, shy, etc. – because they have a general disposition towards certain kinds of behaviour. But in fact they behave quite differently in different situations. This is because their behaviour is affected by interaction with others and by the setting. Interestingly, people tend to describe their own behaviour in situational terms, but label others in terms of their personality.

Although some people are more rigid than others, most psychologists now agree that personality is not a fixed set of attributes. They see personality as dynamic rather than static. It depends partly on inherited factors, but is heavily influenced by the individual's experiences.

Individuals and groups

There are also *organisational* factors which influence the individual's behaviour – the structure of jobs, the tasks performed and the group to which the individual belongs.

Individual behaviour is strongly affected by the workings of groups, and managers must understand group processes if they are to manage effectively. Organisations use groups to fulfil most of their purposes. Through gangs, project teams, committees and meetings, organisations distribute tasks and responsibilities, organise and monitor work, reach decisions, solve problems, gather and exchange information, test out ideas, negotiate and settle conflicts, and agree terms and conditions.

It is now widely accepted that individuals will behave differently, and even change

their ideas and beliefs, if they are members of a cohesive group. Groups can therefore exert more influence over an organisation than individuals can. Yet firms pay much more attention to individuals than groups – through career plans, staff appraisals and the like. In construction, project groups are difficult to monitor, because their composition changes so quickly.

Primary and secondary groups

One of the distinctions used by those who study groups is between small groups in which the members have some common bond or direct relationship, and larger groups in which the link is more tenuous or indirect.

The term primary group is used to describe those groups in which there is intimate, face-to-face association and co-operation. There is a certain fusion of individualities so that, in many ways, the group shares a common life and purpose.

A primary group is relatively small and its members all have close contact with one another. This can be said of a bricklaying gang or a group of buyers sharing an office. It cannot be said of a building firm or a trade union. The latter are secondary groups. Members of these larger groups are aware of a bond between them, but the link is weaker.

Every group has ways of dealing with differences among its members. In secondary groups it is through rules laid down, often in writing, and modified as conditions change. In primary groups, it is largely through unwritten rules or norms. These are also modified through time. Primary groups and their norms are very important to the manager who wants to be effective.

Developing group performance

It takes time for a work group to become efficient. The group's task has to be defined; responsibilities have to be shared out; conflicts between people and between goals have to be resolved; norms have to be worked out. Group members have to resolve two major problems simultaneously:

- How to handle the *tasks* they have been given.
- How to come to terms with one another as *people*.

In a semi-permanent group, this process can take many months (even years), depending on the group's size, membership and task. In construction, project groups have to gel very quickly – within days or weeks. Moreover, these groups alter their composition as the project moves through its lifespan. Every time people leave and others join, there is a period of adjustment, both for new and existing staff.

A further period of adjustment occurs just prior to project completion. Output falls away sharply, feelings of uncertainty develop and there is some nostalgia. The manager's aim in construction must be to get temporary groups into their cohesive, *performing* stage as quickly as possible and keep them performing.

Group cohesiveness

Group cohesiveness is the degree of solidarity and positive feelings held by individuals towards their group (Stoner *et al.*, 1995). One of the earliest researchers of group behaviour, Michael Argyle, described a cohesive group as one in which the members like each other, enjoy being part of the group and co-operate over group tasks. He noted that there was more conformity among members of cohesive groups and that members tended to spend more time with the group.

Mullins (2002) has summarised the factors which appear to influence group cohesiveness:

- *Membership* – the size and permanence of the group; the compatibility of members.
- *Work environment* – the kind of task; the group's physical setting; communications and technology.
- *Organisational factors* – management and leadership; personnel policies and procedures; success; external threats.
- *Group development and maturity* – the stage the group has reached in the development of task performance and group relations (agreement on norms, for instance).

Argyle argued that the amount of interaction among group members and the length of time they stay in the group are also important for cohesiveness to develop. This is an interesting point, because project organisations are made up of teams which change their composition and either meet infrequently or spend a lot of time working apart, whereas the project team members – architect, QS, engineers and so on – spend relatively little time together.

Group cohesiveness is important. It leads to greater interaction among members, creates a climate of satisfaction and co-operation, and can result in lower absenteeism and labour turnover (Argyle, 1989). These factors can lead to high productivity. But there can be problems if group members are cohesive simply because they are all alike. Belbin (1993, 2000) and others have argued that groups need to contain a mix of different types of people, because effective group work requires a range of different skills and behaviours.

Satisfaction, group cohesion and performance

While groups must build and establish networks and relationships, they need to deal with the task in hand. Many studies have shown that effective groups need to balance task and social interaction. Discussing tasks and proposed solutions in a critical way will have an emotional effect on others. This may weaken relationships. Where criticism is raised, supportive communication may need to be used to maintain the professional relationships. However, it is also difficult to criticise close friends. Where relationships become too close, the functional conflict that is

necessary in problem solving may be reduced. Groups that are often too cohesive can suffer a reduced productivity due to the amount of social interaction that takes place. Cohesive groups may suffer from groupthink, being reluctant to challenge others when they disagree with their ideas, proposals and suggestions. A balance needs to be struck between the degree of social and task based interaction (see Figure 7.1).

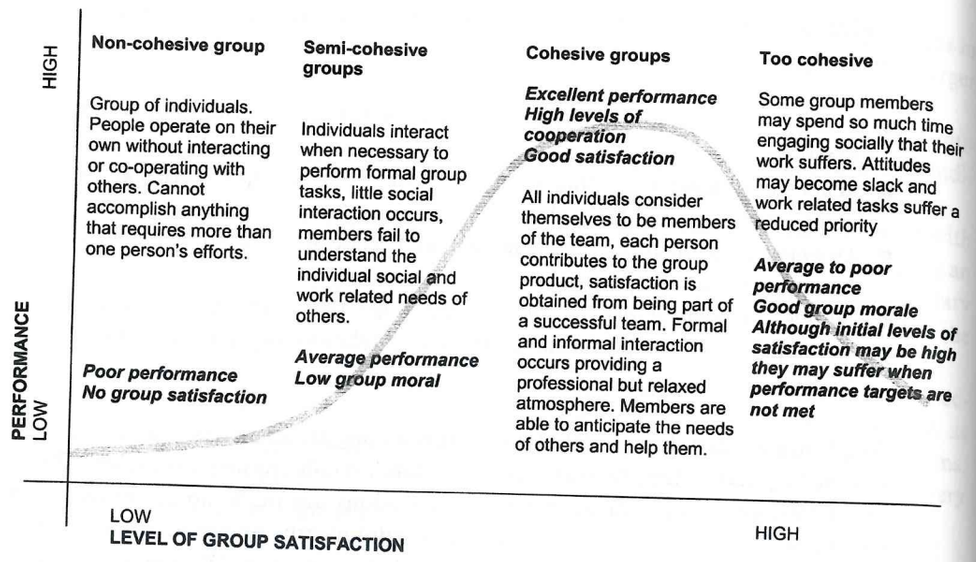


Figure 7.1 Satisfaction, group cohesion and performance.

Norms

Norms are shared attitudes, shared ways of behaving, shared beliefs and feelings within a group. They encourage the conformity and predictability which are important in any task needing co-operation. For any group to be effective, there must be some measure of agreement about what has to be done, and how.

There are norms about:

- *The work*. The best methods, how fast to work and what standards to aim for.
- *Attitudes and beliefs*. Management, unions, the importance of the group and how satisfying the work is.
- *Behaviour*. Co-operation, sharing things, what jokes to tell and where to go for lunch.
- *Clothes and appearance*. How to dress at work and outside work; the wearing of safety helmets and protective clothing.
- *Language*. Use of technical jargon, slang and bad language.

Norms develop as the group tries to solve its social and work problems. The more dominant members have most influence over norms. People new to the group have little impact and tend to shift their behaviour towards the norm.

This shift towards group norms can occur because:

- individuals are under pressure from other group members to conform; if they don't, they may be ignored or rejected;
- individuals think the majority view must be right, especially if the others are more experienced or have been found to be right in the past.

Some people conform more readily than others. People who have a strong need for belonging conform more readily than those who are independent. When people's goals or beliefs are far removed from those of the group, they are more likely to deviate from its norms. Authoritarian people tend to conform more than less rigid types.

Norms take time to evolve and must be reasonably well settled before the group can perform effectively. This is important in construction. With new projects, norm-building often starts from scratch and the norms may change as the composition of groups alters over the project's life-cycle. Many contractors try to keep certain key staff together when they move them from project to project, to speed up the process of getting groups working effectively.

Group norms represent the standards of conduct of the group. It is difficult for the members to operate effectively unless they can be reasonably sure what responses they can expect from their colleagues. Of course, groups vary in the 'tightness' of their standards; some are much more free and easy than others. Some members are tolerated even though they don't always conform. But without some agreement between members about what they will and will not tolerate, the group would find it difficult to continue.

Managers must appreciate this and have some understanding of how norms develop and how they can influence this process. They should realise that individuals may depart from their own judgement because of group pressure. Indeed the manager may sometimes be that individual!

Solomon Asch demonstrated this phenomenon in a well-known experiment in which a series of groups were asked to make a judgement about the length of a line. All but one of the group members had, however, been briefed by the experimenter to agree on an answer which was clearly wrong. The naive members were therefore faced with a group whose judgements contradicted the evidence of their own eyes.

About two-thirds of the naive subjects followed their own judgement, many showing acute embarrassment at doing so. But the rest gave in to group pressure and gave the answer they thought was wrong. They mainly did so either because they thought they must be mistaken, or they thought they were right, but didn't like to contradict the rest of the group.

Clearly, the manager must be aware of such group pressures, which may cause individuals not only to give opinions that conflict with their true feelings, but also change statements of fact.

Encouraging interaction

The work of social psychologists on small groups has given managers some useful insights. For instance, it has been shown that arranging group members in a circle, rather than sitting them in rows, often produces more interaction, and more members join in. Also, people tend to speak in response to those sitting opposite them, except when an authority figure is present. Then they tend to speak to the people sitting beside them.

Although the findings are scattered and incomplete, it is clear that *seating arrangements* for groups, chosen by architects, interior designers and managers, have a marked effect on the social structures which emerge. If people cannot easily talk face-to-face, social interaction is seriously impaired. They rely on visual, as well as verbal, feedback from others. Given a free choice, group members often seat themselves at a distance from their leader, but sit where they can see and be seen by the leader. Those who can most easily make eye-contact with the leader often do the most talking. A circular pattern, often favoured for informal discussions, maximises the eye-contact between group members. The arrangement of seats and other furniture (as in a contractor's office) facilitates or inhibits eye-contact and thus affects communication.

Roles

To understand how groups work, we have to look at how people behave towards one another. Every member of an organisation occupies a position, such as engineer, buyer, chargehand or clerk. For every position there is a *role* – the activities and patterns of behaviour typical of people in that job.

People's behaviour depends on many factors, defined by their and other people's expectations.

The different roles in an organisation interlock, like the roles of doctor and patient. One role cannot be performed without the other. Each role includes the tasks performed, ways of behaving towards people, attitudes and beliefs, the clothes worn and even aspects of the individual's lifestyle.

Managers tend to behave like other managers, architects like other architects. A bricklayer is more likely to behave like other bricklayers, than like a quantity surveyor. Organisations rely on this conformity in behaviour to ensure that work is done effectively. The task itself generates role behaviour if it can only be performed in certain ways. Each person is expected to play a part, not only by the boss, but by colleagues and subordinates. The attitudes and beliefs held by members of a group about what a particular job-holder should do are called *role expectations*. Group members often have differing expectations of how each of the other group members should behave.

Selection helps to perpetuate role behaviour. People are selected for management jobs because they look the part – or may be turned down because they don't! Self-selection operates too. If people don't like the look of managers they have seen, they

probably won't apply for a management job. Several other processes encourage new job-holders to behave like the established ones, including training, imitation and coaching.

People only conform up to a point. Their individuality still shows through. This is because most people belong to several groups – family, work and leisure – and therefore have various roles to perform.

The other people in an individual's group are that person's *role-set*, the people with whom he or she has regular dealings – colleagues, bosses and, where applicable, subordinates. Managers can have quite large role-sets.

People experience *role conflict* when members of their role-set put different pressures on them. The site supervisor who has to choose between a course of action which will please the manager and another which will suit the workers, is suffering from role conflict.

Role ambiguity occurs when people cannot agree about what a role should be. For the individual this often means a lack of clarity about the scope of his or her job. The writer found that poor role definition was quite common among construction managers (Fryer, 1979). Variations in the type and size of projects, the people involved, company rules and contractual procedures, accounted for much of this uncertainty.

When people experience role conflict or role ambiguity, they may become tense and unhappy, dissatisfied with their jobs, less effective in their work or even withdraw from contact with those exerting pressure on them. They will try to resolve the conflict or ambiguity in various ways – by giving some demands priority, by seeking a ruling from their seniors or by bargaining with the people involved. Conflict can also result from differences between people's individual needs and job demands. Many site managers like to be out and about, close to the work, and resent sitting behind a desk full of papers.

The organisation can help minimise this kind of conflict by taking more care over selecting people for jobs. This may mean putting more emphasis on individual needs and interests in staff selection. Interestingly, during the early years of people's careers, there is a tendency for their goals to change to fit their roles better. This is especially true of vocations like architecture, where the training period is long. Moreover, Argyle points out that as people become more influential in their jobs, they may change organisational goals to be more compatible with their own.

Observing and analysing group behaviour

Managers perform most of their duties by leading, or taking part in, groups (project teams, departments, etc.) and therefore need to understand group behaviour. They particularly need to know how to get specific responses – how to persuade a subcontractor to speed up progress, or the architect to provide some design information quickly. Management trainers have responded to this need by including in their courses techniques for studying group behaviour, known as *interaction analysis*. These help those taking part to:

- understand their own behaviour better;
- improve their social skills;
- analyse, understand and respond more positively to other people's behaviour.

One way to study group behaviour is to watch a group at work. The observer can either participate in the group or observe it from the outside. Psychologists have developed a number of systems for recording and analysing group interaction. These can be used, for example, to assess the roles people play (role analysis), who speaks to whom (interaction flow analysis), the social relationships within groups (sociometry) and what people say to one another (content analysis, behaviour analysis, and so on).

R. F. Bales developed one of the earliest methods of content analysis which used twelve categories, six related to the group's task and six to the social relations between group members (Figures 7.2 and 7.3).

Bales' method is still used today in studies of group interaction (Gorse 2002). In behaviour analysis, observers normally use a chart listing the behaviour categories and the names of the group members. The observer has to record, for each contribution to the discussion, the speaker's identity and the kind of behaviour used. When the group has finished, the observer totals the contributions of each individual in each category. The analysis can be extended to include non-verbal behaviour, such as gaze, facial expression, posture and so on. Analysis is not always easy. It can be difficult, for instance, to tell whether a remark is an *opinion* or a *suggestion*.

A system developed by Rackham, Honey and Colbert, uses different sets of behaviour categories to suit the situation (Rackham, 1977). One of these sets is:

- *Proposing* – putting forward a new idea, suggestion or course of action.
- *Building* – extending or developing a proposal made by another person.
- *Supporting* – deliberately agreeing with another person's ideas.
- *Disagreeing* – declaring a difference of opinion, or criticising another's ideas.
- *Defending/attacking* – attacking another or defensively strengthening one's own position.
- *Blocking/difficulty stating* – placing an obstacle in the path of a proposal or idea without offering an alternative or a reasoned argument. This kind of behaviour tends to be rather bald, 'It won't work' or 'We couldn't possibly do that'.
- *Open* – the opposite of defending/attacking. The speaker exposes him/herself to the risk of ridicule or loss of status. This would include admitting a mistake.
- *Testing understanding* – trying to find out if earlier contributions have been understood.
- *Summarising* – restating concisely the content of earlier discussion.
- *Seeking information* – seeking facts, opinions or clarifications.
- *Giving information* – offering facts, opinions or clarifications.
- *Shutting out* – excluding, or trying to exclude, another member of the group.
- *Bringing in* – a direct and positive attempt to involve another member.

		CATEGORY DESCRIPTION Types of communication act and response	
1	F	SHOWS SOLIDARITY – raises others status, gives help, offers praise and reward for effort and contribution, offers assistance, shows support	**Social emotional acts:** Positive emotional reactions Builds relationships
2	E	SHOWS TENSION RELEASE – friendly jokes, expresses light humour, laughs with others, smiles, shows satisfaction with other peoples contributions	
3	D	AGREES – shows passive acceptance, expresses understands, concurs, complies	
4	C	GIVES SUGGESTION – gives firm statement of direction, makes proposal, implying autonomy for others	**Task acts:** Gives info', direction or attempts to answer questions
5	B	GIVES OPINION – evaluates, analyses, expresses feelings, wishes, opinion or perspective	
6	A	GIVES ORIENTATION – gives information and facts, repeats statements to show and confirm understanding, clarifies, confirms	
7	A	ASKS FOR ORIENTATION – asks for information, repetition, asks for confirmation, requests further information and facts	**Task acts:** Seeks information or asks questions
8	B	ASKS FOR OPINION – asks for evaluation, opinion and analysis, asks for expression of feeling	
9	C	ASKS FOR SUGGESTION – asks for direction, possible ways of action, firm proposal. Asks person to make a suggestion	
10	D	DISAGREES – factual or formal disagreement, shows passive rejection, does not express any frustration or emotion, becomes formal, withholds help	**Social emotional acts:** Negative emotional reactions Threatens relationships
11	E	SHOWS TENSION – not only disagrees, but expresses concern and tension, withdraws out of field, expresses negative emotion	
12	F	SHOWS ANTAGONISM – deflates others status, defends or asserts self, becomes aggressive, becomes personal or overly critical	

Legend

A. Problems of orientation
B. Problems of evaluation
C. Problems of control
D. Problems of decision
E. Problems of tension management
F. Problems of integration

Figure 7.2 Bales interaction categories (adapted from Bales, 1950).

EXAMPLE OF CODED INTERACTION FROM SITE MEETING

Project: West London 1. Contractor: Fast Build **Date of observation 8/6/04**

Structural engineers section

The speaker is identified at the start of each statement e.g. <speaker>. Each sentence, or speech act, is categorised in brackets at the end of the sentence e.g. (3) agreement. Notes regarding emotion stated in square brackets e.g. [2] shows support.

<Project manager> If we can return to the agenda **(4)**, item 5.1 roof purlins **(6)**. Ian **(6)** I sent you a letter regarding the deflection in the zed purlins last week and I still haven't had a reply to this **(6)**.
<Structural engineer> I thought I mentioned that at the last meeting **(5)**; the design is correct **(6)**.
<Project manager> The deflection does seem excessive **(5)**, are you sure it's ok **(8)**
<Structural engineer> I've checked through my calculations **(6)**.
<Project manager> Are you sure you have allowed for the air handling ducting? **(7)**
<Structural engineer> Yes **(6)**
<Project manager> The deflection must be outside the design limits **(7)**, it doesn't look safe **(10)**. Can we have another look at it after this meeting **(5) (also) [11]** and think about putting some extra supports in **(4)**.
<Structural engineer> OK **[3]**
<Project manager> Item 5.2 **(6)**

Figure 7.3 Sample of speech coded using Bales IPA method.

These categories are fairly easy to understand, but they can sometimes be difficult to separate. For example, if a group member states an opinion which conflicts with someone else's, it may be hard to decide whether he or she is giving information, disagreeing, attacking or making a proposal. Accurate analysis depends on training and practice, but the framework is good enough to be useful for trainers in team building exercises (Clark, 1994).

The technique often reveals that group members spend a lot of time exchanging information and the remaining contributions are often rather self-centred and negative – disagreeing, defending, attacking and blocking. Members spend more time putting forward their own ideas, than supporting or building on others' ideas. If group members are shown a video-recording of their performance and are asked to make more effort to support and build on one another's ideas, they often achieve better results the next time round.

Bales' SYMLOG (Systems for the Multiple Level Observation of Groups)

Following the development of the IPA technique, Bales *et al.* (1979) developed a different system for studying groups, known as SYMLOG. This method is an extension of the IPA system, and although it is considered to be theoretically more complex, it is believed to be more flexible. Rather than limiting observation to an independent researcher, the system is based on participant observation of other group members and a self-study of internal feelings. The advantage of participant study is that observations are not just limited to observations of overt interaction,

but they also capture the participants' own feelings and values of themselves and other individuals within the group. While the method can enquire into areas of group interaction that the IPA system cannot, it requires the participants to complete a number of forms. The time required for each individual member to understand and complete the SYMLOG self-study is about three to four hours for a group of five; larger group sizes require more time (Bales 1980). The SYMLOG group self study system involves three steps:

(1) A period of informal observation by each member of the group.
(2) A period during which each group member, working alone, completes an observation form which describes the behaviour observed.
(3) A meeting of the group during which the observations are compared.

The system uses three-dimensional diagrams that show the relationships of group members to each other. While the SYMLOG method has not received as much attention as the Bales (1950) Interaction Process Analysis Method, its use in studying small groups is increasing.

Simple Multiple level Observation Techniques (SMOT)

Rather than opting for the complicated SYMLOG system offered by Bales, it is possible to create a simple observation method that still captures events from a number of different perspectives.

The following steps can be useful in devising simple multiple observation methods and tools.

(1) *Focus of data to be collected.* Decide on the topic or areas of interest that will be observed, e.g. amount of interaction and participation (how often people speak, who they speak to and how often they talk to that member), identify aspects of interaction that are to be observed, e.g. issues that develop through interaction (how conflicts emerge, how leadership develops, how decisions are made, etc.). Do not choose too many issues (one or two is fine).
(2) *Context and group situation.* Select a group to study, and the context or situation in which they will be studied (e.g. a group or team solving a problem, or working through a task, or negotiating, or meeting).
(3) *Perspective 1. Observation.* Ask a person to observe the group. Ask them not to engage in the group discussion, but to sit and observe the process – simple data collection sheets can be devised so that the observer can collect the data easily, e.g. number of times a person speaks, who they talk to and when the topic of research emerges.
(4) *Perspective 2. Collect perceptions from group members.* Following the group interaction give all group members a questionnaire. The questionnaire should ask how all the other members of the group interacted, reacted and behaved. Focus the questionnaire on the research topic.

