

## 4 STRUCTURE AND MANAGEMENT OF ORGANISATIONS

*After studying this chapter, in the context of organisations with which you are familiar, you should:*

- *be able to recognise how they are structured;*
- *be able to suggest alternative possible structures and identify their advantages and disadvantages;*
- *be aware of the effect that decisions about organisational structure may have on individual employees.*

### 4.1 ORGANISATIONAL MODELS

As we said at the start of Chapter 3, an organisation is a group of people working together in a formal way. What this means is that the work that has to be done is shared between these people and that there are rules about who does what. How the work is shared and how tasks and people are grouped together – the structure of the organisation – will vary very much from organisation to organisation. It is surprising, however, that organisational structures have much more in common than might be expected. In this chapter, we shall describe the most common ways of structuring organisations.

#### 4.1.1 The bureaucratic model

Organisational theory, the study of how organisations are structured and how they work, goes back to end of the 19th century. The founders of the theory were sociologists like Max Weber and Mary Parker Follett, and practical business people like Henri Fayol and Lyndall Urwick. They developed what is known as the bureaucratic model. In a modified form, this model still describes the organisational structures to be found in most large, and many smaller, organisations. (Note that **bureaucratic** here is simply descriptive; the pejorative sense developed later.)

The ideal bureaucratic organisation was thought to have the following characteristics:

1. All tasks are split up into specialised jobs, in which jobholders become expert; management can thereby hold them responsible for the effective performance of their duties.

2. The performance of each task is governed by precise rules. This means that there should be no variation in the way tasks are carried out and therefore no problems with the coordination of different tasks.
3. Each individual (and hence each unit) in the organisation is accountable to one and only one manager.
4. In order to ensure that personalities and personal relationships do not interfere with the organisation's performance, employees are required to relate both to other employees and to clients in an impersonal and formal manner.
5. Recruitment is based on qualifications and employees are protected against arbitrary dismissal. Promotion is based on seniority and achievement. Life-time employment is envisaged.

These ideas have proved surprisingly long-lasting. Remnants even of the fourth were certainly still to be found in banks and local authorities in the 1980s. In the 1970s it was still the case in some companies that if two employees became engaged to be married, one of them would be required to resign.

It is an inevitable consequence of these rules that the organisation will be hierarchical and that its structure can be represented as a tree.

Despite the obvious weaknesses of the approach (at least in this form), it brings many benefits and many companies were run successfully along these lines for many years. Modernised and liberalised versions are still to be found working successfully, particularly in production line industries. Much grief has ensued when companies whose main business is appropriately organised in this way have applied these ideas to software production, for instance by separating the tasks of writing code, compiling it and correcting compilation errors, and testing it, and assigning them to different groups of specialists.

#### 4.1.2 The organic model

The best known alternative model is the **organic** model, particularly associated with Rensis Lickert. He expresses the basic assumption of the model in the following (rather verbose) terms:

An organisation will be effective to the extent that its structure is such as to ensure a maximum probability that in all interactions and in relationships within the organisation, each member, in the light of his background, values, desires, and expectations, will view the experience as supportive and one which builds a sense of personal worth and importance.

*(The Human Organisation. McGraw-Hill, New York, 1967, p.47)*

This view underlies the organisational structure of most small professional companies – software houses, advertising agencies, even solicitors' and GPs' practices; it is also common in academic institutions, both schools and universities. The view is not necessarily consciously articulated – nor is this view and the adoption of the structures it suggests sufficient to achieve effectiveness!

Proponents of the bureaucratic model claim that it is universally applicable. Proponents of the organic model make similar claims. It says little for common sense that those who hold the obvious view that each has its appropriate place should be christened adherents of the contingency school of organisational design.

### 4.1.3 Matrix management

It is an essential feature of the bureaucratic model that every individual and every unit in the organisation is responsible to only one manager. This is not realistic in the context of project-based, high technology companies. A specialist in high speed communications working for a systems integrator may well find him- or herself working on two or three projects simultaneously, as well as having a more general responsibility for maintaining the company's expertise in the area. In the past 30 years or so the idea of matrix management has become fashionable, as a way of addressing such situations. It accepts that individuals may be responsible to more than one manager and requires rules that will enable possible conflicts to be resolved. In a software company, for example, database specialists may belong to a database group and report to its manager, while at the same time reporting to the project manager of the project they are working on.