(5) *Perspective 3. Ask individuals to state how they interacted.* Ask members to state how they interacted with others, how they sent messages and how they responded, prompt the participant to focus on the aspect of interest.

(6) *Perception 4. Ask individuals to reflect and state the feelings that emerged during interaction.* Ask members to state how they felt when interacting with others and when certain situations or events manifested themselves.

(7) *Perception 5. Video or record the interaction (optional).* Use a video recorder to monitor the group. This is not always necessary and can be considered too invasive on the group and may change their behaviour. If a video recording is taken of the group's activities both the observer and the group members can use the video to review the data captured.

(8) *Analyse the data.* An immense amount of data can be collected from one situation. Ask members and the observer to analyse the data individually, then ask them to analyse the data as a group. Finally, ask the group to reflect and review the analysis. It is normal to find that differences are found between the perceptions of what happened and what the video data showed or the observers found. Differences of opinion may be quite diverse; however, participants develop greater understanding of what is happening during group activities.

Such tools can be used to research interaction, leadership, power, authority, conflict, negotiation, teams and sub-teams, decision-making, dominant and reluctant communicators, and many other aspects of group behaviour. While it may be possible to study more than one of these aspects at any one time, researchers should be careful to focus their research so that the data collected are manageable and meaningful.

Summarising individual and group behaviour

In a labour-intensive business like construction, managers need a good understanding of human behaviour. Many factors influence the way an employee behaves in a given setting. Personality is one of them, but not necessarily the most important. Indeed, an individual's characteristic way of behaving often alters in response to different people and problems. Moreover, employees' behaviour is affected by the work they do and the groups they work with.

A work group can exercise considerable power over its members. Just as organisations have rules which govern what people can and cannot do, so groups have norms, which dictate what behaviour is acceptable and unacceptable within the group. Individuals often conform to group norms, even when this conflicts with their personal preferences. Some people deviate more from norms than others; they are often the independent thinkers.

People perform various roles in the organisation. These roles cause them to shift their behaviour towards that of other people doing similar jobs. The way people behave may not be the way they want to behave, but how they think others expect them to behave.

A number of techniques have been developed for analysing group behaviour. When these are used in training sessions, they can help group members to evaluate their behaviour, leading to improved group performance.

Teamwork

The mid 1980s saw an upsurge of interest in teamwork in the construction industry. This focused both on teams working in individual firms or practices and, more importantly, multi-disciplinary project teams, where ineffective teamwork had led to mistrust, communication breakdown and faulty management.

Since the energy a team can devote to its work is finite, it follows that time spent dealing with the shortcomings of the team and its workings is time lost to *real* work. So, it is important for the industry's managers to know about teamwork and, in particular, about how to build a team fast and maintain its performance throughout a project.

But, first, why has teamwork become so important? In the past, it was possible for an individual to have a good command of most aspects of construction management. Such a person, if reasonably competent, could be relied on to provide an adequate and comprehensive service to the client. However, the last decade or so has placed huge demands on organisations and managers to rethink what they are doing and how they are doing it. Projects have grown more complex – technically, organisationally and contractually – and it has become increasingly difficult for an individual to possess *all* the know-how to manage a project from inception to completion. We are having to acknowledge that large-scale modern building requires a team effort, simply to share out the total project into manageable tasks, to keep customers and society happy and to maximise the chances of a project's success in what is often a fiercely competitive environment.

Such success is embodied in project goals, which have traditionally been expressed in terms of the design, quality, cost and speed of erection of a building, but other criteria have increasingly been introduced, such as energy efficiency, flexibility for future adaptation and costs-in-use. Moreover, major new issues about *sustainable* development and environmental protection are triggering an urgent review of business objectives and the emergence of new disciplines, such as environmental accounting. The inescapable 'greening' of the economy and business practice will cause the industry's managers to further reappraise the priorities for teamwork among the professions.

In the construction industry, creating good project teams isn't always easy. This is because project teams are temporary, *task-force* groups, whose members are brought together only for the duration of the project (and some for only part of the duration) and then disbanded on completion. At the best of times, such teams can be difficult and frustrating to manage.

Of course, teamwork isn't always the answer. Some professional tasks don't need it – and to use it would be inefficient. Many of the routine tasks that professionals

carry out are best discharged independently and only require intermittent co-ordination. There is a well-established maxim which says that if an individual can do a job perfectly well, don't give it to a team.

Nevertheless, even the fairly disparate tasks which can be performed by different professionals working in isolation, need to be co-ordinated – and teamwork is essential for *integrating* specialist work into the total scheme of things.

Moreover, as Baden Hellard (1988) points out, the network of human relationships in a project team becomes a network of *contractual* relationships that is at the root of many disputes. Disputes are far more likely to arise from deficiencies in organisation and communication between the different groups than from failure of technology, materials or problems arising from unforeseen circumstances.

There are several other reasons for giving special attention to teamwork in construction:

- *Location*. The specialists who make up the project team are not located in the same place and do much of their work away from the site and away from one another. They only meet intermittently to exchange information and to solve problems and co-ordinate their actions.
- *Different firms*. Team members work for different parent businesses, each of which has its own values, goals, strategies, ways of working and so on. Team members may experience conflict of loyalty between the project and the firm.
- *Individual differences*. Each profession tends to attract different types of people to its ranks; they are likely to have different interests, skills, backgrounds and personalities. These differences can be reinforced by the pattern and focus of education and training adopted by each profession.
- *Late involvement*. Team members are often appointed at different stages, sometimes after key decisions have been made. This can make it difficult to create commitment to the project and, if meetings are infrequent, it can take a long time before the team can function fully.
- *Teambuilding*. Project teams are not usually put together in a systematic way – but rather in an idiosyncratic way, depending on who is available (and when), who has the necessary experience for this particular type of building, who recommends whom and so on. Moreover, many of the participants are 'part-time', in the sense that they are also contributing to other projects or they are not involved in the project for its full duration. All this makes teambuilding difficult.
- *Delegation*. Project managers and senior managers in parent companies who employ members of the project team aren't always good at delegating. Thus, some members may feel their hands are tied and that they lack the responsibility to commit themselves to major decisions, without consulting their bosses. When this happens, team effectiveness can be drastically reduced.

These issues are set against a backcloth of inter-professional problems, including differing perceptions of status, power and role among the professions; lack of mutual respect, understanding and trust; and a reluctance on the part of some

professions to adapt to new roles and relationships to meet clients' changing demands and expectations (Fryer and Douglas, 1989).

However, it is possible to identify some basic requirements for good teamwork, all of which can be achieved with good management.

- Managers should receive training in teamwork skills.
- Teams should be much more carefully selected.
- Clear goals need to be set for the team, so that they develop a common purpose.
- Adequate resources should be made available to the team.
- Good communication between team members needs to be established from the outset.
- The team members need to develop mutual trust and understanding.
- Simple but effective procedures should underpin the actions of a team.

Features of a good team

A number of studies of teamwork, notably by Hastings, Bixby and Chaudhry-Lawton (1986) at Ashridge Management College, have helped unravel many of the secrets of good teamwork. Some of the qualities they have observed in highly effective teams include:

- *Persistence*. The team perseveres in its efforts and is obsessive in pursuing its goals, but it is also creatively flexible in getting there.
- *Tenacity*. The team is very tenacious and is inventive in removing obstacles – whether people or situations – which lie in its path.
- *Commitment to quality*. Team members are committed to quality performance and excellence in teamwork, with high expectations of themselves and of other people.
- *Inspiration*. The team has strong vision and sense of purpose; it knows where it is going and has a realistic strategy for achieving its aims.
- *Action-orientation*. The team makes things happen, responding rapidly and positively to problems and opportunities. Team members are optimistic even when the going gets tough.
- *Strong leadership*. The team has a really effective leader who fights for support and resources for the team.
- *Excitement and energy*. Members are lively and thrive on success and the recognition it brings.
- *Accessibility and communication*. Members proclaim strongly what they stand for, but welcome outside help and advice.
- *Commitment to success*. Team members are committed to the success of their organisation and thrive on the responsibility and authority delegated to them.
- *Drive*. The team is never complacent; members are continually striving for ways of doing things better.

- *Flexibility*. The team likes to work within guidelines and principles, rather than rigid rules, thus maintaining the important quality of being adaptable.
- *Prioritising*. Team members can distinguish between what is important and what is urgent.
- *Creativity*. The team prides itself on being innovative and will take risks to achieve significant results.
- *Influence*. The team has a significant impact on parent organisations because of its credibility.
- *Co-operation*. Teams always try to work with others, rather than for or against them.
- *Keeping things going*. Team members are able to maintain momentum and communication even when they are working apart.
- *Values*. The team values people not for their position or status but for their contribution, competence and knowledge.

For comparison, two other lists of desirable team characteristics are summarised in Table 7.1, although Adair stresses that some of these are often missing, even in good teams. Indeed, to expect a building project team or a contractor's site team to exhibit all these characteristics would not be realistic. But the lists help to pinpoint problem areas and aspects of teamwork on which managers can focus when trying to make practical changes in a team's performance.

Table 7.1 Some characteristics of effective teams.

● People smile, genuinely and naturally	● People care for each other
● There is plenty of relaxed laughter	● People are open and truthful
● People are confident – a 'can do' group	● There is a high level of trust
● They are loyal to the team and to one another	● There is strong team commitment
● They are relaxed and friendly, not tense and hostile	● Feelings are expressed freely
● They are open to outsiders and interested in the world around them	● Conflict is faced up to and worked through
● They are energetic, lively and active	● Decisions are made by consensus
● They are enterprising and use their initiative – proactive not reactive	● Process issues (task and feelings) are dealt with
● They listen to one another and do not interrupt	● People really listen to ideas and to feelings
(Adapted from Nolan, 1987)	(Adapted from Adair, 1986)

Teamwork roles

Meredith Belbin has also provided valuable insights into teamwork by looking at the roles people perform in teams. His research shows that people play a *team role* in their work groups as well as a technical or functional role. The team role defines a person's contribution to the team's internal functioning. Belbin argues that most people have a preferred role, which will to some extent reflect their personalities, values and attitudes – and their roles are not static. People often carry out a number of roles or a kind of composite role which includes several of them.

Belbin (1993) identifies nine team roles which are consistently found in work groups. They are summarised in Table 7.2.

Team leadership

Whilst leadership has been discussed in Chapter 4, the comments which follow draw attention to aspects of leadership specific to managing teams. In the most effective teams, the leader is likely to be straightforward, honest, trusting, considerate and respected – and not dominant or power-orientated. Although team leadership, like all management, must be flexible to suit the situation, in most team settings the leader must show integrity, enthusiasm and consistency; and lead by example.

For managers in construction, the physical separation of team members can pose problems. For example, contracts managers controlling wide areas or site agents running extensive engineering projects may find that their teams lose their sense of identity and cohesion. Such team leaders must be especially sensitive to the needs of their subordinates, who may feel out of touch and neglected. Ways must be found of keeping these people updated and involved. Telecommunications can help, but will not provide the whole answer. Part of the solution rests with the leader's own behaviour.

Adair (1986) summarises a useful analysis by J. R. Gibb and L. M. Gibb, who suggested five broad classes of leadership functions within teams (or groups as they called them):

- *Initiating* – getting the team going or the action moving, by identifying a goal, suggesting a way ahead, recommending a procedure, etc. This function mainly applies at an early stage in the team's activities.
- *Regulating* – influencing the pace and direction of the team's work, by indicating time constraints, summarising what has happened so far, etc. This becomes an important function as the team gets into its stride.
- *Informing* – providing the team with helpful information or opinions. Like regulating, this will mainly apply when the team is established in its work.
- *Supporting* – creating a climate which holds the team together and helps members to contribute effectively, by giving encouragement, showing trust, relieving tensions in the team, etc. This function is needed all the time.

Table 7.2 Belbin's nine team roles (adapted from Belbin, 1993).

Role title	Description and team contribution	Allowable weaknesses
Plant	Creative, imaginative, unorthodox. Solves difficult problems.	Ignores details. Too pre-occupied to communicate effectively.
Resource investigator	Extrovert, enthusiastic, communicative. Explores opportunities. Develops contacts.	Over-optimistic. Loses interest quickly.
Co-ordinator	Mature, confident, good chairperson. Clarifies goals, promotes decision-taking, delegates effectively.	Can be seen as manipulative. Delegates personal work.
Shaper	Challenging, dynamic, thrives on pressure. Has drive and courage.	Can provoke. Hurts people's feelings.
Monitor evaluator	Sober, strategic, discerning. Sees all options. Judges accurately.	Lacks drive and ability to inspire others. Overly critical.
Teamworker	Co-operative, mild, perceptive, diplomatic. Listens, builds, averts friction, calms waters.	Indecisive in crunch situations. Can be easily influenced.
Implementer	Disciplined, reliable, conservative, efficient. Turns ideas into practical actions.	Somewhat inflexible. Slow to respond to new possibilities.
Completer	Painstaking, conscientious, anxious. Searches out errors. Delivers on time.	Inclined to worry unduly. Reluctant to delegate. Can nit-pick.
Specialist	Single-minded, self-starting, dedicated. Provides knowledge and skills in rare supply.	Contributes on narrow front. Dwells on technicalities. Misses the big picture.

- *Evaluating* – helping the team to monitor the effectiveness of its actions and decisions, by testing for consensus, taking note of team processes, etc. This function will become more important as the team approaches completion of a task.

Hastings *et al.* (1986) identify four primary team leadership functions:

- *Looking forwards* – giving the team a vision and a sense of direction, being able to anticipate events and obstacles and creating an environment that encourages high performance.

- *Managing team members' performance* – defining success criteria for the team, showing interest, keeping performance on course and rewarding significant achievements.
- *Looking inwards* – continually analysing how the team is working and how it can be improved, taking an objective view of what is happening and what is likely to happen.
- *Looking outwards* – creating links with other parts of the organisation and the outside world, ensuring a two-way flow of information, resources and support between the team and others.

Hastings and his colleagues emphasise the need for team leaders to create the right *climate* for effective teamwork, by being more aware of their own behaviour and attitudes, demonstrating their values and expectations and putting forward an exciting vision of what the team can achieve. They also suggest that, wherever possible, leaders should influence the composition of their teams and should spend plenty of time with team members discussing the kind of climate and ways of working which could best contribute to *joint* success. The values and qualities associated with such team leaders include: unshakeable confidence and trust in the team; persistence and positiveness; optimism tempered by toughness and realism; a sense of urgency; accessibility and an openness to ideas.

Day (1994) points out that an important leadership role of project managers is that of *integrator*, pulling together the efforts of the organisations and people contributing to a project. This involves unifying a group of diverse specialists, who may have different ideas about priorities – and, perhaps, tunnel vision.

Team leadership and the self-managed team

The leadership qualities identified above are reasonably consonant with the ideas of empowerment and self-managed teams, but they imply certain features of hierarchical structure and the kind of organisational culture which goes with it. Stewart (1994) questions whether existing organisation structures and cultures provide a suitable basis for empowered, self-managed teams. She discusses the need for an *empowerment culture* within organisations. Pointing out that even modern organisations, with their flatter pyramids and shorter chains of command, are still hierarchical, Stewart suggests that team leaders can create new cultures and structures by inventing their own team hierarchies and their own roles – so that they play a supporting, rather than figurehead, role.

One implication of such action would be the reappraisal of some of the leadership functions stated earlier. Leaders might spend less time initiating, regulating and evaluating their teams; they would spend more time looking forwards and outwards and less time looking inwards and managing team performance. In their inverted pyramid structure, these managers give up their top role of command and see themselves at the bottom, providing a firm foundation for their teams. In this kind

of structure, Stewart argues, leaders use the experience and skills of their front line team and deploy important new management skills, which include:

- *Enabling* – ensuring the team has all the resources it needs to be fully empowered.
- *Facilitating* – removing blocks and delays which prevent staff from doing their best work.
- *Consulting* – with staff to harness their knowledge and experience and use it in both operational and strategic ways.
- *Collaborating* – going beyond consultation to collaborate fully, freely and openly with team members, harnessing all their expertise towards the organisation's goals. This requires seeing the staff as full partners, not just junior members, and is the ultimate test of the leader's skill in empowerment and the *will* to implement it.
- *Mentoring* – helping team members develop and play a fuller role.
- *Supporting* – giving help when it is needed and being especially supportive when someone makes a mistake (Stewart, 1994).

These abilities suggest a radical departure from conventional management thinking – and they are just that. They may not be appropriate in all situations or suit all team members. But for the leader who really believes in empowering a team, they represent the kind of shift that is needed. This is no abdication of leadership, for it leaves many important tasks for the leader to perform. Stewart calls these the eight Es of empowerment:

- *Envision*. Ensure the staff have a shared vision of the goals.
- *Educate*. Train staff to use their own judgement, make decisions, develop understanding and special skills.
- *Eliminate*. The barriers to empowerment.
- *Express*. What empowerment is, what it can achieve, what needs to be achieved, what is going wrong.
- *Enthuse*. Generate excitement, encourage enjoyment; be energetic.
- *Equip*. Devolve resource power/budget control; ensure training happens.
- *Evaluate*. Including self-evaluation; monitor what happens, appraise and give feedback; receive feedback from staff.
- *Expect*. Resistance to change, errors, teething problems; plan to avoid them or overcome them. Also expect success.

Training in teamwork and team leadership

Construction organisations are increasingly recognising the value of training their managers and other employees in teamwork skills. There are many approaches to this, but an interesting example is where team members are brought together, away from the normal pressures of their work, and given the opportunity to analyse their

teamworking methods and ponder on how they might improve them. Nolan (1987) argues that teams benefit from a regular workshop or teamwork course of this kind, because it provides them with some commonly agreed processes and structures and a common language, which the team can subsequently use.

Nolan describes the Synectics' Innovative Teamwork Programme (ITP), an example of a training technique developed by his organisation, which specialises in teamwork training. Participants bring tasks from their workplace and these are used as vehicles for learning in group and individual training sessions. This makes learning more relevant and helps people tackle real problems back in their jobs. The emphasis is on creative problem-solving and on developing in individuals responsibility for their own actions.

Group sessions are video-taped and replayed, giving participants a chance to see themselves in action – and the group is able to analyse each person's behaviour and contributions. Used in this way, video is a powerful learning tool; a tape can be replayed again and again to pick up subtle nuances – and the action can even be re-recorded, with team members doing things a different way and comparing this with earlier versions.

The role of the trainers is quite a humble one, because their main responsibility is to set up a relaxed, non-threatening environment conducive to learning; to be positive and encourage risk-taking, and to be good listeners – open-minded and responsive. Good team-workers, in fact!

In this way, participants on Synectics' courses learn firstly from the problem-solving sessions, secondly from video feedback, next from each other and *lastly* from the trainers. As in many of the modern approaches to training, these trainers don't impose their views on the participants, don't even do most of the talking, but basically set up a learning event and allow it to happen. If feedback is given by the trainer, it is constructive and positive and it accepts the ideas of participants as 'true or valid for them'. The trainer at all times respects the autonomy, experience, competence and self-respect of course members.

George Prince, co-founder of Synectics, has concluded from his studies of thousands of meetings, that when participants act destructively, this is 'grounded in their need to *apparently* win'. He says he deliberately uses the term 'apparently' since 'no-one really wins anything' in a meeting, except that too early a criticism of an idea often results in it being dropped. He identifies other discouraging behaviour, such as pulling rank, acting distant, insisting on early precision or proof, being impatient, making fun of the person who puts forward the idea, or not listening. On the other hand, groups which treat every suggestion as a starting point and try to build on them are often much more productive and creative (Prince, 1995).

Other teambuilding exercises

Adair (1986) classes teambuilding activities as either *substitute* team tasks – business games or outdoor activities – or *real* tasks, such as a weekend conference devising a major business plan. He argues that such activities are crucial in making a group

into a high performance team, particularly because they reinforce valuable informal relationships and mutual understanding among team members.

Since the 1950s, a variety of courses have been devised under the banner of Outward Bound or Adventure Training, with the common feature of using outdoor activities to focus on developing individual and teamwork skills. Laings are among the construction firms which have used this kind of activity. It is very popular with many managers, but some don't like it at all. Among the strengths of outdoor activities are the bonding effect of shared experiences, the 'Hawthorne' effect of concentrating on teamwork matters and, of course, the potential for learning which is present in any new experience (Nolan, 1987). However, Nolan questions the relevance of such training for managers and others working in a commercial and creative environment. Adair points out that business games and outdoor activities are only simulations of corporate teamwork and have the advantage of being risk-free; however, there is also the possibility that they may be seen as irrelevant diversions and not taken seriously.

Nolan quotes Reginald Revans' argument that business games and outdoor activities have more to do with solving puzzles than problems. A puzzle entails finding an already known solution, whereas a problem involves finding a solution where none yet exists. Since management is about creating the future of organisations, training ought to be about solving problems, not puzzles.

The concept of a business planning conference, where the task is real, has the benefit of providing an immediate and relevant task. However, participants may become so immersed in the reality of the problem that the training value of the exercise is overlooked.

Also, if the conference is poorly organised or participants are unable to become actively involved, it can lead to increased discontent and scepticism among team members.

Evaluation of teamwork training

As with most kinds of management training, it is difficult to evaluate teamwork training, because the results aren't easy to quantify. Ideally, one would try to measure progress in the team's performance, but this is difficult because improvements aren't always easy to assess and many other factors are at work in influencing the team's achievements. Moreover, as with many kinds of management development, the benefits of training may not be seen immediately and may only show up in the long-term performance of the team.

The most effective teams will tend to regularly engage in self-evaluation and select their own criteria for evaluation. This is probably the best form of teamwork evaluation. Careful reflection and discussion can lead to major insights into the complexities of teamworking and the team's situation; they can also create a better understanding of the values, attitudes and concerns prevalent among the team members.

Summary

Not until the 1980s did the merit of good teamwork become firmly established in management thinking and in most other areas of human activity. In the construction industry, sound teamwork is now widely regarded as crucial for the achievement of increasingly complex and interrelated social and economic goals, not only within departments and organisations, but on widely dispersed sites and (most importantly) within multi-professional teams, which perform major aspects of project management.

Most of the characteristics of effective teamwork are now well understood, as are the conditions under which teams are likely to succeed. Teams which benefit from good organisational support and competent leadership are, for example, more likely to be highly motivated, cohesive, flexible, tenacious and committed to success and quality. Good team leaders create the right climate for teamwork, lead by good example and spend time with their teams negotiating ways of working which contribute to joint success.

Some leaders are keen to empower their groups and help them become self-managing teams. To do this, the leader must undertake a thorough reappraisal of his or her own roles, skills and attitudes, team members' roles, the group culture and the implications of empowered teams for the organisation.

Teamwork training is now taken very seriously and many approaches have been tried. The most effective techniques seem to be those which involve participants working in groups on realistic and relevant problems, sometimes in the workplace but often away from the job, where the day-to-day pressures and interruptions can be temporarily forgotten. The very best teams learn to evaluate their own performance and to choose the criteria on which to judge their own achievements. Such teamwork is likely to be increasingly valued in an industry which finds itself under growing pressure from its customers to deliver a better co-ordinated service.

Exercise

In a group, look at the different skills and attributes of each member and identify the roles that each member would be best suited to when running a complex construction project. Consider who would be the best members to plan, start-up, monitor, check progress, control, give instructions, chair meetings, ensure relationships are maintained, supervise (safety and quality), handle disputes, bring the project to an end and close, plus any other aspects of project management.

Chapter 8
Motivation and Human Performance

People and work

People have mixed feelings about work. To some it is liberation, to others slavery. In industrial societies, much of the work consists of ready-made jobs. Many of them don't offer much scope for individual expression or fulfilment. Yet, work is undeniably important. Robert Kahn and his colleagues asked nationwide samples of American workers the same question over a period of more than 25 years:

> If you were to get enough money to live as comfortably as you'd like for the rest of your life, would you continue to work?

The answer did not change very much. About three-quarters of employed men and the majority of employed women said they would carry on working even if they didn't need a wage. Seventy per cent of all workers surveyed said they have met some of their best friends at work. Even the small number of people who would give up work if they could afford to, mentioned their co-workers when asked what they would miss most. The majority who would carry on working pointed out that having a job keeps them from being bored and gives direction to their lives (Kahn, 1981).

Kahn defines work as human activity that produces something of recognised value. All elements of this definition are important to the worker's well-being:

- The activity itself.
- The experience of making something.
- The fact that the activity or product is valued by the worker or by others.

One of the problems of industrial work is that one or more of these elements is often poorly provided for.

For many people in an industrial society, there is no alternative to paid employment; nothing to replace it for providing activity, meaning, reward and social status. The industrialisation of society has reduced many people's jobs to merely making a living. For them, work is just a means to an end. But for most people, having a job means much more than just earning a wage. They want to work, even if they don't need to. They might not do the job they do now, but they want work of some sort.

Many features of work are important. It can create dependence or autonomy, danger or safety, isolation or belonging, monotony or variety. The social reformer, Gandhi, argued that the object of work is less the making of *things* than the making of *people*. Work brings people together to co-operate, in direct contact with materials, giving them knowledge of those materials, engaging the whole person, mind and body. Work gives people a sense of belonging to society, of having something positive to do, of having a purpose in life.

Of course, work is not the only way in which people satisfy needs. And too much work can be as unsatisfactory as too little. The way in which work meets people's needs varies. In particular, different occupations satisfy different needs. Senior contracts managers may achieve status and power through their jobs, steelfixers may not. However, steelfixers may get satisfaction from making something with their hands, whilst contracts managers sit at their desks worrying about the piles of paperwork. Some people satisfy most of their needs through work. Their jobs become a main life interest. Others mainly satisfy their needs outside the workplace. For them, paid employment is a means to an end.

Employee performance

Within any group of people performing the same job, some will do it better than others. This applies to all employees, whether operatives or managers, engineers or clerks. One reason is that the better workers are more skilled or more experienced. They have more *ability*. Another explanation is that the high performers are willing to work harder. They have more *motivation*.

Other factors affect job performance too (see Fig. 8.1). Employees must have a clear idea of what the job requirements are – *role clarity*. Misunderstandings about what they should or should not be doing can lead to wasted effort and poor performance, even if the employees are able and highly motivated.

Employees' *personalities* can also have a bearing on performance. If their characters are ill-suited to their jobs, they will not be so successful. Managers whose jobs involve co-operating with people and influencing their behaviour, are unlikely to be successful if they are arrogant, intolerant or poor listeners.

Performance can suffer if any factor is weak. The most able employees will not work well if their motivation is low. The most highly motivated workers will not be a success, if they lack the skills or personality needed for the job.

A great deal has been written about improving workers' motivation with a view to finding out how to get the best out of employees – including managers themselves! But human performance depends on many other variables, including the task and the individual's level of alertness, anxiety and fatigue.

In most tasks, people set themselves standards which they are content to achieve. Often they don't exceed these targets, even though they are capable of doing so. The level individuals set for acceptable performance depends on the situation, and on their past successes and failures. It is not always possible to predict how successes or

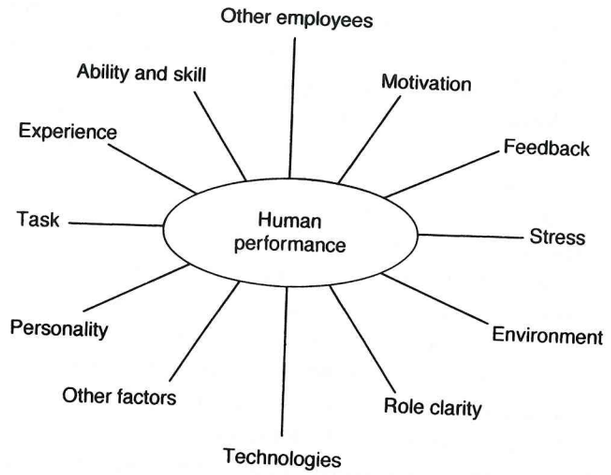


Figure 8.1 Factors affecting human performance.

failures will affect people's future performance, but psychological experiments have suggested that successful performance leads to an increase in the standards employees set themselves, whilst failure leads to a decrease. However, there are exceptions to this. For instance, continued success may eventually lead to boredom and an unwillingness to expend further effort.

Many psychological experiments have shown that performance is influenced by people's expectations. For instance, in one well-known experiment, C. A. Mace improved subjects' performance at an aiming task by adding more concentric rings around a bulls-eye, making a previously good score look mediocre.

People work closer to their capabilities when given *feedback* comparing their performance with other people's, or with their own earlier achievements. Objective criteria for measuring performance are needed to achieve this.

For many operative and clerical tasks in construction, measurement is fairly straightforward and is relied on in management control, estimating and bonusing. The performance of technical and managerial work is less easy to measure because there are so many variables. We can say that one task is harder than another, but we cannot always say how much harder. We can see that a manager's performance has improved, but cannot say by how much.

Human performance partly depends on *skills*. People develop hundreds of skills during their lives, including highly developed skills for listening, observing, understanding and dealing with social situations. Some skills are used so often and so naturally that people don't recognise them as skills at all. People are very versatile at developing skills for coping with life, but their capacities are not unlimited. The rate at which skills are learned and the level of performance finally achieved depend on the body's musculature and nervous system, as well as on the tasks themselves (Fitts and Posner, 1973).

Skilled performance depends on organisation, awareness of a goal, and feedback. But even a well-organised sequence of activities directed towards a specific objective is not enough, if the individual receives no feedback.

Feedback

There are two kinds of feedback. *Intrinsic* feedback comes from the individual's own senses. *Extrinsic* feedback comes from other people. Both provide the individual with information and, if used properly, can enhance motivation. Feedback can serve as a reward, providing strong motivation to continue a task, because it gives information about progress towards a goal. For this reason, feedback is important for both effective performance and learning. Its importance may not be recognised until it is missing and performance has declined as a result.

Intrinsic feedback

Normally, intrinsic feedback is automatically present and is immediate. In construction, the operative receives constant feedback from sensations like pressure, vibration, noise and movement. Seeing is an important source of feedback in many tasks.

Sometimes part of the feedback is missing. For example, operatives working in noisy surroundings cannot hear the sounds made by their tools. This can disrupt their performance. Similarly, if operatives working in cramped, poorly-lit conditions cannot see what they are doing, their speed and efficiency will be impaired.

Gould (1965) conducted an experiment in which subjects were able to watch themselves on a monitor as they performed a task. Selectively blocking out parts of the intrinsic feedback (by excluding them from the picture on the screen) always impaired performance, although the subjects did slowly adjust to the lack of feedback. Other experimenters have reached similar conclusions. It seems that:

- performance is disrupted when any part of feedback is eliminated or distorted;
- when feedback is missing, performance improves with practice, but only up to a point;
- people carrying out a task without proper feedback seldom perform as well as people receiving adequate feedback.

Managers should be aware of the importance of intrinsic feedback, the lack of which may seriously disrupt speed and quality of people's work. People adjust to lack of feedback in the same way that they learn new skills, but they rarely achieve their full potential.

Extrinsic feedback

Feedback from others is very important and can provide strong motivation, leading to high performance levels. If this feedback is augmented from another source, its

value is increased. For instance, Smode (1958) gave two groups the same task. One group was given a feedback report after each trial. The other received a report *and* a display of their cumulative score. From the outset, the group receiving the extra feedback performed much better and continued to do so, even when conditions returned to normal.

One of the problems with extrinsic feedback is that it is often delayed; the busy manager forgets to tell an employee how well he/she is doing; bonus payments are received a week after the work was done. This feedback 'lag' is most serious when the individual moves on from one task to another, so that feedback is received when it is too late to influence behaviour at that task. If the individual is carrying out similar tasks over a long period, the feedback lag is less serious.

Ability and skills

It is quite commonly believed that some people are inherently more able than others. Psychologists increasingly think that ability depends more on matching people to tasks and giving them proper training, than on any inherent factor. An individual's ability in a particular task is affected by many factors, of which one of the most important is the level of skill attained.

Understanding the stages in the acquisition of skills can help the manager to:

- devise suitable training programmes and job experiences for new recruits and less skilled employees; and
- monitor their progress as they acquire skills.

The stages of skill development, although not necessarily sequential, are summarised by Taylor, Sluckin *et al.* (1982) as:

- *Plan formation*. New skills are built on to existing skills, which are numerous. Before people can modify or extend their existing skills, they need a plan of action. They need to understand the task they are learning and its purpose.
- *Perceptual organisation*. The learner begins to sort out the important information from the less important, recognising patterns in incoming information, e.g. A is usually followed by B, rarely by C and never by D.
- *Economy of action*. The unskilled operator has to work harder than the skilled one. The apparent effortlessness of the skilled worker comes from knowing when to act or respond.
- *Timing*. This is an important feature of skilled behaviour and often the last to be learned. Skilled workers become expert at timing their actions and this is the first aspect of skill to be lost under stressful conditions.
- *Automatic execution*. The elements of the skilled behaviour become so automatic that many of them are performed unconsciously and the operator can work whilst thinking about other things.

Learning does not stop here. Fitts and Posner and others have shown how skill continues to improve until limited by the age of the operator or the constraints of the task. To maintain automatic performance, especially in complex tasks, regular practice is needed. This would apply to driving a large crane or excavator. Operators may think their performance remains at peak, but what deteriorates is their ability to cope with incoming information. The less practised operator is less able to respond effectively when the demands of the task suddenly increase, as in an emergency.

In considering human performance, there are those who would argue that this should also be looked at in the context of the project and the wider organisation(s) involved in the project. At this point, it is important to mention that the UK construction industry has developed what are called Key Performance Indicators (KPI) (DETR, 2000).

A key performance indicator is the measure of performance of an activity that is critical to the success of an organisation. Its purpose is primarily to enable measurement of project and organisational performance throughout the construction industry. The KPI framework consists of seven main groups:

- Time
- Cost
- Quality
- Client satisfaction
- Client changes
- Business performance
- Health and safety.

In order to define the KPIs throughout the lifetime of a project, it is suggested that five key stages need to be addressed. These are:

- *Commit to invest*. Client decides in principle to invest in a project, sets out the requirements in business terms, and authorises the project team to proceed with conceptual design
- *Commit to construct*. Client authorises the project team to start the construction of the project
- *Available for use*. Project is available for substantial occupancy of use. This may be in advance of the completion of the project
- *End of defect liability period*. The period within the construction contract during which the contractor is obliged to rectify defects.
- *End of lifetime of project*. The period over which the project is employed in its original, or near original, purpose ends. This is a theoretical point over which concepts of full life costs can be applied.

Details of the KPI groups and their associated indicators (and definitions for these indicators) can be obtained from the KPI–DETR document (DETR, 2000) entitled *KPI Report for the Minister of Construction*.

Performance and stress

Stress can be defined as the demands that a task and the environment make on an individual. The structural engineer uses the term in a similar way to describe the demands made on materials.

It has been found that people perform best under *intermediate* stress. If all the demands of the task and environment are removed, the individual becomes bored, less alert and may even fall asleep! Hopefully, this will not happen too often on site. When the work is too demanding or working conditions are very unfavourable, people also perform poorly.

People can cope with a range of physical conditions and can tolerate wide variations in temperature, lighting, noise, ventilation and humidity. But extreme physical and social conditions are stressful.

When the job demands and working conditions are reasonable, the employee is most likely to find the work stimulating and challenging, and will put in maximum effort.

Job stress

Unlike physical and chemical hazards, job stressors respect no occupational boundaries. Therefore, the potential for exposure to this class of health risk is ubiquitous. There are many reasons why organisations should take account of stress and do something about it. These include:

- Organisations have the social responsibility to provide good quality of working life.
- Excessive stress causes illness.
- Stress can result in an inability to cope with the demands of the job which, of course, creates more stress.
- Excessive stress can reduce employee effectiveness and therefore organisational performance.

A model of job stress and health is depicted in Fig. 8.2. The model shows that job stressors can produce acute reactions and strains, which can lead to chronic illness. Although job stressors are listed as a single category, usually they are grouped into several broad categories such as: factors intrinsic to the job; role in the organisation; relationships at work; career development; and organisational structure/climate.

From the model presented, it can be seen that the factors that influence (moderating factors) job stressors include personal characteristics (e.g. personal traits), non-work factors (e.g. family matters, financial issues, social relationships), and buffer factors (e.g. social support, coping skills, physical exercise). The moderating factors operate to strengthen or weaken the relationship between job stressors and health outcomes.

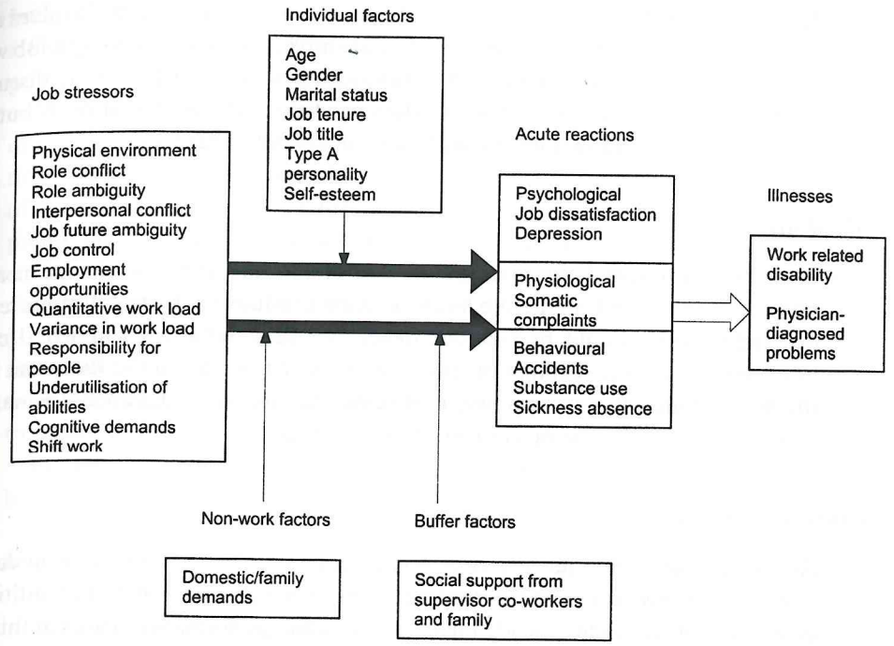


Figure 8.2 Model of stress/health relationship (from Murphy, 1995, pp. 41–50).

The model also highlights the complexity of the problem of stress, as it cuts across work and non-work domains. These cross-cutting effects suggest that the study of job stress, and the design of stress management interventions, should be approached from a multidisciplinary perspective. It is only through this that an accurate picture of the nature of stress and how it should be managed could be produced.

People react to excessive stress in various ways:

- *They work faster*. They act without weighing up all the available information and allow more errors to happen.
- *They work out priorities*. They filter incoming information, discard some or set it aside for later attention, delegate some tasks to subordinates and concentrate on the important ones themselves. Many people work fairly effectively in this way. Managers often have to.
- *They put all work in a queue*. Jobs, important or trivial, just wait in line. This evens out the individual's workload, but causes delays. Some delays lead to costly mistakes, but others may be productive. In some tasks, human performance improves if information has been absorbed before being acted on.
- *They stop working*. Under extreme pressure, people cannot carry on. Taking a break may seem undesirable in the short-term, but can lead to better performance later on.

The causes of stress do not necessarily have a cumulative effect. Stress involves many factors which interact in various ways. For example, if someone is doing a job which involves *reading*, a small amount of extraneous *conversation* will be more disruptive than a loud mechanical noise. Lack of sleep produces a low level of arousal, but loud noise increases it. So, a noisy workplace would offset tiredness.

Optimal stress

It is not easy to specify an optimum level of stress. Its effects can change as a task progresses. Normally, moderate levels of stress produce the best performance, so a demanding task should be counterbalanced by favourable environmental conditions, and vice versa. Talking to fellow workers or listening to the radio can make the performance of a routine task more efficient, but would hamper a demanding task which needed concentration (Fitts and Posner).

Alertness and fatigue

Alertness drops when an employee has been doing a job for too long under low stress conditions. Tasks which need vigilance, as in checking a bill of quantities for errors, usually result in a steady fall in alertness and performance. Tasks of this kind are becoming more common, as routine operations become automated.

A typical task in which fatigue occurs is mechanical excavation, where the driver is continually adjusting controls in the cab. At first, performance improves as the operator adapts to site conditions. But efficiency declines if the task goes on for too long. The continual demands of this 'tracking' task cause fatigue and loss of attention. The longer the task goes on without a break, the more the worker makes mistakes. Performance can be improved by adding variety to the work, using frequent rest pauses and giving feedback on performance.

Anxiety

People respond to excessive stress in different ways. It has been cited as a contributory factor in heart disease, cancer and stomach ulcers. Often, however, the reaction is simply anxiety or anger. As with stress, a *moderate* amount of anxiety can improve performance, but too little or too much is usually counterproductive.

People become too anxious if the job they are given is too hard. Employees need to be given goals which are challenging but attainable, and should be encouraged to organise their work more efficiently. Anxiety caused by personal problems can interfere with an employee's ability to concentrate. This may be harder to remedy.

Stress and its management

Many factors beyond the task and working conditions also act as stressors. What an employee finds stressful depends on his or her characteristics, the situation and the interaction between the two (Payne *et al.*, 1982). Research by Arsenault and Dolan (1983) also suggests a contingency theory of job stress. For an introduction to potential sources of stress, see Cooper (1978, 1984).

Much effort has gone into suggesting ways of managing stress at work. Methods of stress management training include muscle relaxation, biofeedback and meditation. Murphy (1984) suggests that these can be cost-effective, but must take account of sources of stress at the organisational, ergonomic, group and individual levels. He points out that while stress factors cannot be designed out of some jobs, work environment and organisational factors *can* be modified, through organisational change, job enrichment and job redesign. Murphy sees stress management methods as a useful support to these techniques, but not as a substitute. The organisation must still tackle the causes of excessive stress. Whilst some people doubt whether techniques like job enrichment can increase productivity, it seems that they can help to reduce stress.

In summary, the following can be offered as ways in which stress can be managed by an organisation.

- *Job design*. It is important to clarify roles, reducing the danger of role ambiguity and conflict and giving people more autonomy within a defined structure to manage their responsibilities.
- *Targets and performance standards*. It is important to set reasonable and achievable targets that may stress individual workers but do not place impossible burdens on them.
- *The placement of people in jobs*. Organisations need to take care in placing people in jobs that are within their capabilities.
- *Performance management processes*. There is a need to have performance management processes that allow meaningful dialogue to take place between managers/supervisors and individuals about the latter's work, problems and ambitions.
- *Counselling*. It is important to give individuals the opportunity to talk about their problems with a member of the HR/personnel department, or through an employee assistance programme if one exists.
- *Management training*. It is important to provide management training in performance review and counselling techniques and in what managers can do in order to alleviate their own stress and reduce it in others.
- *Work–life balance policies and strategies*. Having work–life balance policies is important. This could be operationalised to take account of the pressures on employees who have responsibilities as parents, partners or carers, and which can include such provisions as special leave and flexible working hours.

Information technology

One of the technologies which is having an increasing effect on employee performance is information technology. IT is changing work practices and hence

employees' attitudes towards work. It is changing the nature and content of individual jobs and work groups; the tasks of supervision and management; and the hierarchical structure of work roles.

On the positive side, this 'new work' (as it was sometimes dubbed in the 1990s) may offer more employees work which is less repetitive, less boring; tasks which empower them and involve them in constant learning; roles which require them to do more problem-solving, decision-making, innovation and other higher-order thinking.

Motivation

Miller (1966) and others point out that what constitutes motivated behaviour is very diverse. Its study encompasses biochemistry, sociology, psychology and anthropology, to name just a few.