Some organisations and some management consultants have tried to formulate the matrix management model much more formally. The results are not encouraging.

## 4.2 STRUCTURING PRINCIPLES

The bureaucratic model tells us something about the way individuals and groups in an organisation relate to each other. It tells us nothing, however, about how to group together the tasks and activities that have to be carried out. In practice, there are many different ways of doing this and we shall describe some of them in the following sections. It should not be thought that these models are mutually exclusive. In all but the smallest companies, different parts of the organisation are likely to reflect different ways of producing a structure. Furthermore, the structures produced by the different criteria may be combined in a matrix structure.

### 4.2.1 Structure by function

In almost every organisation, we can identify certain groups of activities that have to be carried out and that fit naturally together.

First of all, there are the activities that are the primary purpose of the organisation. These activities are known as **operations**. The primary purpose of a school is to teach students. The primary purpose of a hospital is to cure sick people. The primary purpose of a software company is to provide software for its customers. In each case, these activities constitute the operations of the organisation concerned. The term **core business** is often used to mean the primary purpose of an organisation.

Secondly, almost all organisations have to pay their bills and pay their employees. They will need to ensure that the buildings they use are cleaned regularly. If they charge for

their services, they may need to send out bills and ensure that these are paid. They will probably need to hire new employees from time to time. These activities are generally known as **administration**. Although operations in different types of organisation will be very different, administration varies much less.

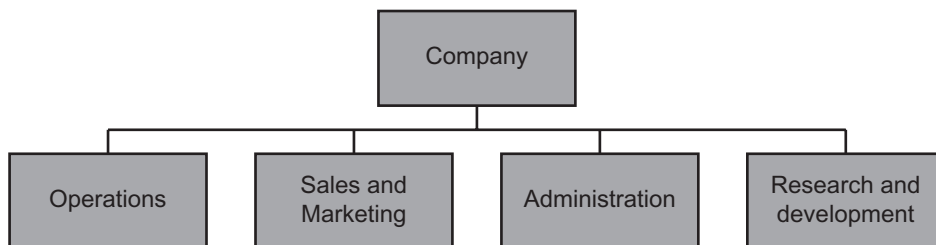
Thirdly, many organisations will need to publicise their services or their products and try to persuade people to use them or buy them. In the business world these activities are usually known as **sales and marketing**. Strictly speaking, marketing means the activities involved in making potential customers aware of the products the business can offer; it also includes planning new products on the basis of what the company might provide and what customers would like. Selling or sales is the activity of persuading individual customers to buy from the company.

It is often thought that sales and marketing are activities restricted to commercial organisations. This is not the case. Health services try to persuade people to go for check-ups and to participate in screening programmes. Publicising these services is a marketing activity; sending out specific invitations to individuals is a sales activity. In Britain, as part of the policy of giving parents a choice of schools for their children, schools are encouraged to compete for pupils. This means schools must produce publicity material, a marketing activity, and must try to persuade parents visiting the school to send their children to it, a sales activity.

Finally, many organisations need to be continually developing new products or services, or developing new ways to deliver them. These activities are known as research and development.

A structure based on functions, with an administrative division, an operations division, a sales and marketing division and possibly a research and development division, is the commonest type of structure to be found in medium-sized companies. It is illustrated in Figure 4.1.

**Figure 4.1 A function-based structure**



### 4.2.2 Structure by geography

In many cases it makes sense to group activities together on a geographical basis. Multinational companies, that is, companies that operate in a number of different countries, are usually forced to have some geographical elements in their structure. In most cases, in order to operate effectively in a country, they will need a permanent presence there, and this requires that they have a legal personality, usually in the form of a subsidiary company registered in the country but owned by the parent. The subsidiaries are subject to the laws of the countries in which they are registered, in particular, the laws regarding employment, accounting and taxation. These laws differ markedly from country to country so each subsidiary will need its own administrative capability. Linguistic and cultural factors will usually mean that sales and marketing have to be locally based; certainly this is the case if the company's customers are consumers.