There have been numerous attempts to explain motivation and the boundaries between approaches are not clear cut. Few theories embrace the full complexity of motivation. Instead, they provide partial explanations of motivated behaviour and offer the manager sketchy advice about how to influence the process.

Even in psychology, many kinds of explanations have been put forward, some more plausible and useful than others. A contingency approach seems most appropriate – what motivates one person will not necessarily motivate another. For each individual, what motivates depends on the circumstances and how the person perceives them.

Although some theories are more soundly constructed than others, there is no single theory which explains all motivated behaviour. Most introductory psychology books expand on some or all the ideas mentioned below, but vary in the way they categorise them.

Approaches to motivation

Needs and drives

Drive-reduction theory

Hull's theory (1943) was built on by Mowrer (1950). People have a range of primary biological needs, e.g. hunger, thirst. These activate primary drives such as searching for food. *Anxiety*, caused by the fear of being unable to satisfy primary needs, is also motivating. This anxiety drives people to strive for success, power, social approval and money. Mowrer maintains that the need for security keeps most people in their jobs.

For many reasons, most psychologists are disenchanted with drive-reduction theory.

Self theory

Snyder and Williams (1982) claim that people have a basic need to maintain or enhance their self-image. They suggest that this theory could provide a unifying theme for a range of cognitive theories of motivation and be a useful addition to operant conditioning theory (see below).

Other needs theories

There are numerous needs theories. Some, such as Murray's (1938), list about 20 needs. Others list a few arranged in a hierarchy. Maslow's hierarchy (1954) is perhaps the best known to managers.

Maslow claims that needs operate in a kind of hierarchy, where *reasonable* gratification of one level triggers the next level to operate. These needs include basic necessities like food, clothing and shelter, which lead to physical well-being and security. Then there are higher needs, like affection, respect and self-fulfilment, which are said to be triggered when the basic needs are reasonably well catered for.

At first glance, the idea seems plausible. People will not be interested in gaining one another's respect, if they are starving to death. They will be motivated by the need to obtain food.

Managers should certainly be aware that for any individual, some needs will be *prepotent* at certain times. Despite its appeal to many managers, Maslow's theory has been heavily criticised.

Some needs theories mention only single items, such as the need for affiliation (Schachter, 1959), achievement (McClelland, 1961), and competence (White, 1959).

Cognitive theories

These relate motivation to cognitive processes like thinking, perception and memory. They include the following.

Cognitive consistency theories

Motivation depends on how the individual perceives the world. An example is Korman's theory (1974), which argues that an individual is motivated to behave in ways consistent with his or her self-image. Festinger's cognitive dissonance theory (1957) is another well-known example.

Expectancy theories

Examples are Vroom (1964); Porter and Lawler (1968). Motivation is seen as a joint function of *expectancy* – a belief regarding the probability that a particular course of action will lead to a particular outcome – and *valence* – the value an individual attaches to each probable outcome. If the most probable outcome is highly valued, motivation will be high; if the likelihood of achieving the most valued goal is low or if the most probable outcome is not highly valued, motivation will be low.

Expectancy theories assume that people always make rational choices, but the evidence throws doubt on this (Wason, 1978 and others).

Instrumental conditioning

The theory of instrumental conditioning looks at the relationship between performance and rewards. The general assumption is that people will work harder if rewarded for their efforts (B. F. Skinner, 1953). The reward, and hence the motivation, is *extrinsic* to the task. Skinner found that if a reward is given when people behave in a certain way, they are more likely to repeat that action. There is solid evidence to support this.

To establish a desired level of behaviour, managers must reward improvements in performance, until eventually they reward only behaviour which closely approximates to the desired behaviour, and finally only the behaviour itself. Rewards should be given regularly until the desired behaviour is well-established. Ideally, the reward should follow the desired behaviour fairly soon.

A reward is anything valued by the individual. Some people prefer tangible rewards, others a word of praise or hint of promotion (Higgins and Archer, 1968). Moreover, what the individual regards as rewarding varies over time.

Even if employees don't want a monetary reward, money can be motivating if it helps them *buy* the rewards they do want. In this role, money acts as a *secondary reinforcer*.

What Skinner found out about the repetition of rewards is not widely known among managers. First, he noted that if the performing/rewarding sequence is repeated regularly after the desired behaviour is established, there is a gradual decline in performance. But rewards given unpredictably lead to continued motivation to repeat the task. This is how gamblers are rewarded; they do not know when they are going to win and they do not always win.

Second, Skinner noted that when a person's behaviour is ignored, there is a tendency for it not to be repeated. Thus, the absence of a suitable reward can cause performance to decline, unless something else takes its place.

Reward systems often have unpleasant connotations, implying that some controlling person offers rewards to some less influential person. In practice, extrinsic motivation operates continuously in all aspects of human relations and is a two-way process. Construction managers and workers reward, or fail to reward, one another all the time (Fryer and Fryer, 1980).

Intrinsic motivation

Even when rewards are absent, people often work at a task for no other reason than the pleasure of doing it. Motivation is derived from the task itself. Such a task is said to be *intrinsically* motivating. Bruner (1966) identifies three reasons for this.

Curiosity

We become curious about a task when it is unclear, uncertain or unfinished. Our attention is maintained until the problem is solved. Operatives are motivated in this way when they have an unusual construction detail to work out. But motivation of this sort will only be sustained if employees are given tasks which are slightly different from, or a little harder than, those they have done before. If a task is too easy, employees become bored. If it is too difficult, they become frustrated. Either way, motivation suffers.

Setting challenging tasks for subordinates demands ingenuity and imagination on the part of the manager. Fortunately, construction work is often more varied and interesting than mass production and processing work, because projects are quite challenging and diverse. The manager must look for opportunities to restructure tasks to provide people with a challenge. The scope for this may be limited by outside constraints, such as rigid job specifications and job demarcations agreed with the unions. Overcoming such problems may require help from senior managers in the firm.

Sense of competence

It seems that most employees are motivated by a need to become more competent. Bruner argues that unless people become competent at a job, they will find it difficult to stay interested in it. To achieve this sense of competence, employees must have some measure of how well they are doing. This relies on having a clear target and some feedback on performance. A vague task, stretching far into the future, offers little scope for measuring progress. Its effect on motivation will be small.

The need for competence may vary with age, sex and background, and managers must be sensitive to individual differences if they are to provide opportunities for competence needs to be met. Construction managers recognise the need to treat their subordinates as individuals (Fryer, 1979), but may not recognise how much their needs differ.

Employees often have *competence models* – individuals with whom they work, whose respect they seek and whose standards they wish to make their own. They identify with such models even when the latter are not in positions of authority – hence the success of many informal group leaders. People are very loyal to their competence models.

The need to co-operate

Many people need to respond to others and work together towards common objectives. They satisfy this need in different ways. Some are natural leaders whilst others contribute to the group by offering helpful suggestions, by evaluating ideas or simply by doing what is asked of them.

Managers must be tolerant and flexible; it is in cultivating these varied but interlocking roles that they help their subordinates to get a sense of working

together. If individuals can see how they contribute to their team's effectiveness, they are likely to become more motivated. Construction work is often organised so that it is carried out by small gangs. Tasks like bricklaying, which often depend on co-operation, will encourage motivation, if properly managed.

Goal-setting theory

Developed initially by Edwin Locke in the 1960s, goal theory argues that performance in almost any work activity can be improved if clear goals or targets are set in relation to specific tasks, the employee accepts those goals, and performance of the task can be measured and controlled. Cooper (1995) says that extensive research into the effect of goal-setting on performance shows that:

- Difficult goals lead to higher performance than moderate or easy goals.
- Specific, difficult goals are more effective than vague, broad goals.
- Feedback about the person's goal-directed behaviour is necessary if goal-setting is to work.
- Employees need to be committed to achieving the goals.

Bruner argued that if tasks are *too* difficult, there is an adverse effect on motivation. Locke made a similar point; employees will not be motivated if they don't possess – and know they don't possess – the skills needed to achieve a goal. But of course lack of skills is not the only reason a task may be too hard. Some of the obstacles may be beyond the employee's control. The manager must ensure that such obstacles can be resolved and that targets are therefore feasible.

Locke has suggested that goal-setting should be viewed as a motivational technique rather than a motivation theory.

Motivation and job satisfaction

There is a widely held view that if people are satisfied with their jobs, they will be motivated to work harder. However, it is difficult to draw a distinction between satisfaction, rewards and needs. Many rewards are sources of satisfaction, in the sense that they satisfy needs.

Researchers have put a lot of effort into showing that job satisfaction and motivation are correlated, but the evidence does not support this. Moreover, it has been difficult to separate cause and effect. Effective performance could lead to job satisfaction, rather than be the result of it. Also, removing the causes of dissatisfaction does not automatically lead to satisfaction!

It does seem that unconditional rewards – fringe benefits not directly related to performance – do help the firm attract and hold employees. They can therefore contribute to productivity by reducing absenteeism and labour turnover. But it seems very doubtful whether they lead to increased motivation.

Financial incentives

Financial rewards are based on instrumental conditioning. The construction industry introduced financial incentives after World War II to improve productivity. They have generally not worked well, because of the complexity of motivation and even of reinforcement (see instrumental conditioning, above). They are still widespread because most managers have not appreciated how complex motivation really is. Moreover, bonus schemes are 'visible' and are relatively easy to operate. Agreements about financial incentives have been reached by employers and unions over many years and these are formally written into working rule agreements.

For an incentive scheme to work even reasonably well, the following conditions must be observed:

- *Simplicity*. Operatives must be able to calculate or check their bonus earnings.
- *Honesty*. The scheme must be seen to be fair.
- *Agreement*. The terms must be fully accepted by workers and management.
- *Targets*. These must be reasonably attainable.
- *Size of task*. Bonus should be based on small parcels of work, enabling the operative to assess progress and bonus earned.
- *Group size*. Bonus should be related to individual effort (although, in practice, rewarding a small group can be effective and can encourage co-operation).
- *Availability of work*. There must be adequate bonusable work available, so that operatives are not prevented from earning bonus.
- *Payments*. These should be regular and prompt (although this is more likely to keep operatives happy than maintain their performance).
- *Scope of scheme*. As many tasks as possible should be bonusable.

For a discussion of the types of incentive scheme and their implementation, see Harris and McCaffer (2001).

Sub-contractors

Site managers are concerned with the motivation of two distinct groups – direct labour and sub-contract labour. Whilst they have direct influence and control over their own labour, sub-contractors pose a different problem.

The manager, having no direct authority over sub-contract operatives, must identify ways of supporting the sub-contractor's own efforts to get high performance levels.

A great deal can be done to support sub-contractors' site personnel. Although managers do not dictate the rewards to sub-contractors, the attention they give to target setting, planning and co-ordination can create better prospects for sub-contract staff to achieve their goals. Construction managers can do much to provide favourable conditions for sub-contract performance, but their efforts will be of little value unless the sub-contractor's own management is making an effort too.

Job design

Job design is about improving motivation and performance at work. Some people thought machines would help, by automating dull, monotonous work out of existence. But the replacement of human energy by machines has created problems too. It has encouraged specialisation and the deskilling of many jobs, making it hard to provide varied, interesting (and hence intrinsically motivating) work. We have paid a price for our technical progress. Some would argue that the price has been too high. What can be done to make work more meaningful? Several techniques have been tried.

Job enlargement

This involves making a job more interesting or challenging by widening the range of tasks. Normally the extra work is no more difficult. The challenge comes from the greater variety of tasks the worker handles. Monotony is reduced because each task is repeated less often.

Work can be restructured in this way for humanitarian reasons, but the underlying purpose is to improve performance. Individuals may see it as a management ploy to get more work out of them for the same pay.

In construction, job enlargement would certainly involve removing some trade demarcations. This could create problems, but would lead to more flexible use of employees. The gain in terms of human satisfaction might not be great. Many of the more skilled construction jobs already offer variety and interest.

Job enrichment

Sometimes called vertical job enlargement, this allows workers to take more responsibility for their work. This could include quality control and decisions about work methods and sequencing. The *autonomous work group* or *self-managed team* is an extension of this idea.

Whether job enrichment succeeds is hard to evaluate. There is some evidence that workers are more satisfied, but production levels are not always higher. The aim is to promote productivity by providing challenging jobs. One difficulty is that if people are given more responsibility, their bosses will have less. The effects of job enrichment on higher management levels must be considered, although there is often scope for senior staff to turn their attention to strategic problems, which might otherwise be neglected.

Some people may not want their jobs enriched or may not be able to cope with the responsibility. Extra training may be needed and this cost must be set against the benefits. Quality of work may improve when jobs are enriched and this must also be taken into account.

Ergonomics

This involves an interdisciplinary approach to work, using knowledge of anatomy, physiology and psychology. It is used to design better workplaces and to improve machine layouts and controls. Its main aim is to improve efficiency rather than job satisfaction, but designing jobs to suit people can help to increase satisfaction and reduce frustration. This will not be achieved if the purpose of the exercise is only to achieve efficient and cost-effective production. To maximise productivity *and* satisfaction, there must be a trade-off between technical efficiency and the employee's well-being. In ergonomics, human satisfaction should be a key consideration.

Job rotation

A rather more straightforward way of enlarging people's jobs is to move them around the business. This can widen the range of their work, creating interest and motivation, but its value may be short-lived if they see it as moving from one boring job to another. It is also costly to move people from jobs they are good at to jobs they are unfamiliar with. It can lead to union demarcation problems and, unless the tasks involved are well-designed and interesting, it is unlikely to lead to a substantial change in workers' attitudes to their jobs.

There is scope for varying the length and timing of job rotation and making it voluntary rather than compulsory. This may make it more attractive, but too much rotation can cause confusion, breaking down the task and social bonds which exist within the organisation.

Job rotation has another function – in staff development. In a study by the writer, construction managers said they valued job rotation as a way of developing managers (Fryer, 1977).

Time management

Put simply, time management refers to the development of processes and tools that increase efficiency and productivity. Time management is often thought of, or presented as, a set of time management skills; the theory is that once we master these skills, we will be more organised and efficient.

Over the years, practitioners and students of time management have attempted to analyse and understand the time use of those persons who want to become more efficient on the job, in their home lives and in the other activities that they undertake. Some sets of common precepts have emerged. These include the need for prioritisation, the creation and use of lists, and the assigning of activities to particular time slots on an individual's calendar (Macan, 1994). All these approaches are based on the premise that activities can be organised longitudinally and completed in manageable bits, allowing a person to work through the obligations of the

day to achieve desired goals. However, there have been studies that examined the relationship between traditional time management behaviours and the concept of polychronicity (Slocombe and Bluedorn, 1999). Polychronicity is the extent to which people prefer to engage in two or more tasks or events simultaneously. Thus, polychronic behaviour, at first glance, appears not to fit the more traditional step-by-step, one-thing at a time suggestions that characterise efficient time management. Rather than prioritising and ordering activities one by one, polychronic time use is characterised by overlaps of activities, interruptions, and the dovetailing of tasks.

In business, time management has morphed into everything from methodologies such as Enterprise Resource Planning through consultants' services such as Professional Organisers. There are people who find management tools, such as Project Information Management (PIM) software and PDAs (Personal Digital Assistants), useful for managing their time more effectively. As an example, PDAs can make it easier to schedule and keep track of events and appointments.

There are useful personal time management skills. These include:

- Goal setting
- Planning
- Scheduling
- Prioritising
- Decision-making
- Delegating.

The typical manager's day is full of activities, some of which are planned beforehand and some of which are new and need to be addressed as they arise. This makes time management difficult. However it is important that managers are able to make the relevant effort to consider some of the following issues:

- *Planning and organisation.* Organise your same-day appointments geographically. Arrange any errands to coincide with any outings. Also, organise materials for a meeting the day before to gain more time on the day of the appointment. Resolve to do today what you wanted to do tomorrow. Make a catch-up list of tasks you have avoided or put on the 'back-burner' and rank them from the most important to the least important. Resolve to do at least one task from this list each day.
- *Set priorities and focus on goals.* Determine what is most important – prioritising is the key to mastering the use of time.
- *Work breakdown.* Break down a major project into smaller component tasks that can be done in a short time. Target a date to complete each of these.
- *Avoid interruptions.* Be able to set aside a period of the day as 'off-limits' during which time you will not be interrupted. Use this time to work on your top priorities. Time your calls strategically. Make your contacts with colleagues, staff and clients productive, but crisp. Be able to schedule free time. Find at least one day each week during which you do no work or business at all. You will get a better perspective on your work after you have time away from it.
- *Delegation.* Be able to assign tasks to another or others to give you more time to handle the tasks which only you can do. Effectively multiplying your time is the ultimate time management technique.
- *Establish work habits.* There is a need to have a routine to take care of the work activities. If not, it is more difficult to focus, to get things done, to schedule activities, and to control distractions. With an effective routine, one can increase efficiency and get more things done.

Summary

Human performance is complex and difficult to control. Whether or not an individual works hard or works effectively depends on many diverse factors, such as skills, age, personality, past experience and motivation. The type of task, developments in technology, the job design, the feedback given and the organisational setting are also important. Moreover, all these variables interact with one another.

Stress affects performance, but not necessarily in a negative way. People often work best under moderate levels of stress.

Motivation is extremely complex. It seems that an individual's motivation depends on factors intrinsic to the task and on extrinsic rewards that the individual values. However, people are different and what motivates one person will not necessarily motivate another.

There is no simple relationship between job satisfaction, motivation and performance. Indeed, some evidence shows that poorly motivated people performing badly can be more satisfied than highly motivated workers doing good work.

To improve performance, managers must be aware of all the variables involved and take a contingency approach, recognising that what will work in one situation may not work in another.

Discussion

Discuss the important aspects of organisational and project strategies that are likely to contribute positively to the reduction in stress levels of employees.

Discuss the strategies that a construction manager might employ as part of effective time management.

Chapter 9

Problem-Solving and Decision-Making

Most managers, including construction managers, regard decision-making as a key aspect of their work. Studies have shown that managers do not always spend a lot of time on decisions, but making a good decision is often the result of much careful information gathering and analysis, involving discussions with a range of people, scrutiny of recorded information and, for some decisions, manipulation of data using computer programs.

So a decision reached in minutes may be preceded by many hours of collating and analysing information. Even a key business decision may be reached quickly, but only after prolonged consideration of information, a process which may have been spread over weeks or months and involved other staff.

Problem-solving has not enjoyed the same status in management thinking as decision-making. Problem-solving occurs all the time as people try to achieve their goals, find they cannot do so directly and search for ways round the problem. Much problem-solving, though quite elaborate, is performed without the individual's awareness of the process.

Some problems do not involve a decision, because there is only one course the manager can take. A decision almost always involves choosing between several courses of action. If the choices are well-defined, the problem can be described as routine. There may already be procedures for dealing with it. If the choices are unclear, the problem is non-routine and the manager may spend a lot of time looking at the options before reaching a decision.

The decision will be more difficult if the number of choices is large or the outcomes are hard to compare. If the manager lacks information about the problem or about the options available, the decision can become very difficult indeed.

Most decisions are routine. They may not take up a lot of the manager's time, but they interrupt other work. They distract the manager from more critical decisions, which are less structured but have long-term consequences. The manager must guard against this and get priorities right. But routine problems cannot be ignored. They can be urgent too!

The conflict between short-term and long-term decisions is a real one, as this site manager lucidly describes:

> The long-term decision is to some extent a stab in the dark, an attempt to decide policy some distance in the future based on today's standards and events. Immediate, operational decisions require no crystal-ball gazing. A problem presents itself and the manager makes a decision with most of the facts available. It is perhaps unfair to say that long-term decisions are 'neglected' but rather that they are 'shelved' – until today's long-term decision becomes tomorrow's immediate decision.
>
> To completely neglect the long-term is to court disaster, but equally if the short-term is neglected then, as fast as the organisation thinks it is making money in the future, it is definitely losing money in the present.
>
> As a site manager with too few supervisors under me, I have had to make the decision to spend an afternoon in the office, scheduling and programming, when I know full well that labour is idle or not fully employed on site. I have had to balance the effects of 50 per cent production against the possibility of a total lack of direction, or no materials on site with which to work. But in all honesty, I invariably end up scheduling and planning at home! That is, these items take second place to the immediate decisions.
>
> Consider too my contracts director. He feels it his duty to oversee existing contracts and seek out new work at the same time. But if one of his contracts is doing badly, he will feel that time spent in finding new work will be to the detriment of the existing contract.
>
> The site manager will be judged on the performance of the contract to date, rather than on the final result, and is therefore unlikely to plan too far ahead if the problems of today are pressing.
>
> Our industry is subject to change at short notice, often negating weeks of preparation and planning. The factors influencing a long-term decision may have changed before it has been implemented.

Clearly, managers face a dilemma, but the situation can be eased. The same manager had these suggestions for striking a better balance between long- and short-term decisions:

> If I had more intermediate supervisors, I would delegate more and my time could be spent more effectively on long-term tasks. Managers must do as much as possible to control the changing environment. Good long-term policies can ensure that many immediate operational decisions have already been made as part of a longer-term view.

Types of problem and decision

Management problems come in all shapes and sizes. They vary with the type of work, the rate of external change, the levels of management involved and so on. Some problems are easily resolved; others need a long and difficult period of creative thinking and decision-making. Igor Ansoff developed one of the best known analyses of decision types or categories (see Ansoff, 1987):

- *Operating decisions* relate to the firm's day-to-day activities and to making current operations profitable. They absorb a lot of time and energy and include decisions about allocating resources and people, planning and monitoring projects, scheduling routine tasks and co-ordinating sub-contractors.
- *Strategic decisions* are about long-term problems, risks and uncertainties. Senior

managers have to decide about markets and clients. They must review objectives and consider new techniques, to guarantee the firm's long-range survival. They must have a policy about sub-contracting work and employing direct labour.

- *Administrative decisions* bridge the gap between operating and strategic decisions and deal with how the firm functions effectively. Some of these decisions are about organising the business: what decision-making to centralise and decentralise; how to structure responsibilities, work flow, information flow, and location of facilities. Others are about obtaining and developing people and resources, and the financing of operations and capital assets.