An example of a company that is structured on a geographical basis at the top level is CGI. It is the fifth largest IT services company in the world and is based in Montreal. It operates in 40 countries across the world and its operations are structured into six geographically-based divisions.

Within a single country, geographical factors have become less important as a result of the development of modern communications and, as a result, geographical structures have been replaced by structures based on other factors. British banks, for example, used to operate through local branches that provided all but the very largest customers with all the banking services they required. The local branches themselves were under the control of regional management, based on geographical regions. Now that customers can do much of their banking online over the internet, the role of the local branch and the extent of its manager's authority are steadily declining. Instead, the banks have moved towards a product line organisation, in which different banking services (current accounts, loans, investment advice and so on) are provided by different divisions of the bank, independent of the local branches.

### 4.2.3 Product line structure

A product line structure is a structure that is based around the different types of product that an organisation produces. This type of structure is very common in the engineering industry, for example, where a motor vehicle manufacturer may be structured into three divisions: cars and light vans, heavy goods vehicles, and replacement parts.

Companies that produce and market a substantial piece of software for corporate customers – a multi-user accounting package, for example – often organise themselves into three main operational divisions: development and maintenance of the software, consultancy and training. This should be regarded as a product line structure since the three types of activity, providing software, giving advice to companies in how to use it, and provide training for customer staff, can be considered to be different services that the company provides and they are typically provided by different teams of people.

## MIXED STRUCTURES

Large multinational companies often show a mixture of functional, geographical and product line structures. Microsoft, for example, operates its business in five 'segments' based on a product line structure:

**Windows Division** develops and markets PC operating systems, related software and online services, and PC hardware products.

**Server and Tools** develops and markets server software, software developer tools and services for information technology professionals and developers.

**Online Services Division** develops and markets information and content designed to help people simplify tasks and make more informed decisions online, and help advertisers connect with audiences. Its products include Bing, MSN, adCenter and advertiser tools.

**Microsoft Business Division** handles Microsoft Office, SharePoint, Exchange, and related products.

**Entertainment and Devices Division** develops and markets products and services designed to entertain and connect people. These include the Xbox and Skype.

Long-term research and development is organised as a separate, corporate activity, spread geographically across ten countries but structured internally on a project basis rather than by location. Support services such as finance, human resources and legal services are provided at a corporate level, structured by function.

### 4.2.4 Structure by market sector

Structure by market sector means structure based on the different market sectors to which its customers or prospective customers belong.

This approach is very popular within the IT industry. From the sales and marketing point of view it has the great advantage that each division can fairly readily identify its potential customers and its staff, both sales and technical, are likely to be familiar with customers' problems and to speak a language that the customer will understand.

There are two dangers with this approach. First, there is the risk one division may be unaware of technological expertise that exists in another division. This may lead to inefficient use of resources, through unnecessarily hiring additional specialists or employing consultants, or, worse, to failing to learn from mistakes that have been made by other parts of the company.

The second danger with a structure based on market sector is that, by continuing to concentrate on its traditional areas even when these markets are becoming saturated, the company will miss new opportunities and will stagnate.

### 4.2.5 Structure by technology

A technology-based structure was once a favourite model for software companies. Thus, a company might have divisions specialising in artificial intelligence, communications, web-based systems, databases and real-time systems. There are several problems with this type of structure:

- It usually requires several different technologies to meet a customer's needs.
- There are many applications that cannot be said to require specific technologies.
- There are many competent software engineers whose expertise runs across a number of technologies.
- It is difficult, if not impossible, for sales and marketing staff to predict which potential clients will need which technology.

The last of these is particularly serious and companies that are primarily structured by technology have serious problems finding their clients. In marketing jargon, they are not sufficiently 'customer-focused' – they concentrate on selling the technologies that they have, rather than finding out what the customer needs.

### 4.2.5 Operational structure

The actual operations of a company may be organised on **project** basis or on a **production** basis, although the line separating the two may be vague.

A project is an activity that has specific objectives that have to be achieved within a fixed time period and with the expenditure of no more than some fixed quantity of resources. Every project is different from every other project. In some companies, nearly all the revenue-earning activities are project-based. This is particularly true of companies that produce bespoke software or companies that carry out system integration work.

Project-based activity is not restricted to operations. Most research and development is organised on a project basis and such administrative activities as introducing a new accounting system or transferring a company's head office are also to be regarded as projects, in that they last for a fixed length of time, after which they should be complete.

Projects last a comparatively long time but the team carrying out the work only stays together for the length of the project. Production activities are comparatively short but the team carrying them out stays in existence indefinitely. Classic examples of production activities are motor vehicle manufacturing, oil refining and dairy farming; each of them goes on year after year producing much the same outputs. The central data processing operations of a company are organised on a production basis. There is a schedule of programs – payroll, accounts payable, accounts receivable, and so on – that have to be run regularly on specific dates. It is the job of the operations team to ensure that these activities are completed on schedule. Although the individuals in the team will change from time to time, the team itself will continue to exist.

From the point of view of the employee, the difference between project-based and production structures is very marked. On the whole, if activities are structured on a

project basis, employees will find their working environment – their colleagues, their clients and even the job they are doing – changing radically every few weeks or months, as they move from project to project. If they are working in a production environment, change will be slower and more gradual. One environment is not generally preferable to the other; much depends on the personality of the employee.

4.3 DEPTH OF STRUCTURE

The depth of an organisational structure is the number of layers in the structure – or, more precisely, the maximum number of layers, since not all parts of the structure will have the same number of layers. Organisational structures are often described as flat or, in contrast, deep or tall, according to whether the depth is small or large. For a given number of people, the depth of the structure will obviously depend on the number of people reporting directly to each manager; this is sometimes known as the manager's **span of control**. Figures 4.2 and 4.3 both show 12 people organised in a bureaucratic structure. In Figure 4.2, each manager's span of control is two and there are four layers in the structure. This means that the people at the bottom of the structure, such as H, have to pass through two managers (B and D in the case of H) before reaching the head of the organisation, A. Figure 4.3 shows a flatter structure for the same number of people. Each manager's span of control is six but the number of layers is reduced to three, meaning that people at the bottom of the structure only have to pass through one manager to reach A. It is generally accepted that, in a bureaucratic structure, managers should not be expected to have more than six people reporting to them directly.

Figure 4.2 Twelve people organised into a four-level structure

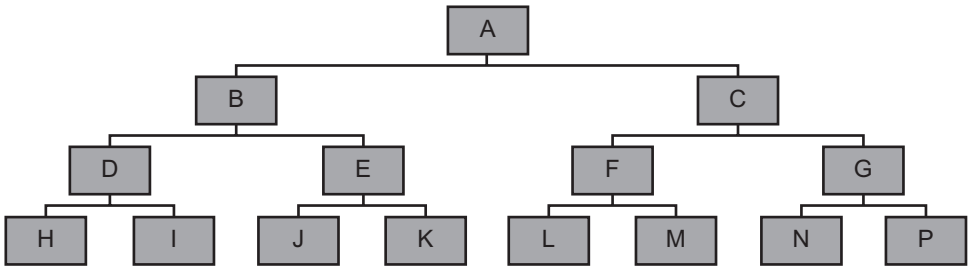
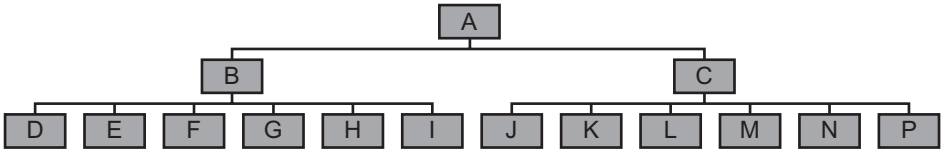


Figure 4.3 Twelve people organised into a three-level structure





Obviously the structure of organisations with large numbers of employees is likely to be deeper than that of smaller organisations. Professional staff generally prefer to work with flatter structures.