Important decisions come mixed up with trivial but time-consuming demands. Somehow the manager must strike a *balance* between them. On a single day, a senior manager may have to make a decision about the firm's future, reconcile a conflict between two members of staff and advise on a host of operating problems. The strategic decisions are the ones most likely to remain hidden, or be pushed aside. The manager must actively pursue them.

Some managers write down their problems and arrange them in order of priority. However, importance and urgency do not always coincide. Managers must try to delegate routine decisions to give themselves more time for important ones. These are not always obvious and managers may have to search for the opportunities and threats looming up. Many contractors try to solve their trading problems using operating decisions, like cost-reduction exercises, when what is needed is a complete rethink of the business.

Site managers work mainly at the operating level, leaving the main strategic problems to their seniors. However, viewing the site as a separate organisation, some of the manager's decisions are strategic in relation to the project goals. The site manager must strive to balance the immediate and long-range issues, albeit within the narrower timespan of the contract.

H. A. Simon suggests another way of classifying decisions:

- *Programmed decisions*. These are repetitive and can be dealt with using tried procedures. If a problem occurs often – how much spot bonus to pay for sweeping up, how soon to call up a delivery of timber – a routine will be worked out for dealing with it.
- *Non-programmed decisions*. These are the difficult ones. They relate to problems which are novel and unstructured. There is no obvious method for dealing with them because they haven't happened before, or their structure is complex. To solve them, the manager must rely not only on techniques, but on judgement, intuition and generative thinking.

Many decisions are taken under pressure. The manager hasn't time to think them through and may seem to behave irrationally. Thorough planning, thinking ahead and the use of some decision rules can help the manager to cope. Decision rules evolve when a problem occurs regularly. Once a problem has been solved, the manager knows, more or less, what to do if it happens again.

Stages in problem-solving and decision-making

Problems and decisions vary so much in complexity and importance that the manager needs to be flexible to cope with them. On site, some of the problems are technical and can be quantified. Others, like some sub-contract problems, are organisational or contractual and demand judgement and compromise. The manager may have to decide what is *reasonable* rather than right.

Managers must know when a problem should be tackled alone and when to involve others who have some special knowledge or skill. They must be able to judge when others want a firm directive and when they expect consultation.

There have been many analyses of problem-solving and decision-making processes, but for many simple problems the steps are passed over quickly and without much conscious thought. A decision can emerge without anyone being sure when it was made or who made it; indeed, without anybody realising a decision was reached at all.

More complex problems must be approached systematically.

Deciding priorities

Problems rarely crop up one at a time, but come in thick and fast, important ones mixed up with trivial ones. The first step is to decide which problems need to be tackled first. This is not easy. Information will be incomplete and it will be difficult to judge priorities objectively.

Defining the problem

For straightforward problems, this stage can be passed over quickly, but classifying a problem too soon can limit one's thinking. Many problems need clearer definition before a solution can be sought. It often helps to write the problem down in simple language, identifying causes and the desirable outcome (although defining an acceptable solution is not always easy). If the problem is complex, it can be helpful to break it down into a series of 'problem statements' (Parnes, 1992). This makes the task more manageable and is more likely to lead to novel solutions.

Collecting information

Information is gathered, often from many sources. Opinions must be separated from facts and accuracy of data checked. Some of the information can be converted into numbers, graphs and diagrams, which make the problem more visual (but perhaps more abstract).

Major or complex problems may have to be tackled piecemeal to make them manageable. For instance, with materials wastage it may be necessary to tackle one cause of waste at a time (say, multiple handling) or one material (presumably one causing high wastage costs).

Generating choices

Possible solutions must be identified, but there may not be an ideal one. Choices emerge as information is analysed, evaluated and synthesised. However, the information is often incomplete and the validity of each possible solution can rarely be accurately assessed. The manager may have to be content with a course of action which is acceptable rather than correct. Most books on decision-making stress the importance of considering alternatives, but there are times when only one course of action is open.

Drucker has pointed out that one choice is to do nothing. Even this requires a decision, for it will produce an effect, just like any other course of action.

Reaching a decision and acting on it

Choosing between the alternatives is not easy. The full facts are seldom available, so the manager simply doesn't know which decision is best and has to fall back on experience and judgement.

Some decisions need two kinds of knowledge: that which comes from knowing the local situation and that which comes from knowing where the local situation fits into the wider picture. The person on the spot – the site manager, for instance – understands the local situation better than the senior manager, who may be very experienced, but is distant at head office. However, the senior manager is better able to judge the effect of a local decision on the whole firm and must decide when a decision needs this wider perspective.

Once implemented, the effects of a decision should be monitored to ensure that the solution is working.

Problem-solving and decision-making demand a mixture of experience, intellectual ability, skill in rearranging the problem, and insight. Previous habits play an important part in the process. Skills and principles previously learned can be used in solving problems, but people may persist in using solutions that worked in the past, but which are no longer appropriate.

Lack of skills for dealing adequately with any part of problem-solving can lead to poor results. Managers who are good at generating ideas will not necessarily be able to solve a problem if they cannot diagnose it properly in the first place.

Human reasoning and problem-solving

Before the development of experimental psychology, philosophers thought that all human thinking followed the laws of logic. We now know this is not the case. People are not always logical or rational. Instead, they often solve problems intuitively. They don't always know how they arrived at a solution, but are fairly sure it is correct.

H. A. Simon contrasted these two views of people as decision-makers. In the *rational* view, the manager has perfect knowledge of the problem and a clear idea of the alternatives and the kind of solution wanted. The other view is that the manager solves problems in a much more *intuitive* way. The manager rarely has perfect knowledge and cannot operate entirely rationally.

Some interesting research on human reasoning has been carried out by psychologists such as P. C. Wason and J. St. B. T. Evans. Logical reasoning involves two processes – deduction and induction. *Deduction* involves drawing specific inferences from a general set of statements, as in:

All construction workers are mortal.
Alex is a construction worker.
Therefore, Alex is mortal.

However, consider:

All construction workers wear safety helmets.
Alex is wearing a safety helmet.
Therefore, Alex is a construction worker.

The reasoning in the second example is faulty. Wason (1978) argues that people are often poor at reasoning; this can be counter-productive, but at times invaluable. Faulty reasoning forms the basis of much prejudiced thinking, but it becomes invaluable when it allows people to base useful conclusions on hunches. Strictly logical reasoning cannot be used in this way.

Induction involves generating a rule based on some specific instances. An example is 'All construction workers wear safety helmets' based on seeing a number of operatives wearing hard hats. Inductive inferences can always be disproved, for instance, by the appearance of a construction operative *not* wearing a hard hat.

Much of the time people do not reason logically, unless they have had special training. Wason argues that instead of looking at people's abilities to reason logically, it is more productive to study how they perform when given *closed* tasks, where they must choose among fixed alternatives, and *generative* tasks, where they have to think up their own hypotheses and examples. Wason evolved a number of experimental tasks which mirror the processes involved in everyday problem-solving. The results have been surprising. They show that people faced with difficult problems may regress to a simplistic approach. Having reached a solution, often latching on to information given in the problem, they strongly resist attempts to persuade them to change their minds.

In the mid-1970s, Wason and Evans published their *dual-process hypothesis* of reasoning. They argue that for simple problems, people can state accurately how they reached a solution. For more difficult problems, they cannot always do so. How people say they solved a problem may bear little resemblance to how they really did. They cannot recall how they reached the solution and therefore tailor their explanations to fit the result. Wason says this is like the intuition of mathe-

maticians who 'know' when a solution is correct and work out a proof afterwards. It is interesting that research on logical reasoning should result in statements about intuition and irrational thought.

Don Norman made some interesting comparisons between the reasoning capabilities of human beings and computers. People make elementary errors in perception, have poor memories and make mistakes in their reasoning. Computers handle vast amounts of data quickly and accurately and make logical inferences from data given. On the other hand, people play violins, paint masterpieces and understand language. Almost all the things computers are good at, people do badly and vice versa. Ironically, the aspects of human behaviour that we understand best are the things we do most poorly (Norman). One reason for this is that errors give clues to how people think. Indeed, psychologists have devised many experiments intended to cause people to make mistakes so that they can study human thought processes.

Some of the strengths of people and computers are compared in Table 9.1. We are lucky to have the best of both worlds. We can use computers for tasks that people are poor at or find boring. This gives people more time to concentrate on those creative tasks which they do better than computers.

Table 9.1 Comparison of human and computer attributes (adapted from Norman, 1978).

Computers	People
Fast at computation	Flexible
Accurate	Have vast stores of information and learned strategies
Good at computation	Good at applying things already known
Good at storing and manipulating information	Good at exploiting new situations
Good at storing abstract data (codes and figures)	Capable of insight
Good at making logical inferences	Good at intuition
Known memory capacity	Can tackle novel problems
Rigid	
	Slow at computation
	Prone to errors of perception, logical reasoning and recall

Artificial intelligence (AI)

AI uses computational approaches to simulate the characteristics of intelligent human thought and behaviour. One of the applications of AI is in the development of expert systems, which can emulate human judgement and expertise – diagnosing problems, recommending alternative solutions, identifying possible strategies, and so on. It is likely that computers and hence robots will eventually be able to do many of the things humans can do.

It appears that human skills and computer programs are arranged in the same, hierarchical way. That is to say, human behaviour is governed by programs or sequences of instructions, similar to those used by digital computers. Parts of these programs, like the actions of a scaffolder tightening a coupling, or a crane driver slewing right, are repeated again and again. These *sub-routines* are under the control of higher-level instructions called *executive programs*, which decide the overall plan of action and call upon the various sub-routines at the right points in the process.

Critics of this computer analogy stress that AI programs have not yet come anywhere near modelling the complexity of human cognitive processes. The human mind is so elaborate that even the most advanced AI models leave major aspects of thinking unexplained. But one should remember that a model does not have to be complete or correct to be useful. Its value lies in its ability to foster new understanding and stimulate research that extends our knowledge (Smith, 1993).

Group decision-making

A lot of interest has centred on whether groups make better decisions than individuals. The conclusion is that there are benefits and drawbacks. Some groups are very creative and produce consistently good decisions. Others never get things together.

Managers should avoid judging the value of group decision-making solely on the quality of decisions reached. The very process of co-operating to solve a problem can have a powerful effect on employees' satisfaction and motivation, and this may outweigh the disadvantages of a few poor decisions.

Hunt (1992) and other writers have summarised the advantages and disadvantages of group decision-making.

Advantages

- More skills and experiences are brought to bear on the problem.
- Groups can generate more ideas and information than individuals.
- Members can spot one another's mistakes.
- The task can be divided up between members.
- Group involvement can increase commitment, motivation and satisfaction.
- Groups sometimes average their answers and eliminate extreme positions (but see 'Group polarisation' below).

Disadvantages

- Members may be too alike.
- Members may be so different that they cannot communicate with, or understand, one another.
- Averaged answers may end up as ineffective compromises.
- Decisions often take much longer to reach.

- Members may not identify one another's skills and experiences, so that their contributions are wasted.
- Discussions go off at a tangent, wasting time and effort and creating frustration and annoyance.
- Some members don't understand the problem as well as others.
- Time is lost dealing with personal clashes and social issues.
- Some members dominate the others and do not listen to their ideas. The more passive members stop making suggestions.
- If there are too many in the group, some will not get a chance to express their views.

Despite these problems, the trend towards group decision-making, sometimes called *management by committee*, has continued. For one thing, organisations have become larger and more complex, making it increasingly difficult for one person, or even one department, to reach a decision without consulting others who have relevant information or are affected by the outcome. Moreover, people want to be involved in decision-making about matters that affect them.

Hunt suggests that groups are more effective at decision-making if certain guidelines are followed:

- Give the group a clearly defined, 'concrete' task, with a clear objective.
- Give the group autonomy to carry out the task, and feedback on its decisions.
- Reward the group as a whole, not as individuals.
- Give the group a task which needs a variety of skills and experiences.
- Teach group members about group processes.
- Appoint a good leader who will co-ordinate the group and keep it on course.
- Restrict the size of the group. Five or six is often about right.
- Don't give a group a decision which only justifies one person's attention. Decisions should be assigned to groups only when there is a clear benefit to the members or the organisation.

The problem-solving abilities of a group depend to a large extent on the interaction within the group (for further discussion, see Chapter 7).

When unanimous agreement is a problem in decision-making: groupthink

Cline (1994) is one of the few researchers who has investigated what happens when group members seem to agree, but probably do not. The findings show that, during difficult tasks and stressful situations, members of the group are more inclined to pursue relationship goals supporting each other than to deal with the problem and enquire about the risks involved. Also, individuals may avoid disagreeing or asking for further information as they feel that their view is inferior, or they believe that if they offer a different point of view they may offend or upset other members of the group. When those considered to hold more senior or authoritarian positions in the group put forward a view, some members of the group may be so fearful that they will not put forward their true opinion, even if asked to. Some members within a group may have such a desire to be part of the team included in future projects, and so worried about rejection or conflict, that they may withhold potentially important information so that they don't offend influential group members. Pressure to agree may be so strong that group members may continue to agree blandly whilst unwittingly consenting to their own destruction.

'Groupthink' is an expression used to describe a group that feels that they are moving forward agreeing on issues, when privately some members of the group are not in agreement, but do not express this. Cline (1994) suggested a few ways of avoiding 'groupthink'. This included asking questions, noting an absence of disagreement (which serves as a warning to group members to reassess alternatives) and being aware that the risk of illusory agreement heightens as external stress increases. Hartley (1997) also points out that a seemingly unanimous agreement by the group may disguise a silent minority.

Group polarisation and 'the risky shift'

Groups often make more risky decisions than individuals. This was discovered in the late 1950s. It came as a surprise because it had been assumed that committees and other groups tend to stifle individual boldness and produce cautious, unimaginative decisions (Taylor *et al.* 1982).

Various explanations were put forward for this *risky shift*. The most successful was by Brown (1965; 1986). He suggested that risk is valued in Western culture. We admire risk-takers more than people who are timid and cautious. People discover that there are others in their group who are prepared to take higher risks, so to maintain their self-image, they shift their level of risk-taking towards the higher level.

However, the shift is sometimes towards caution. A group may make a safer decision than the individual members would have done. Brown's explanation is that caution is also valued in some situations (as in investment decisions).

In the late 1960s, it became apparent that an effect called *group polarisation* was at the root of the risky and cautious shifts. An important French study by Moscovici and Zavalloni (1969) showed that individuals are drawn towards the predominant attitude in their group. When group members' individual judgements tend towards the risky pole, a risky shift occurs. When individuals are tending towards the cautious pole, there is a cautious shift. This effect has been amply shown by experiments.

Brown identified another factor which contributes to the polarisation effect. He argued that individuals tend to support the dominant group opinion because they want to remain popular. This reinforces the tendency towards a risky or cautious shift.

Managers should be aware of this polarisation effect, as it will affect the choice of individual and group decision-making for specific problems. For instance, it has

been found that trade union mass meetings produce more militant decisions than ballots among members. Similarly, when members of bargaining teams set high targets, discussion results in even higher targets.

Complexities of group decision-making

Owing to the many variables associated with group decision-making, it is a difficult topic to understand. Because people seem to make effective decisions every day, writers often oversimplify the process, neglecting many of the factors that influence choices (Hirokawa and Poole, 1996). Some treat decisions as discrete events that are distinguishable from social behaviour, overlooking interaction, influences, constrained choices, assumptions, power, dominance, norms, rituals, practices, support, relationships, conflict and other group phenomena that may affect the decision-making process.

Many aspects of group behaviour affect group decisions (Fig. 9.1). Group practices can develop into norms or ritual type behaviour that eventually provide a backdrop against which decisions are made (Hackman, 1992). Many groups operate almost automatically and fail to consider what they are doing and the possible effects and limitations of the procedures that they use.

While decisions can be made by an individual alone or within a group context, the difference between making a decision alone and making a group decision is

Figure 9.1 Factors affecting group interaction and decision making potential.

considerable. Group chemistry has the potential to release the best that every member has to offer, generating ideas and synthesising view points, or it can stifle contribution contaminating the group product (Hirokawa and Poole, 1996). To assist the group's effectiveness, an examination of the nature of the task, perceptual barriers, procedures and methods used during decision-making is needed. Decisions made by groups where members are prevented from participating fully do not make use of the group's decision-making potential and these decisions can result in adverse consequences (Hartley, 1997). Failing to consider issues of group interaction and behaviour when making decisions can lead to disasters. There are a few notable examples of institutional group behaviour that can help contextualise poor decision-making processes, for example Capers and Lipton's (1993) research into the behaviours of engineers involved in the development of the Hubble Space Telescope, and the many studies and theories now emerging from the Challenger space shuttle (Hirokawa *et al.*, 1988; Cline, 1994; Hirokawa *et al.*, 1996). In all of the examples reported, members within the teams knew the problems that caused the disasters before the projects were launched. Probably more interesting is that the specialists within the teams had the knowledge to solve the problems, yet for some reason this information was not used. The behaviours reported in such disasters are often common in everyday groups, although the consequence of ignoring information, blocking contributions and not considering others does not always lead to such major disasters.

The phenomena of 'groupthink or risky shift' are closely related to such issues and should also be considered.

Groupthink is where individuals within the group believe that all other group members are in agreement and, even though the individual does not agree with the opinions expressed, they choose not to disagree or put forward their alternative view. The individual feels that their opinion is inferior to those of the other members of the group, or that it will not receive a favourable response. Often when groups seem to be in unanimous agreement individual members may be suppressing alternative views, and may even agree when they actually disagree.

Risky shift often occurs in group situations. Research has shown that groups are more likely to decide on courses of action that involve greater risks than an individual would. The more flamboyant, dominant and courageous members of the group may appear more interesting and exert greater influence on other group members, encouraging others to take increased risks. Also, it is often perceived that the individual is protected in a group and if things go wrong they will not be held personally accountable. The lack of individual responsibility may contribute to groups accepting greater risks.

Video observation and reflection on group decision-making

Although a vast range of what-to-do and what-not-to-do decision-making models do exist, they all have their limitations (Jarboe, 1996). Rather than overwhelming

practitioners with the vast array of decision-making models, attempts should be made to develop a better understanding of the group decision-making process.

No amount of theoretical discussion seems to have quite the same impact as a study of one's self in a decision-making and problem-solving context. Possibly one of the best methods for evaluating a group decision-making process is to video-record group meetings and allow the members to investigate and evaluate their own and others' performance (Gorse and Whitehead, 2002). Previous research on video feedback has found that it can also affect future group behaviour. Weber's (1971) research on team building and the effects of video feedback on group interaction found that simply exposing groups to video footage of earlier meetings moderated subsequent behaviour. Over a series of meetings, control groups that did not receive feedback during the experiment increasingly engaged in less co-operative behaviours and became more negative. Members in groups who watched footage of their previous interaction reduced their communication dominance and encouraged others to participate in the group. Thus, when individuals observe their own behaviour they become much more aware of the group's behaviour and how they influence and affect other members of the group.

During the discussions prior to examination of video footage of group decision-making people are prone to making very simple generalisations about specific features that they believe have the greatest effects on the group and decision-making (Gorse and Whitehead, 2002). As the participants take part in group decision-making (which is video recorded) and then later observe themselves engaging in the group decision-making process, they become more aware of their own action and behaviours that affect other members of the group. Early observations by the participants tend to concentrate on the interaction behaviour of themselves, others with whom they engage, and those who affect their individual contributions. This self-interest results in criticism, defence and general statements regarding mannerisms and behaviours used by themselves. Some participants suggest that their behaviour is different from what they imagined. Participants have noted characteristics that they were satisfied and uncomfortable with. The first important discovery is that perceptions of how one behaved can be quite different from that observed.

As participants are allowed to analyse the video data using various quantitative methods (e.g. counting the number of times a person contributed, the number of times a person spoke, offered a suggestion or disagreed with another) and qualitative methods (e.g. making notes of how conflict developed and how problems were resolved) they discover factors that affect the group's discussion, and ultimately the group's decisions. Examinations of interaction often reveal that participation within the group is not distributed evenly. There are dominant group members, those who participate less or are reluctant to communicate, members to whom most of the group interaction is addressed. Thus, the skewed interaction is used to inform the group's initial decisions. Participants may realise that some members are more likely to offer direction, others show emotion and disagree more than other members.

Once data on the number of times a person speaks to or interrupts another are

collected, group members often re-examine the video data attempting to determine how members dominated discussions. Those less willing to contribute also become subjects of interest. Attempts are made to disclose why individuals did not contribute; whether they were blocked, suppressed, chose not to contribute, became free-riders (or loafers). Observations often uncover different styles of interaction behaviour that seem to be more effective in encouraging others to engage in interaction.

Following the identification of unequal participation, discussions develop over the strengths and weaknesses when compared with a more balanced level of contribution. Proposals then emerge on how greater contribution from less dominant members can be achieved. The group's investigations are often iterative, with members reviewing the text, examining the video and discussing observations a number of times and changing behaviour between meetings. As well as observing others both during the process and using the video data, participants can also reflect on the internal feelings experienced, providing an extra dimension to the exercise.

The learning process equips the participants with a greater awareness of factors that will affect their own and others' ability to influence and contribute to decision-making processes.

The video exercise has potential to be used as an in-house company training tool. With relatively minor alterations, practitioners can engage in a decision-making process that focuses on an aspect of decisions at work. Using video and audio recording techniques described above, Conflict Management Profiles (Fig. 6.8) and the Quantitative Analysis and Direction (QuAD) tick sheet (Fig. 5.4) participants can be encouraged to evaluate their own and other colleagues' behaviour. With the aid of a facilitator to control monitoring equipment and subsequent discussions, the exercise develops greater awareness of oneself and others during the group decision-making. Such training has the potential to improve understanding of multi-disciplinary decision-making processes.

Suspending judgement in problem-solving

When managers think about a problem, their purpose is not to be right, but to be effective. The education system instils in us the idea that we should be right all the time, but the manager only needs to be right *in the end*. The danger of trying to be right all the time is that it puts the manager's thinking in a straitjacket. It shuts out ideas that are not right in themselves, yet could trigger an original approach to the problem. An effective solution could depend on identifying this fresh angle.

Approaches to thinking stressed by people like Liam Hudson and Edward de Bono rely on the premise that we may need to be wrong on the way to a solution if we are to come up with a good one.

Lateral thinking – a term introduced by de Bono – is not concerned with the *logical arrangement* of information, but with where it will *lead*. De Bono stresses that we have been taught to reject silly or impractical ideas; we judge ideas as useful or

useless almost as quickly as we think of them. The impractical ideas are pushed aside so quickly that further thinking which they might have generated is cut off. Instead, we immediately channel our thinking into well-trodden paths that often end with unimaginative solutions.

If managers suspend judgement, ideas survive longer and may breed further ideas. If a manager resists the urge to label an idea as good or bad, subordinates may feel safer in making suggestions – suggestions the manager might find very helpful. Ideas which don't fit into the manager's current framework of ideas may survive long enough to show that the framework itself needs modifying.

In lateral thinking, the manager suspends judgement because exploring an idea is much more productive than evaluating it. The longer the idea survives, the more likely it is that it will lead to a fresh insight.

Creative problem-solving (CPS)

There are a large number of techniques which can be used by managers and others, individually or in groups, to generate and evaluate original and imaginative solutions to problems. VanGundy (1988, 1992) provides an excellent summary of some of them.

CPS techniques help people to break away from entrenched thinking habits and generate truly original ideas. Participants are required to suspend judgement on their own and others' ideas, so that they can explore very unusual, even fantastic, ideas without fear of ridicule.

Brainstorming, also known as information showering, is one of the better known techniques and uses spontaneous group discussion to generate more ideas and better solutions to problems.

For brainstorming to be effective:

- the problem must be stated clearly and simply;
- participants should not criticise one another's ideas;
- self-criticism is discouraged;
- all ideas are recorded, preferably in a way which allows everyone to see them;
- free association of ideas is encouraged;
- quantity of ideas is important – they should come thick and fast;
- building on and relating to previous ideas is encouraged.

Suspending judgement is vital in creative problem-solving. If members criticise one another, this inhibits thinking and discourages people from sharing their ideas. Fear of looking a fool or being proved wrong is probably the biggest barrier to creative thinking. The barrier is heightened when people of varying seniority work together on a problem. Juniors are afraid to put forward unusual ideas for fear it will damage their prospects. Seniors are reluctant to make wild suggestions which might damage their image or credibility.

It is vital to get rid of such barriers in CPS sessions. Participants must *free-wheel*, letting go of inhibitions and allowing themselves to think freely about the problem. Even a wild idea may quickly be modified by someone else, exposing a fresh insight into the problem. Usually, ideas are not evaluated until later, often some time after the session.

Participants should actively develop one another's ideas, allowing one idea to spark off another. In normal meetings, this rarely happens; people are so busy deciding what they want to say next, that they ignore other people's suggestions.

Before a group CPS session, the leader should remind the group of the rules and perhaps start with a warm-up on an unrelated theme. This helps overcome initial anxiety and lack of self-confidence. Ideas often dry up after half an hour. It may help to have a break, before returning to the problem.

Study of CPS groups in business suggests that members learn to show greater empathy and tolerance for their colleagues' ideas. It can also lead to improved morale because there is more interaction and everybody feels they are making a contribution.

Alex Osborn is credited with founding the technique of brainstorming. His process was elaborated by Parnes and is now known as the Osborn–Parnes creative problem-solving process. The CPS process can be used by individuals and teams and, in essence, involves a systematic approach to idea generation carried through to implementation of the chosen solution. At every stage, problem solvers are required to first think broadly (as in brainstorming) and then analytically, before finally homing in on the chosen course of action.

Another creativity development programme, *Synectics*, deliberately brings together people with different expertise to work on a problem. The techniques used involve drawing analogies which may relate to quite disparate disciplines. For example, designers and engineers often use biology as a fruitful source of ideas. They might explore how plants cope with harsh climatic conditions. They then consider what analogies can be drawn with their design brief. Synectics uses analogies in complex ways (Gordon, 1961). Gordon points out that often the really productive ideas result from noticing the points of similarity between otherwise unrelated phenomena.

Other idea generation tools

There are many methods that are used to help groups generate ideas, evaluate alternatives and solve problems, a few of those most commonly used are identified below:

- *Attribute listing*. Very useful for tackling product or process problems. A problem and its objectives are clearly stated. Next, all the attributes of the problem are listed. Witholding all evaluation, each attribute is systematically modified until ideas for a solution emerge.

- *Reverse brainstorming*. The same as above, but generates ideas that would make the problem worse.
- *Role storming*. Each person is asked to brainstorm an issue from another person's perspective.
- *Idea writing*. This is used to explore the meaning of ideas generated. The process is normally undertaken in four stages: (1) Divide into subgroups; (2) Each member writes responses based on an idea, topic or suggestion; (3) Response forms are shared and exchanged and (4) Each member then reads their initial response and a group discussion follows.
- *Delphi method*. Experts work independently listing their individual ideas. The ideas are then reported to all group members and then ranked in order of usefulness and, finally, the ranking of ideas is reconsidered.
- *Focus group*. A group directly affected by an issue or that has a specific interest in a topic are brought together to gather responses and thoughts.
- *Buzz groups*. Large groups are divided into smaller groups to generate ideas on a topic and then bring their ideas back to the larger group forum where they are evaluated.
- *Brainwriting*. Members generate ideas silently. In one variant, each member writes down one idea on a card and passes it on to the next member. The process is used to help members to build on ideas and stimulate thought. Following brainwriting *consensus mapping* can be carried out. In consensus mapping, cards from members can be sorted into various classifications to develop more informed solutions.

Before selecting and using the above methods, which either deal with problems using groups or individuals in isolation, it is important to consider factors that affect individual and group performance.

Will the problem-solving process inhibit members' contributions?

These are the factors to be considered before selecting and using idea generation and decision-making tools:

- Individual's confidence when working alone, when working in groups.
- Members' abilities to use communication methods (reading, writing, talking, presenting skills, mathematical computations and language).
- Reluctant and dominant communicators. A socially inept member may be the sole expert in the team, yet they may find it difficult to contribute their ideas. Alternatively the dominant person may have little relevant knowledge, yet can be highly influential.
- Members' ability to identify relevant knowledge and expertise within a group. Regardless of skewed participation, groups are capable of recognising individual expertise (Littlepage and Silbiger, 1992); however, plenty of legal decisions show that some professionals do lie and exaggerate.

- Members' ability to control and deal with differences of opinion and conflict.
- Members' ability to ask questions, explore options and make detailed enquiries.
- Informal and formal leadership. Those who are socially liked or respected often assume such roles; members of groups may try to please these members by agreeing with them without fully considering proposals.
- Members' ability to build on others' ideas. Sometimes hopping on another person's idea is frowned upon, yet such behaviour can be successful, rewarding to the group and should be encouraged.
- Members' ability to think laterally and come up with ideas that are based on a very different approach. Those with minimal experience and expertise often propose unconstrained solutions.
- Risk – note that groups tend to take riskier decisions. The belief that no one person will be accountable if the decision goes wrong is considered to be a key reason for the riskier decision. Should one person assume sole responsibility for the group decision, possibly reducing such effects?
- Problems of groupthink, individuals may withhold contributions.
- The effect of taking turns in groups reduces the amount of contributions that a member can make.

In order to deal with some of these issues it may be necessary to use a combination of the methods previously described. Different approaches can be used to allow people to work alone and/or in groups, use methods that develop ideas that build on another person's idea and/or produce alternative approaches to ideas, select techniques that use facilitators or experts and/or allow groups to work unaided. There are benefits to be gained from both working in isolation and in groups. While some group members may suppress others, the combined discussion of two or more people may develop a proposal that none of the members could have individually envisaged.

Summary

Problems crop up in an endless stream, important ones mixed up with trivial ones. When a problem can be solved in various ways, a decision is needed. Decisions vary from routine and short-term, to unstructured and long-term. Managers often neglect the strategic decisions and spend too long on the operational ones. It is important to strike a balance between the two.

There are definite steps in problem-solving and making decisions, but for simpler problems they are passed over quickly and without much conscious thought. Many decisions are reached intuitively rather than logically. A common difficulty is that people classify problems too soon, failing to collect and interpret all the relevant information. Lack of skill in any stage of problem-solving will lead to poor decisions and solutions.

Group decision-making has benefits and drawbacks. It is most effective when

there is a clear task with specific objectives, and when participation helps secure the group's commitment to the task. Groups may reach a riskier or safer decision than they would have as individuals.

There is a wide range of creative problem-solving techniques for generating and evaluating new ideas. They help remove the barriers to creativity, leading to more imaginative solutions to problems.

Exercise

Within a group, propose a fictional or real problem, which is related to a particular situation, and identify a number of problem-solving and decision-making techniques that would be suitable for exploring the problem and options available. Discuss why the techniques selected are more suitable than other techniques.

Chapter 10
Managing Change

In the late 1990s Sir John Egan's report, *Rethinking Construction*, issued a challenge to the construction industry to commit itself to change, change that might lead to dramatic improvements in overall performance. As such it was a wake up call to the construction industry, setting out five key drivers for change:

- Committed leadership
- A focus on the customer
- Integrated processes and teams
- A quality driven agenda
- Commitment to people.

Importantly, Egan set targets against which efficiency gains could be compared. Namely, annual reductions of 10% in construction cost and construction time, reductions in defects in projects and reportable accidents together with increased productivity and turnover, and profits of 10% per year. Whilst the report was not without its critics, these statements of intent were backed up by radical proposals to change the processes and culture that were endemic in the industry. Integrated teams and supply chains, coupled with an emphasis on delivering value rather than lowest price, provided the platform for delivering improvements, much as they were perceived to have done in other industries.

Four years later, Egan (2002) reported that change was 'already underway' and, consistent with his ethos of continuous improvement, he proposed further strategic targets that focused on the factors that underpin the successful delivery of projects. Namely, teamwork, stakeholder collaboration and education. There could be no doubting, therefore, Egan's desire to place the workforce and their concerns 'at the heart of the industry's agenda'.

To achieve cultural change within any organisation, long-term people-oriented strategies are required – a fact recognised in The Respect for People Working Group (2002) report, *A Framework for Action*. The report features key Action Themes, i.e. equality and diversity, the working environment, health, safety and career development and lifelong learning, and reiterates the business case for investing in people.

When organisations are operating in a stable, predictable environment, there is little pressure to change. But most organisations are not. They are having to face up to the need for quite dramatic change and this must be planned.

Future studies

Future studies is a developing discipline which uses a number of quantitative and qualitative methods to study change. These methods range from forecasting based on trend extrapolation, which mostly uses numerical data, to more judgemental methods, such as scenario building and the construction of forecasting models, some of which are very complex (e.g. global models).

All the methods suffer from a common problem – the future is basically unpredictable – it can only be assessed in terms of possibilities and probabilities. As the possibilities are almost endless, a whole range of futures can be posited, from highly optimistic to totally pessimistic. Trend extrapolation, in particular, can be very misleading, because past trends may be totally unreliable as a guide to what will happen in the future.

Whilst acknowledging the difficulties associated with predicting the future, May (1996) recognises that successful firms increasingly need to respond to changing markets. May suggests a method of classifying the ways of thinking about the future. Futures techniques are placed on a continuum between those that are concerned with foreseeing the future and those that aim to help managers to create the future. Techniques concerned with the management of change, e.g. impact-assessment, cost benefit analysis, scenarios and risk assessment, are centrally positioned on the continuum as these are deemed to be useful in situations where it is difficult either to foresee the future or plan a pre-determined goal with any certainty. May examines in detail the techniques associated with foreseeing, managing and creating the future.

The process of organisational change

Recognising the need for change

Part of the pressure for change originates outside the organisation, in the form of shifting market structure, technological development and government measures. Other pressures come from within the organisation. They include new attitudes to work and industrial conflict. Any effort to change the organisation must take account of both external and internal forces.

External pressures

Companies are experiencing unprecedented pressure to change the processes, structures and functional divisions of their organisations. The forces for change include the following:

- Increasingly complex and onerous client requirements.
- Globalisation of the world economy.

- The impact of Internet-based information and communication.
- Public pressure for efficiency improvements and best value.
- The growth of public private partnerships.
- Public concern about the environmental impact of business.

Winch (2000) suggests that the internationalisation of construction clients and construction firms, together with economic imperatives, underlie the changes currently taking place in the construction industry. The British construction industry is relatively successful in international markets but Winch believes that it faces important challenges. Sustained client commitment to a best value ethos, redefinition of professional roles, greater understanding of whole-life building performance and the potential of concessions contracting and renewed focus on organisational capability and the control of the production process are advocated.

Inside pressures

The manager must take account of the organisation's *climate* or ethos, because it creates pressure for change. The norms, values and attitudes of managers and other employees are among the factors affecting its ethos.

An organisation's climate can be assessed by looking at the following.

- Workers' perceptions of whether the atmosphere at work is friendly or hostile.
- The kind of leadership style adopted by management.
- The extent to which people have to conform to rules and procedures.
- The production standards set by managers and workers.
- The ways in which employees are rewarded.

The climate can centre around power, relationships or achievement. In a power-oriented climate, the decisions are centralised, communication channels are clearly defined and authority is clearly established and frequently used. There is little room for individual discretion.

In a relationship- or affiliation-oriented climate, the firm is organised along more democratic lines. Workers participate in problem-solving and are encouraged to bring their difficulties to the manager.

The climate is said to be achievement-oriented when senior managers formulate objectives, but allow groups to work out their own procedures and rewards. Top managers expect high performance from employees and give them feedback on their achievements.

Planning organisational change

The firm's problems must be thoroughly investigated before any action can be taken. Managers must agree on the scope of the problems and the need for change.

Data must be collected and analysed with care and presented in a suitable form to employees affected by the changes or involved in putting them into action.

The goals of change should be realistic and clearly stated. Where possible, they should be quantified, so that progress can be measured. Many attempts to change organisations have failed because the purpose was not clearly stated and misunderstandings arose among employees who had to implement the change. There should be a clear statement of the timescale for change and the activities needed to achieve it. The process cannot be monitored or controlled unless there is a clear plan of action.

Implementing change

Change can be structural, technical or social. Structural changes introduce new systems of authority, work flows, rules and decision-making systems. Technical change stresses new work methods and layouts, the use of computers and so on. Social changes include such things as the modification of social skills, changes in attitudes and organisational cultures and new approaches to motivation.

Systems thinking stresses that these variables are interdependent. For example, a change leading to decentralised decision-making will affect the attitudes and skill needs of more junior managers. Similarly, the introduction of a technical change, such as a management information system, may change the structure of the organisation and alter the tasks and skills of some employees.

Different firms adopt different strategies for coping with change. Some firms lack rigid structure and rules and are therefore inherently adaptable. Bureaucratic firms find it harder. They often respond to rapid change by setting up new departments or functions, or by strengthening the formal structure. They redefine managerial roles and working relationships along conventional lines, making reference to organisation charts and manuals. Unless a new department has been set up, problems with change tend to be referred up the hierarchy and end up on the desks of senior managers. The latter become heavily loaded with decisions. If a new department is set up to deal with the demands of change, a communications problem arises between the new and existing departments. In the hierarchic firm, people are not encouraged to move freely across functional boundaries. In flexible firms, these problems hardly exist.

Once changes have been introduced, they must be closely monitored for some time to ensure that they are working properly.

Managing change

Change can be implemented at various levels. At the organisational level, it involves activities like strategic management, marketing and organisational development. At the individual level, it involves changing employees' attitudes and helping and encouraging them to develop creative and adaptive skills (Fig. 10.1). To integrate

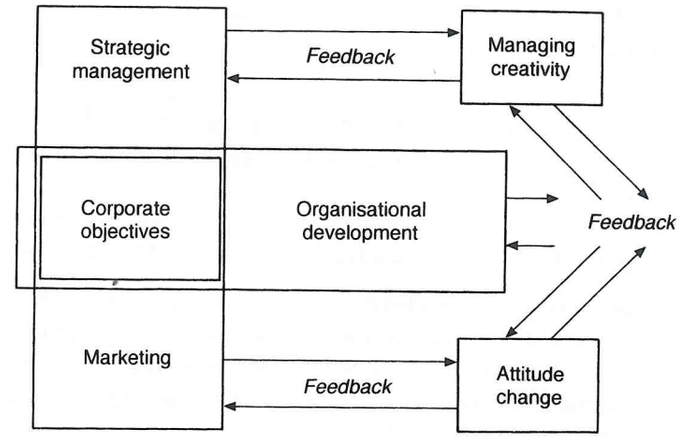


Figure 10.1 The organisational change process.

these levels of change, the composition and tasks of groups and departments may have to be altered.

Strategic management

Terms like strategic management, strategic planning and corporate strategy tend to be used interchangeably. The term strategic management is used here as the umbrella term. Grundy (1994) defines *strategy* as:

> A pattern in the decisions and behaviour of an organisation, team or individual in creating and responding to change.

Although strategic management usually focuses on the organisational level, Grundy's definition is revealing because it stresses the human elements of strategic change (decisions and behaviour), that they are organised (patterns) and that they occur at various levels (including teams). Indeed, Edgar Schein's concept of the psychological contract was built on the premise that there is a consensus between management and employees about the organisation's mission, goals and the strategies for achieving them.

Many people find this hard to accept – seeing strategy as the prerogative of top management. But this belief needs to be reviewed in the light of modern management thinking, with its emphasis on participation, empowerment and ethical and social responsibility. Most would, however, agree that strategic management is fundamental. It deals with significant change, ambiguity, complexity – everything that is non-routine. It is about where the organisation is heading, why, and how it plans to get there.

Deciding how to get there is given names like strategic planning or corporate planning. One analysis uses strategic planning as the overarching level which divides into:

- *Corporate planning* – planning that can't be delegated[1].
- *Business planning* – decisions that are critical to sustainable competitive advantage.
- *Functional planning* – to develop the organisation's core competencies, the sources of its competitive advantage (Hax and Majluf, 1994).

Strategic management establishes the mission of the organisation and its long-term goals, assesses its strengths and weaknesses and searches for the opportunities and threats on the horizon. These questions also form the starting point for marketing. Strategic planning addresses the question of how to implement the long-term goals. This also impacts on marketing.

Wheelen and Hunger (2002) break down strategic management into: environmental scanning, strategy formulation, strategy implementation, and evaluation and control. Strategy formulation includes establishing the organisation's mission and long-term goals, leading to strategies and policies. These strategies and policies are the basis of strategic planning. Figure 10.2 summarises the elements of strategic management using Wheelen and Hunger's broad framework.

Environmental scanning

Decisions about the organisation's future have to take account of both external and internal constraints. Actively searching both the external and internal environment for signs of new opportunities, strengths, trend shifts and dangers is sometimes called environmental scanning. An internal appraisal should include company performance and assets, financial standing, the organisation's structure and systems, and employee strengths and weaknesses. An external appraisal would include a study of the expected pattern of future competition and other events and trends which may influence the organisation's future success.

The aim is to collect reliable data and identify the environmental factors which will most influence the business – and how they may impact on it. The main difficulty is, of course, uncertainty – data is unavailable or unreliable; things change all the time; today's opportunities may become tomorrow's threats. The changes themselves are complex. As Wheelen and Hunger (2002) acknowledge, environmental scanning can be the source of reasonably reliable data on the present situation and current trends, but intuition and luck are needed to predict accurately if these trends will continue.

Strategic planning

The plan describes how the organisation will try to meet its strategic goals. It can be broken into a hierarchy of sub-plans using the kind of breakdown suggested by Hax and Majluf above. This ensures that issues like markets, competitive advantage, financial constraints, resources and employee competencies are systematically examined, making the plan as realistic as possible.

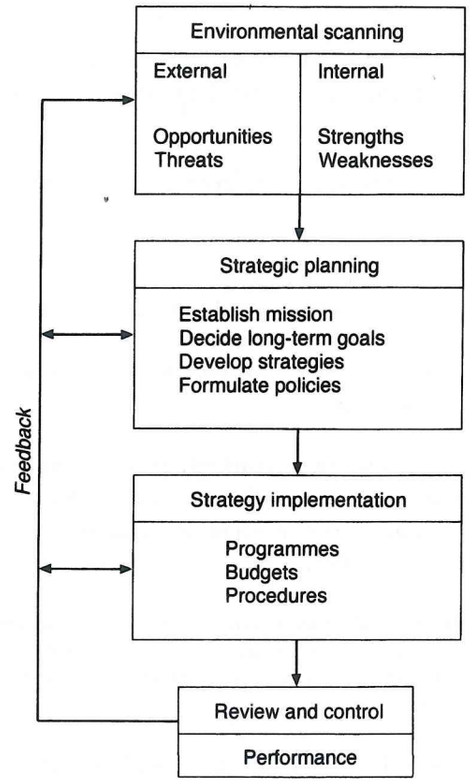


Figure 10.2 The strategic management process.

However, because its timescale is long, it is impossible to exercise strategic planning in too great a detail. Too much detail would, in fact, make the plan too rigid. Like all plans, the strategic plan must be flexible enough to meet unexpected events. Much of the process will rely more heavily on the experience and judgement of managers than on quantitative techniques.

Implementing the plan

The plan must be disseminated throughout the organisation. Co-ordinated, goal-directed action cannot occur if employees don't know what the plan is. The plan is divided up and allocated to departments and groups. The information will include targets, programmes of action, a budget for each programme, and procedures for operationalising it. Clearly, this stage is important and requires close attention. Clear communication of this information is vital to effective implementation.

Review and control performance

The strategic plan, like any plan, must be continually monitored, and corrective action taken if performance varies from it. Systems must be set up to provide reliable feedback.

There are a number of broad options open to a firm when reviewing its long-term plans:

- *Containment*. Attempt to maintain present workload in existing market(s).
- *Expansion*. Try to increase workload in present market(s).
- *Contraction*. Reduce current workload.
- *Diversification*. Try to enter new market(s). These can either replace or be additional to present ones.

Benchmarking has become an increasingly popular management tool for understanding how value is delivered for customers (Winch, 2001) and is widely acknowledged as having gained momentum in the construction industry since the mid-1990s. Pickrell *et al.* (1997) define benchmarking as:

> a continuous process of establishing critical areas for improvement within an organisation, investigating the extent to which others carry out the same or similar tasks more efficiently, identifying the techniques that give rise to better performance, implementing them and measuring the outcome

As such, benchmarking has proved to be a flexible tool that can be used in isolation or to support other strategies (Garnett and Pickrell, 2000). Further details on benchmarking and Key Performance Indicators can be accessed on the KPIZone website.

Wheelen and Hunger observe that benchmarking has been found to produce best results in companies that are already well managed.

In smaller firms, strategic planning is often neglected owing to pressure from recurrent operational problems, some of which are quite important and urgent. It must be actively pursued, with time set aside for it. This may mean delegating other tasks and responsibilities. The degree of formality adopted in strategic planning will reflect the size and circumstances of each firm.

There are various tools and techniques for helping to deal with the uncertainties and risks associated with strategic management. Future studies has already been mentioned. Another is *risk management*, a discussion of which can be found in Chapter 11.

Marketing

A company's survival and success depends on its ability to satisfy its customers. Marketing identifies what clients want and how the company can most profitably meet those wants. A firm's marketing policy must be flexible, to cope with market changes.

Amongst the most notable changes in the UK construction industry is a move away from traditional contract procurement towards partnerships and alliances. Indeed, current literature is replete with case study examples of successful partnerships. Hence it comes as little surprise that a considerable number of clients and contracting organisations are now adopting a partnering strategy within their commercial relationships, as evidenced by the *Building* '50 Top Clients' review (2003).

Pheng (1999) draws comparisons between partnering and relationship marketing, which is very much focused on building strong relationships with individual customers. In this new commercial environment, Pheng recognises the need to place trust, dedication to common goals and a shared understanding of each other's individual expectations and values at the centre of a contractor's marketing strategy. Moreover, Walker (2000) suggests that a wider view of the 'customer' is needed. No longer should the client be seen as the 'paying customer', but as a 'stakeholder' alongside all those in the community who are directly affected by construction projects. He argues that an awareness of the community makes marketing and business sense.

A successful marketing strategy, therefore, must recognise the interplay between external, social, political and economic environments both at home and abroad, as these determine the opportunities for work and thereby potential profit (Yisa *et al.*, 1996). Indeed there are many examples today where UK contractors have seized upon opportunities to increase their activities in other parts of the world. As Pettinger (1998) points out, there is no such thing as a closed market. Every market is open to global competition.

The elements of marketing

Market research

This involves identifying the market structure and systematically collecting information about markets, clients, competitors, competitive pricing and general trends. Several trends are important in arriving at marketing decisions, including political, economic and social trends. Trends aren't always reliable because there can be discontinuities or step-changes, which alter the expected future dramatically.

Unless contractors undertake field research, which often requires the services of an outside agency, information will normally be collected via desk research. Data can be gathered from internal sources, e.g. accounts records, sales reports and customers records, or from external sources, e.g. government statistics, trade associations, business magazines and the business pages of the national newspapers (CBPP, 2002).

Today, much of this information is available at low cost or freely accessible via the Internet. Information about customers and competitors can quickly become out-of-

date, therefore the Internet has become a valuable tool for contractors. For example, up-to-the minute financial information, in the form of annual reports and financial statements, can often be viewed on-line together with press cuttings about a firm's activities.

Marketing strategy

Pearce (1992) defines marketing strategy as that part of corporate strategy and business planning which considers the needs of customers, identifies the customers on whom the firm should concentrate its efforts, anticipates their needs and plans how to go about satisfying them. The data used in this process comes from numerous sources and much is gathered through market research.

Unlike some marketing writers who stress the importance of deciding which products or services to develop, Pearce puts a lot of emphasis on deciding who the firm's customers should be and on building good relationships with those customers. In an industry like construction, where products and services cannot be displayed in shops, this seems a thoroughly sensible approach to marketing.

A marketing strategy should ultimately answer the question 'What business are we in?' and this analysis must be based on sound research and imaginative thinking.

SWOT analysis

One of the first stages in developing a marketing strategy is normally to carry out an audit of the firm's strengths, weaknesses, opportunities and threats – a SWOT analysis, as it is usually called. Managers can exercise some control over most of the firm's strengths and weaknesses, but opportunities and threats are external and often cannot be directly influenced. However, it is essential that the organisation knows what these outside factors are and responds in an appropriate way.

Positioning

To be successful, most construction firms have to limit the scope of their activities and concentrate on particular market segments. Positioning is about choosing what products and services the organisation will offer to clients; at what price, quality and timescale; and for what type of client. This is a key market strategy decision; it identifies what business the firm is in. It is, of course, essential to let potential clients know where the firm is positioning itself in the market-place.

A *unique selling proposition* (USP) is an exceptional characteristic of a service or product which clients know separates it from services or products offered by competitors.

Building personal and corporate relationships

Contractors used to say that they could exercise very little influence over what competitive contracts they were awarded, other than by submitting a price that was so low they were unlikely to complete the project at a profit. Nowadays, firms are much more active in pursuing business opportunities and, apart from giving assiduous attention to all kinds of marketing information, one way is to build good relationships with clients at personal and corporate levels.

This makes use of the human preference for working with people we know and trust. It gives the contractor a more thorough understanding of the customer's business needs and can also give rise to earlier information about the client's building needs.

Enquiries and contracts

An enquiry can literally be an enquiry from a potential client or it can be any project a firm is interested in undertaking. An enquiry which may lead to a firm's first contract with a new client is especially important. It could lead to further business direct from the client, without competition, so such a relationship helps a contractor to keep down the costs of abortive tendering. The sooner the contractor makes contact with the customer, the more influence can be exerted over the customer's decision-making and this can benefit the contractor.

Meetings with clients

These can take several forms, including initial face-to-face contact with customers to establish personal and corporate relationships, formal interviews, tender presentations and contract negotiations. Selection interviews are now commonplace prior to awarding a contract. Contractors and professional consultants make a presentation to the client and answer questions; and their selection can depend on the quality of that meeting. Contractors take a lot of trouble preparing for such meetings, choosing interview teams carefully, rehearsing presentations, and including presentation skills training in their management development programmes.

Corporate identity

The phrase 'corporate image' has been largely superseded by 'corporate identity', which can be defined as the way a company expresses to the outside world what it is and what it stands for. A company's corporate identity reflects its mission or objectives and its products and activities. Corporate identity is demonstrated through the communications and publicity materials the firm produces, the appearance of its buildings and sites, and the behaviour and appearance of its employees. The attitudes of managers and other employees are very important. They will be visible in many communications the company has with clients and others. At the other extreme, the design of the company's letterhead will convey a distinct impression of the firm – for better or worse.

Brochures

Many construction firms now routinely use brochures, sometimes accompanied by CD Roms, to help communicate their corporate identity and give positive

information to potential and existing clients. If the firm operates in several market segments, it will usually have different brochures for each, probably with an overarching company brochure. Preece and Male (1997) recognise that different promotional strategies are required for established key clients, prospective clients and for those who may influence the client's decision. Personal recommendations, however, from previous satisfied clients and professional advisers are always highly influential. Accordingly, they advocate the use of testimonial, or third party endorsement, in brochures that are informative and attractively designed.

Other marketing activities

A number of other activities can support the marketing effort. They include advertising, press coverage, sponsorship, entertaining, exhibitions and other forms of publicity. These activities are expensive; they need to be carefully targeted and their cost-effectiveness assessed. An advertisement aimed at potential customers is useless if it appears in a publication that those clients don't read! Advertising in the right place can help to establish a firm's corporate identity, by giving details of successful projects and conveying information about the company's philosophy and standards. In all advertising, the critical factors include repetition, timing, careful wording and good layout of 'copy'.

Marketing audit

The purpose of the marketing audit is to review the organisation's marketing intentions, performance and methods. The audit can be carried out by internal staff or by external consultants, but either way it must be performed systematically, objectively and by people who have a thorough understanding of marketing. The outcome should be a report summarising what can be learned about the organisation's marketing efforts and how they might be improved.

The audit can be carried out annually to coincide with the preparation of the annual report, but it may be advisable to do it less frequently. After all, any audit is a disruptive process, which unsettles people and interferes with the smooth running of an important business function. There is an argument for having no set frequency and only performing an audit when there are signs that it is needed (Pearce, 1992). Nevertheless, when the audit is carried out, it must be done thoroughly and may lead to major changes in marketing activities.

Organisational development

Companies affected by continuous and rapid change may draw up a formal policy for dealing with it. Organisational development (OD) is a term used to describe formal approaches to organising change. Ways of implementing OD include:

- Employing consultants to advise on change.
- Setting up a specialist department to do the work.
- Integrating the change process with the mainstream activities of the firm.

Each approach has its strengths and drawbacks. Consultants bring new ideas and expertise into the organisation, but their services are costly and they will not know the business as well as the employees do. Staff may resent outside interference, especially when the consultants start telling them what to do. Most important of all, perhaps, the people who benefit from the exercise – the ones who develop new skills and gain real insights into the organisation's problems – are the consultants themselves and not the firm's employees.

For this reason, many firms prefer to get as many as possible of their own personnel involved in change, so that they can learn from the experience, as well as becoming committed to new systems and methods.

Whether internal OD work is best done by a specialist department or spread through the organisation, depends to some extent on the firm and its problems. Line managers may be too busy to devote time to development work. Specialists will have the time but, like the consultants, may lack a detailed understanding of how the firm operates. If the specialists design all the changes, those who have to implement them may lack commitment. They won't understand the need for change and how it might benefit them.

Sometimes the firm combines the talents of its line managers (thus gaining their ideas and commitment), a specialist department (which can offer both the time and techniques for developing and implementing the changes), and outside consultants (who will see the problems more objectively, having experienced other change activities).

The difficulty here is how to co-ordinate people and get them to trust and share their ideas with one another. In some organisations, the OD specialists are isolated from other employees – the people who will have to implement and live with their ideas. To overcome these difficulties, OD specialists need to have good social skills and be prepared to network extensively.

An increasingly popular way of using consultants without losing the benefit of employee involvement, is to alter the role of the consultants, so that they 'facilitate' change rather than carry out the work themselves. The consultants act as mentors, helping the organisation's employees to learn the skills for engineering and coping with change.

It is widely believed that people resist change. Perhaps it is more accurate to say that there is a time lag between the introduction of a new idea and people's attitudes catching up with it. Certainly, the social aspects of change present special problems. To introduce a new process or alter a work method may require a major shift in the attitudes and behaviour of the people affected by it. In OD work, the biggest task is not changing the system, but changing the people. As Hannagan (2002) and others have pointed out, OD may involve changing the organisation's *culture*.

When specialists and consultants are involved, no single person is likely to have all

the knowledge and skills needed to cope with the whole change programme. Many consultants who are experts in designing a computer system or setting up an automated production process, would not know where to begin to help or persuade employees to adapt to them. It is therefore essential that OD is a team effort, using people with a wide spectrum of skills. It usually means that any development must be tackled as a multidisciplinary task at three levels: organisational, group and individual.

Modifying individual and group behaviour is often the most important and time-consuming part of a change programme. It involves creating the right organisational climate, in which two-way exchange of ideas is actively encouraged. It is important that managers and workers trust one another and know that the other group will listen to them.

Employees who know their jobs well often have worthwhile ideas about what the firm ought to be doing and what changes are needed. If managers are receptive to these ideas, the firm may become more efficient and employees will feel valued and gain a sense of identity with the firm and its goals. Human factors play a major role in organisational change.

Business process re-engineering

BPR is a technique which became more widely known among UK managers in the early 1990s. It involves the organisation in a radical rethink and redesign of business processes aimed at making major improvements in key performance areas, like cost, time and quality. This process sounds similar to OD and the two processes are quite difficult to separate. Both can be approached in different ways; both can lead to major changes. BPR is perhaps a little more focused.

Leading BPR proponents Hammer and Champy (1994) claim that the outcome of re-engineering a business process can be dramatic; it can lead to narrow, task-oriented jobs becoming multidimensional, to functional departments losing their reason for existing, to workers concentrating more on customers' needs than bosses' needs and managers behaving more like coaches than supervisors. Almost every aspect of the organisation changes.

As with many new management concepts, BPR describes actions that many would see as long-established aspects of the manager's job. Love and Li (1998) doubt whether BPR approaches to change can improve the performance of projects. Whilst traditional BPR may lead to improvements within an organisation, i.e. intra-organisational processes, the fragmented nature of the construction industry is perceived to be a barrier to inter-organisational change. They suggest that improvements in project performance can only be achieved if the concepts of lean construction, concurrent engineering, continuous improvement *and* process re-engineering are embraced by multidisciplinary teams. Improvement is likely to be a continuous process rather than the radical improvements sought by BPR (see Figure 10.3).

Elsewhere BPR has focused attention on the use of electronic commerce

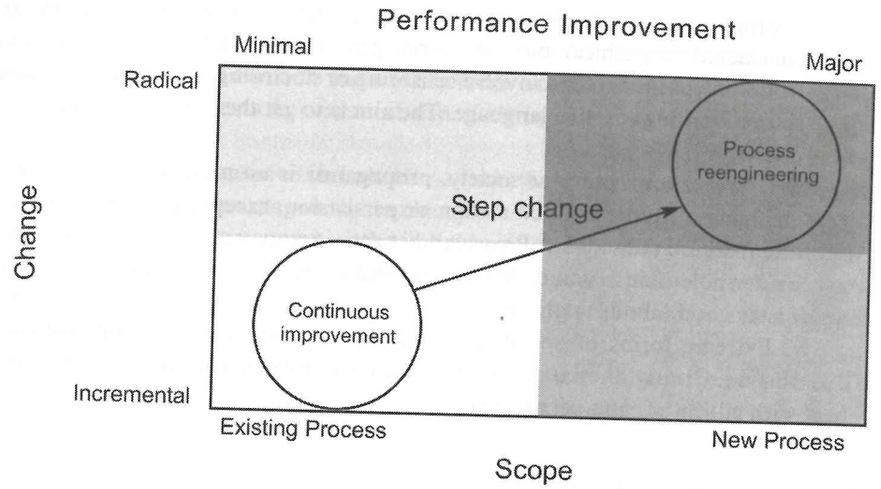


Figure 10.3 The process change continuum (adapted from Love and Li, 1998).

(e-commerce) applications to improve information flow throughout the supply chain (Elliman and Orange, 2000; Ruikar *et al.*, 2003). For example, Ruikar lists reduced project cost, reduced time wastage, reduced errors and the avoidance of disputes amongst the many benefits that e-commerce offers the construction sector. Hence the value of initiatives like BPR is that they can help focus managers' attention on the need for change and the ways to achieve it.

Changing people's attitudes

Corporate planning, marketing and organisational development will fail unless the policies they introduce are accepted by employees. People will adapt to new strategies more willingly if they have been properly consulted and involved in decision-making.

Many factors have a bearing on attitude change and there is a spectrum of ways of influencing people. *Education* and *persuasion* are the more socially acceptable methods. Education is normally the mildest form of social influence. One of the aims of education, at least in Western society, is to give people information in a reasonably unbiased way and present as many viewpoints as possible. Even so, the material chosen and the way it is presented involves value judgements. Implicit biases may be passed on, without the receiver being aware of it. The purpose of education is to develop people who will help to steer organisations into the future.

Persuasion, like education, is considered socially acceptable by most people. If managers are to do their jobs properly, they will have to persuade employees to accept new methods of working, adapt to new technologies, be more safety conscious, and so on.

Propaganda comes further along the spectum of influence methods. It is not considered very ethical, but companies, governments and advertisers do resort to it from time to time. It can involve censoring or doctoring information, concealing its source or using emotive language. The aim is to get the message accepted and acted upon.

However, in a pluralist society, propaganda is no more likely to be effective in changing attitudes than education or persuasion, except amongst poorly educated and insecure individuals. Propagandist activities may go on within an organisation or a whole industry and this can sometimes cause difficulties for those trying to foster good labour relations.

Extreme forms of social influence include indoctrination, brain-washing and torture. Clearly, they are beyond the scope of the manager's job! The manager is left with education and persuasion.

Making persuasion work

There are two conflicting views about the effectiveness of persuasion. One is that people are very malleable and can easily be persuaded to change their attitudes and beliefs. The other is quite the reverse – that people are stubborn and resistant to change.

These opposing views partly result from early research on persuasion by social psychologists at Columbia University and experimental psychologists at Yale. They studied persuasion in different ways. The Columbia centre used surveys to monitor the effects of media campaigns on the public. The Yale psychologists concentrated on laboratory experiments with individuals.

The Columbia group found that only about one in 20 of the population were affected by persuasive communications, but the Yale group found that between a third and a half changed their attitudes. The Yale experiments showed that persuasive communications can be very powerful if there are no conflicting influences. The Columbia studies found that *personal contact* is more effective for changing opinions and behaviour than mass media campaigns. This is not a problem in small firms, but large organisations often have to use impersonal, formal communications. This may be ineffective unless supported by *opinion leaders*. These are popular or respected employees who take an interest in developments by attending meetings or actively seeking information in other ways. They influence others as they pass on new information and ideas.

The importance of personal contact in attitude change has been demonstrated in many studies. People take much more notice of those they admire or identify with, than they do of impersonal communications, however well these are formulated. For instance, researchers found that Iowa farmers took more notice of their neighbours' opinions about a new seed corn than they did of information from a government department.

Formal communications are not a waste of time, but are more likely to be successful when supported by opinion leaders and when the audience is already mildly

interested. For example, a circular letter from the managing director can help awaken latent ideas or beliefs. It creates favourable conditions, in which personal persuasion by those closer to the work is more likely to succeed.

Persuasion can be more successful, especially in larger organisations, if:

- empowerment is used to include everyone in the change process, even those who are indifferent or antagonistic to change;
- the communicator considers the individuality of those at whom persuasion is aimed: differences in their goals, values, attitudes and beliefs, lifestyles;
- the goals for change, as presented, are SMART: *specific, measurable, achievable, relevant, timed*;
- the communicator arouses a moderate level of anxiety about the proposals. Too much anxiety can reduce susceptibility to persuasion; too little can lead to indifference.

Many factors are involved, such as the complexity of the message and employees' anxieties about the subject being communicated. Employees who are anxious about redundancy, may become unco-operative if put under pressure to accept new working practices which they feel would increase the likelihood of redundancies. Similarly, employees worried because they can't cope with their work are unlikely to respond positively to threats about what will happen if they don't improve. Low-threat persuasion has considerably more effect on anxious people than it does on calmer ones.

Encouraging dialogue

Attempts to change attitudes in organisations are unlikely to meet with total and instant success – and this is just as well! In a free society, a plurality of viewpoints exists and is encouraged (one hopes!). When people come into contact with one another daily, this partly offsets the effect of persuasive media communications. In an organisation, attitudes are influenced by information from many sources – the media, friends, family, opinion leaders and management. The firm is more likely to successfully engineer change if, rather than imposing its views on employees, it encourages dialogue and values a range of independent viewpoints.

It is important that differences of opinion can be aired without fear of recrimination. This encourages independent thinkers as opposed to conformers (Jahoda, 1959). The independents are likely to be the creative members of the organisation. To create something better, people must question and criticise what exists. If suggestions are welcomed and taken seriously, the firm is more likely to have an innovative and enthusiastic workforce, well equipped to face the future.

Managing creativity

The old view that creativity was mainly a matter for the arts has gone. It is now widely agreed that creativity is necessary in all fields and is central to business success. In stable conditions, creativity helps businesses to improve their vitality and competitiveness, avoiding stagnation. When rapid change is the norm, creativity is vital, helping firms to drive change, innovate boldly and meet new demands and trading conditions energetically.

Moreover, as we move into the tertiary era, core questions emerge that demand serious creative thinking. For instance, 'what should replace the management principles and practices learned in industrial society in the new organisations that prevail in our (so-called) post-industrial society?' (Davis and Scase, 2000).

Creativity is about pushing forward boundaries in ways that are *original* and *effective*. The best ideas are not just original but often *radical*. In business, creativity involves looking for archetypal ideas, keen insights, fresh perspectives and new opportunities. These translate into new products and services, unique designs, novel ventures and fresh markets. Creativity demands a rethink of current policies and practices and can lead to better use of resources (Fryer, M., 2002).

Managing this creativity is about finding ways to encourage *creative behaviour* among employees. It used to be thought that creative talent was enjoyed by only a few, but current thinking is that most people have creative potential. The management skill is in tapping this ability for the benefit of the organisation and all its stakeholders.

Although exceptional creativity may depend on special knowledge and talents, much of the creativity found in businesses stems from the actions of ordinary people, using well understood skills and know-how. Research has shown that commonplace qualities like *determination* and *perseverance*, *curiosity*, *hard work*, *independent judgement*, *willingness to take risks*, *tolerance of ambiguity* and a *readiness to challenge orthodox thinking* are central to most creative achievements. Many of these characteristics can be regularly observed in *highly motivated* employees, suggesting that management action aimed at boosting motivation may be one key way to stimulate creativity at work.

Creativity pioneer E. Paul Torrance (1995) found that highly creative people are more likely to really enjoy their work and enjoy thinking deeply about things. They also tend to have a strong sense of purpose, are not afraid to express a minority viewpoint and are prepared to challenge established wisdom. They often seek autonomy, are attracted by complexity and display self-confidence. Davis and Scase, among others, also stress the importance of autonomy, seeing it as a major feature of the creative process in organisations.

If managers can encourage or support qualities like these in their staff, they are more likely to release the kind of new thinking that leads to positive change and future business success.

It takes about a decade working in an occupation for someone to become highly innovative or 'expert' in their field (Stein, 2002). Once they have developed this

expertise, they tackle complex problems and issues more effectively than do beginners. For example, they are better at recognising patterns, thinking in terms of underlying principles and seeing analogies (Weisberg, 1993). So, helping employees to develop expertise can contribute directly to their creative skills.

However, there are many barriers to creative thinking, some *personal* and some *organisational*. Innovative ideas are not likely to be produced unless both kinds of obstacle are tackled. Organisational barriers include unnecessary or outmoded customs and procedures, as well as an inappropriate organisational *ethos*. Nothing kills creative thinking faster than an atmosphere where new ideas are frowned on or ridiculed. This is especially important because some of the best ideas often involve moving way beyond current thinking; or else, going off at a tangent (as in Edward de Bono's popular concept of *lateral thinking*).

Indeed, some exploratory ideas may seem quite bizarre, even ludicrous, but if they are rejected at the outset, their potential for suggesting something really worthwhile will never be realised. Rejecting unusual ideas is highly damaging to any business that wants to foster innovation. Personal barriers to creativity include resistance to change and other unhelpful habits. Habits lead us to become more set in our ways, yet creative thinking demands challenging assumptions, breaking with old ways and thinking differently.

Developing creative thinkers

The task for the manager is to encourage more creative thinking among as many employees as possible, whilst paying particular attention to employees who show exceptional potential or whose occupations depend more heavily on fresh thinking and new ideas. Increasingly, creativity is likely to involve teamwork (M. Fryer, 2002), so management action and staff development that build team skills and flexibility also contribute to creativity training. Indeed, Taylor Woodrow Chairman, Robert Hawley, has pointed out that creative feats of engineering are routinely achieved by project teams in the construction industry (Hawley, 2003).

Many creativity training courses concentrate on *creative problem solving*, taking participants through the well-defined steps of the process – problem finding, fact finding, idea finding, solution finding and so on. Other courses deal with the so-called *creativity tools* or *techniques*, which use analogy, metaphor and other procedures to spark new thinking.

However, the courses need careful evaluation. They can be very expensive, and high cost and slick packaging don't guarantee quality. Also, few courses are comprehensive. Most tend to be limited in scope and fail to address the full complexity of creativity or the problems organisations face in implementing it. The Creativity Centre, a UK organisation based in Leeds, has tried to address these problems seriously and offer a more balanced service.

Apart from creativity courses, managers can help by paying more attention to the way that they organise the firm or construction project; and the way they treat employees. VanDemark (1991) offers some useful guidelines, stressing that

organisations need to create a stimulating and challenging environment, with clearly articulated goals. Managers need to be dynamic and 'people-oriented'. This tallies with UK research, which also supports an employee-centred management style (Fryer, M., 1994). Fryer explains that the behaviour and attitudes of managers need to be similar to those of student-centred teachers, who are more successful in developing creativity in their students than are their mainly task-oriented colleagues.

VanDemark also points out that younger organisations are more conducive to creativity. They have important qualities of openness, flexibility and fluidity. There is enthusiasm and a willingness to experiment. Older organisations, especially as they grow larger, tend to get bogged down with bureaucracy and rigid management structures. In these organisations, people may become protective of their territory and unwilling to tolerate change, which they see as a threat. In construction, temporary projects are a positive feature because they are fluid and provide the scope for flexibility that creativity needs.

West, among others, has stressed the importance to creative success of a *supportive* and *challenging* work environment, where managers offer not only warm support and flexibility, but also intellectually demanding work (West, 1997). Earlier research also suggests that people respond creatively to a challenge.

So, managers need to nurture their teams, foster motivation, stretch their staff and encourage and reward independent ideas. They need to protect their most creative employees from the ridicule of others long enough for them to try out and modify their more extreme ideas. Unfortunately, managers aren't always sufficiently sensitive or knowledgeable to provide this kind of support.

There is a common belief that creativity rests on some mysterious processes and thrives in informal, unstructured settings. But the evidence suggests otherwise. Creative people use specific thinking strategies, for instance:

- *scenario building* – building mental pictures of current and alternative states of affairs in order to select the most promising option;
- *attention-directing devices* – helping to generate and evaluate fresh ideas at every stage from identifying problems to implementing solutions;
- *metaphor and analogy* – identifying useful connections between previously unrelated ideas (Fryer, M., 2002).

Creative people make use of extensive knowledge and a raft of well-established skills, and often work best when there are tough constraints on their actions.

Summary

The need for organisations to face up to change has been stressed throughout this chapter and elsewhere in this book. The impact of information technology and telecommunications and the globalisation of trade are just a few of the irreversible

trends which are changing the structure of work and the shape of organisations. Information technology is altering the nature of clerical work, and office jobs are changing fast.

People's expectations and values are changing. They demand more from their jobs and are less deferential to the authority of their bosses. They don't expect a job to be 'for life'.

Organisations must manage change if they are to remain in tune with society's needs. Managers have to respond to changes which are beyond their control, but they must also shape the environment in which their firms operate – they must engineer change and involve their teams in the process. Innovation is a central process of change, over which managers and teams can exercise some control.

The management of change starts with strategic management and marketing. These strategic activities give the company a clear idea of where it is going and how to get there. If the impact of change is likely to be great, the company may introduce a programme of organisational development or business process re-engineering. E-commerce is providing managers with new tools to improve communication and so foster effective multidisciplinary working.

No programme of change will succeed unless accepted by the people who will be affected by it. Changing the organisation involves changing people. Employees may have to be persuaded to alter their work practices, learn new skills and change their attitudes. They must learn to live with change.

Creativity is central to the survival and success of all kinds of construction organisations. Creative skills are not the preserve of the few; these skills are widely distributed in the population. Today's managers need a sound understanding of how to nurture inventive behaviour, releasing employees' full potential to contribute new ideas to the business. In particular, managers need to focus on improving the organisational ethos and the motivation and expertise of staff, as these have a major impact on innovative thinking.

Exercise

Book mark the following industry specific Web sites:

- Constructing Excellence
- Strategic Forum for Construction
- Housing Forum
- IT Construction Best Practice
- CITB Construction Skills
- DTI Construction Sector Unit

Choose three Demonstration Projects in the M4I Projects database that employed best practice in working relationships and analyse the features that were common to all.

Notes

[1] As firms adopt practices such as partnering, empowering staff and allowing them significant decision-making, employees will develop a growing interest in the mission, goals and long-term plans of the business. Perhaps corporate planning can't be delegated, but it could be co-determined.

Chapter 11
Value and Risk Management

Best value

Whilst the achievement of best value in construction has long been the aim of clients and contractors alike, today it has become a platform for radical performance improvement in the public and private sector. In the public sector, the 'Best Value' initiative launched by the UK government seeks to raise standards and provide better quality provision at reasonable cost (CBPP, 2002). The Housing Corporation describe this challenge as 'thinking the unthinkable' so that new and innovative ideas can be developed (Bennett, 2002). Hence there has been a noticeable shift in government procurement policy towards value for money and not lowest price alone (OGC, 2002). In the private sector, however, the concept of best value is not used in quite the same context, as informed clients resort to new techniques to maximise investment opportunities. But in essence both the public and private sectors are seeking the same outcomes – effectiveness, efficiency and economy.

Not surprisingly, in these post-Egan days, such ideas no longer remain the preserve of clients and their professional advisers. The boundaries between the consultant and contractor are becoming increasingly blurred, largely due to the growth in partnering and collaborative relationships. Additional demands are being placed on contractors in their dealings with clients, and the techniques used in achieving the client's objectives and in managing the supply chain are becoming ever more sophisticated. Best value in construction, therefore, is relevant to all project stakeholders.

CIRIA (1998) published a report, *Selecting Contractors by Value*, in which they identified the opportunities for contractors to add value through better:

- teamwork
- programming
- design and specification
- care of the environment
- budgeting
- management of risk and value.

Two techniques that are increasingly being used to add value and improve project success are value and risk management. For some, this split between value and risk

is artificial. Rather than perpetuating a cyclic process of adding things in (because of risk) and taking them out (because of value), many practitioners argue that both concepts should be combined. But it is not entirely clear from practice how this might best be achieved and opinion remains divided as to whether value constitutes a subset of risk management or vice versa.

The discussion that follows considers risk and value management separately (drawing extensively on Ellis and Wood's research presented at the RICS COBRA 2001 and 2003 conferences), prior to a discussion of the likely benefits of bringing all project stakeholders together in a collaborative workshop.

Collaborative agreements

In the wake of the Egan Report, the Movement for Innovation and the Construction Best Practice Programme, many see alliancing and partnering as the panacea for all the construction industry's problems (Standing, 2001). Certainly, such approaches are aimed at improving productivity, profitability and value and reducing confrontation and dispute. In short, the creation of win–win situations.

Collaborative agreements are said to avoid the waste of resources that traditional fragmented and adversarial relationships engender, and encourage innovation, which leads to the enhancement of value. Value management (VM) and value engineering are techniques for enhancing value within a project by defining what will deliver value in the specific project, engineering a best value solution to meet those defined value parameters, and then delivering that solution cost effectively.

VM studies take place at strategic, tactical and technical levels. The aims and objectives of the different levels are shown in Fig. 11.1

The contribution of the contractor's expertise to such activities is helpful in the enhancement of project value and long-term collaborative agreements can provide greater opportunities for such involvement. The benefit to the client of such collaboration is real and obvious. Any financial benefit to the contractor may be less easily identified and obtained (Standing, 2001). Pain/gain share arrangements within partnering are generally fixed against agreed target costs. Standing contends that in the UK there are no formal value-based incentives.

However, the trend towards partnering is the most radical shift in procurement thinking for many years and the move away from a purely cost-driven process now has the backing of the largest construction clients in both the public and private sectors.

Value management

The CBPP (1998) define value management as a structured approach that seeks to establish what 'value' means to a client in meeting a perceived need, by clearly defining and agreeing the project objectives and establishing how they can best be achieved.

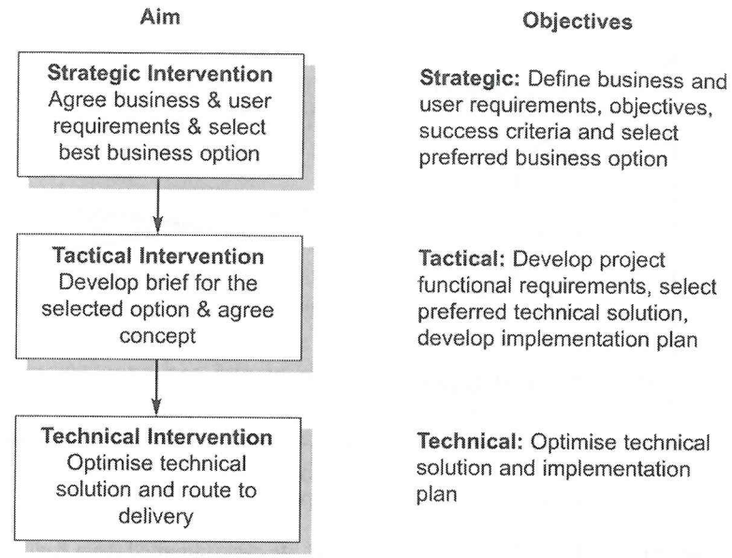


Figure 11.1 Aims and objectives of value management (Locke, 2002).

Having originated within USA manufacturing, the business technique of Value Engineering (VE) was first applied to UK construction projects during the mid-1980s. Kelly and Male (1988) concluded that VE had a place within the industry, but that its form would need to be adapted to suit UK practice – a view subsequently endorsed by the CIOB in a Technical Information Sheet (Palmer, 1990) advocating that value studies should take place in the early concept stages of the design process. Since then the technique has evolved into a much broader based approach that seeks to achieve best value and the term Value Management has become popular. Kelly and Poynter-Brown (1990) were among the first to recognise that value management was a natural progression for the QS and an opportunity to develop leading edge skills. Moreover, authors (Kelly *et al.*, 1993; Green, 1994) began to identify a range of possible value interventions and to adopt more sophisticated techniques of analysis such as SMART (Green, 1992) and FAST (Kelly and Male, 1993). Today, these services have become commonplace amongst cost consultants and contracting firms and have been found to have widespread application throughout the project lifecycle (Fig. 11.2).

Value management is applicable to all construction projects and complements Private Finance Initiative schemes, two-stage design and build, prime contracting and other partnering-style arrangements throughout the project life cycle. There is also agreement that with the growth of facilities management, the emphasis on capital spend is becoming less important than operational spend.

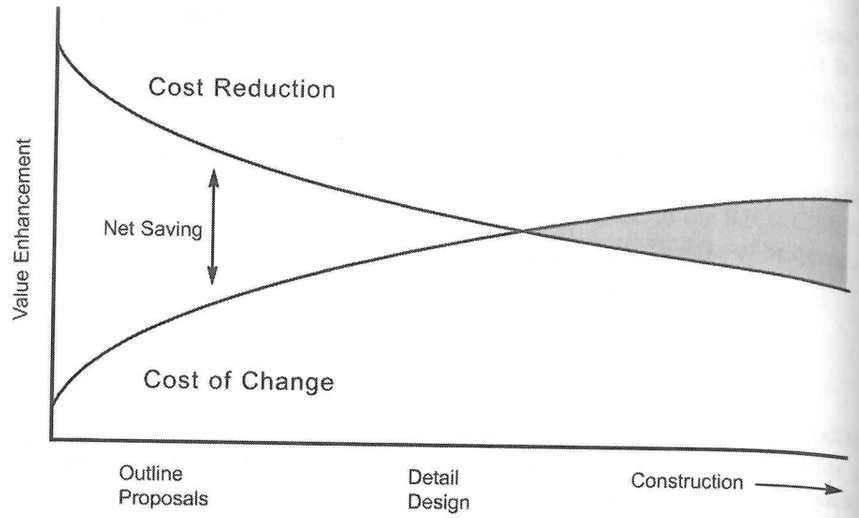


Figure 11.2 VM benefits through the project life cycle (adapted from Kelly and Male, 1993).

Value management and enhanced team-working

The shift in focus away from lowest cost to value enhancement in recent years is attributed to people looking for better ways of working, bringing about a growth in non-traditional procurement techniques. Value management has a key role to play in these new approaches. The CBPP state that value management can:

- integrate a variety of proposals from stakeholders with client's own objectives;
- identify revenue-earning potential and features that are likely to attract funding;
- accelerate the development of a project performance brief;
- achieve consensus from disparate groups of stakeholders; and
- inspire confidence that the chosen project team was focused in the requirements of the client, end-users and other stakeholders.

Moreover, the technique has applicability throughout the supply chain. Value Stream Mapping seeks to maximise cost reduction, quality and delivery, and minimise lead times and waste (CBPP, 1998). However, it is widely acknowledged that a common spin-off arising from all VM interventions is enhanced team-working and the development of closer working relationships.

Value management interventions

Much has been written about the processes and techniques involved in Value Management (ICE, 1996; Defence Estates Organisation, 1998; BRE, 2000), but

whilst the length, approach and detail may vary according to the nature of the project, the time available and the timing and purpose of the specific intervention, some form of workshop is universally the norm. To gain maximum benefit from the workshop activity, pre-planning, appropriate facilitation and adequate follow-up are essential.

Pre-workshop

Two aspects of pre-planning are vital, i.e. the value manager briefing and the briefing of the workshop participants. The former is necessary to ensure that the value manager understands the client's key functionality aspects. The latter, so that the participants, who are influenced by their own professional traditions and backgrounds and who are often 'solution-driven', understand both the need for a broader, functional, analytical approach to value management and the essential multi-disciplinary nature of the activity.

Workshop

As with all group activities, clear guidance and easily understood objectives are essential. Thus construction managers, charged with facilitating value management sessions, must follow a clear agenda. The Job Plan approach, comprising information/analysis, creativity, evaluation and development is commonly used, although there is no necessity to adhere rigidly to these basic methodological stages. During the first stage, some form of functional analysis and prioritisation is required, although Ellis *et al.* (2003c) found that the approach adopted by facilitators varies according to the experience, training, understanding and openness of the workshop team, the needs of the particular project and the view of specific clients. The need to think creatively, to identify innovative alternative solutions and generally indulge in some 'out of the box' thinking is arguably the key aspect of value management. During the creativity stage, alternatives are generated that enhance value, through effective brainstorming sessions. A variety of techniques can be adopted. Amongst the most novel are those that use the de Bono concept of the 'different hats', in which participants are asked to adopt different personas and produce appropriate suggestions. They may be asked to adopt the persona of *Mr Silly* or *Mr Sensible*! Evaluation of the options produced relies on ranking, in the form of a numerical sorting scale or decision matrices. Whatever the method used, engagement is the key and the livelier the workshop, the more involved participants become and the better the result.

Post-workshop

Detailed development of the most likely options may need some form of evaluation post-workshop in terms of cost, re-design, implications on time, etc. Where further development work is undertaken, it is important that what is to be done,

the time scale for action and who is responsible for the action, are clearly identified.

Without question, there is much to be gained upstream by the application of VM methodologies, but there is little evidence as yet to support the contention that contractors are fully embracing these new techniques (Ellis *et al.*, 2003c).

A case study in value management

The project comprises the demolition of office accommodation in the centre of Leeds and the design and construction of a new seven-storey office block with basement car park, a retail shell unit at ground floor level and new mains services and external works. Davis Langdon, project managers for the development, were responsible for the management of a two-stage tender process using JCT98 with Contractor Design. Following receipt of competitive bids in Stage 1, based upon preliminary costs and an overall overheads and profit margin, HBG Construction were invited to work as part of the project team and 'firm up' the contract sum. Figure 11.3 shows the activities that comprise the Stage 2 contract sum development.

During the second stage process, value management workshops were held with the whole team to identify areas of potential improvement. The workshops were aimed at improving value and various proposals categorised as priorities were designated to members of the team to review and report back. The general process is illustrated in Fig. 11.4.

The benefits arising from the VM process are:

- The alignment of design and construction processes with business needs.
- Improved project definition and an increased certainty of outcome.
- A shared understanding of value and the creation of an environment to optimise value.
- The promotion of innovation and the development of new ideas and team building.

The value management process is acknowledged as having forced parties, who would not ordinarily engage in direct communication, to co-ordinate their efforts. In part this is attributed to the two-stage tendering process, which provides greater opportunities to work with the client, fostering a teamwork approach, and making it possible to draw upon specialist knowledge and focus on 'buildability' issues earlier in the project.

In summary, value management is viewed as a proactive process aimed at maximising the value of a project by managing the development from concept to use. Not only are clients becoming more knowledgeable and conversant with value and risk management but project stakeholders are also recognising the benefits of maintaining client involvement throughout the process.

It would be erroneous to infer that the decision to provide value management

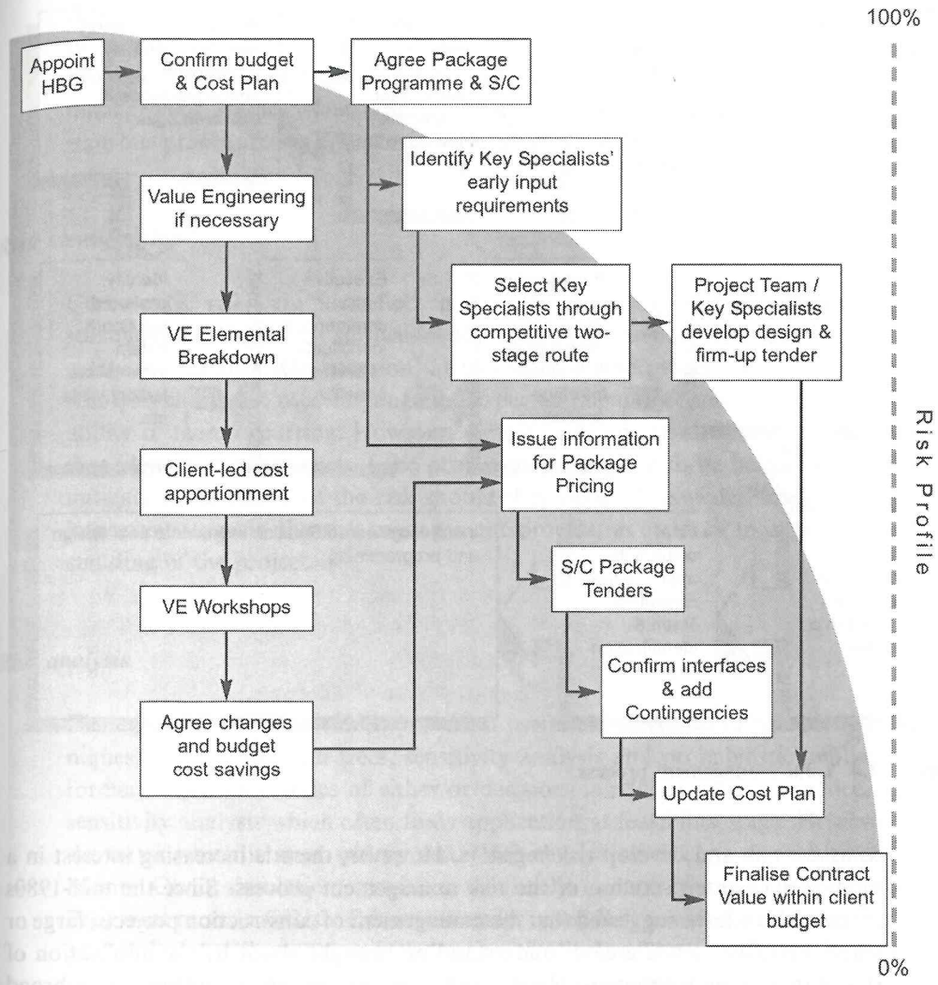


Figure 11.3 Contract sum development.

services resides solely with the contractor. On the contrary, it appears that the client continues to dictate whether or not value management exercises are implemented. Indeed it is frequently the individual within any organisation and their experience of the service that appears to be a determining factor in the uptake of VM.

Risk management

Risk management is normally associated with health and safety. Largely due to CDM regulations, there is an imperative upon all parties to the construction process