#### 4.4 CENTRALISATION

Organisations may be centralised or decentralised. In a centralised company, as much power as possible is kept at the top of the company, with delegation only when essential. In a decentralised company, as much power and control as possible is delegated to the lowest level. If we take a software company as an example, centralisation might mean that there were company-wide rules that all programming should be done in C++ and that, whenever a database package was needed, Oracle should be used. Such a policy has the obvious advantages that programmers could be easily moved from one part of the company to another and that it would be possible to build up a close relationship with Oracle. On the other hand, it might mean that C++ and Oracle were used for projects that would have been much better done using Java and MySQL, or Visual Basic and Access. Decentralisation would allow the most suitable tools to be chosen for each project but might mean that the staff were very inflexible. It could also lead to a maintenance nightmare in the future, with maintenance staff needing to be familiar with large numbers of obsolete tools.

Drawing the correct balance between centralisation and decentralisation is important but difficult. Decentralisation is commonly found in hi-tech companies, where there is plenty of talent at lower levels. Centralisation is commoner in large manufacturing companies and other long-established organisations. The ideal might be described as **flexible centralisation**, in which rules and practices are laid down centrally but it is accepted that reasonable arguments for modifying them in specific cases will be readily accepted. Unfortunately, putting this into practice often proves difficult.

#### 4.5 SETTING UP A STRUCTURE IN PRACTICE

In most cases, an organisation of any size will have a structure that includes elements of several of the different types of structure described above.

Consider the case of a medium-sized UK-based company providing bespoke software development and consultancy in the UK and operating in several other western European countries through subsidiary companies there.

At the top level, the company is faced with a choice. It could adopt a market sector structure, with divisions corresponding to each market sector in which it operates. Each division would be responsible both for sales and marketing in that sector and operations, that is, carrying out projects for that sector. Alternatively, it could adopt a functional structure with a sales and marketing department and an operations department. In either case it seems sensible to have a finance and administration department, probably under the management of the Finance Director.

The functional structure would have the advantage of bringing together all the programmers, analysts, designers and project managers in one group and all the sales

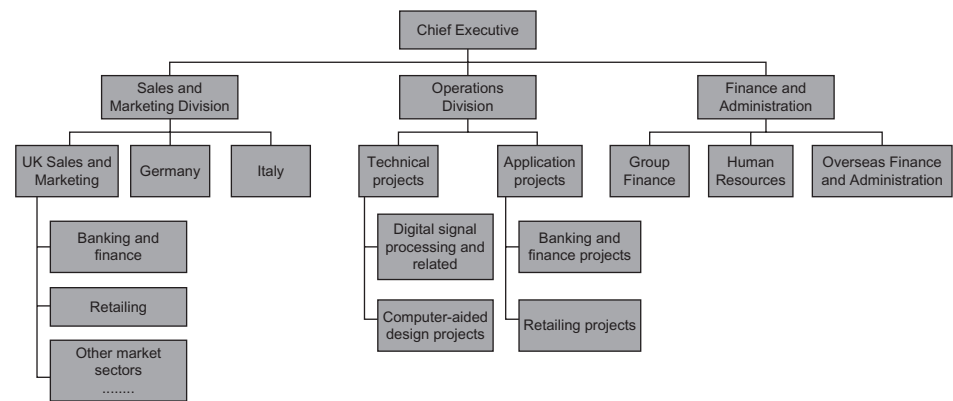
and marketing staff in another. This offers great flexibility and should enable the head of each group to deploy its staff efficiently. If this is done, however, it will probably be necessary to structure the sales and marketing division according to market sector, because sales and marketing activity is usually only effective if aimed at specific sectors.

In order to sell in a country, it is almost essential to speak the language and to be familiar with the culture. Furthermore, despite the gradual harmonisation of business regulations in the European Union, each country has its own laws, its own bureaucratic procedures and its own way of producing accounts. All these factors suggest a need for a country-based organisation. The best way of doing this may be to set up a subsidiary company in each country, with a small office, responsible for sales and marketing, and administration in that that country. The subsidiary will be able to call on the sales and marketing division in the UK for specialist help.

The organisational structure within the operations division presents other difficulties. Although a project structure will obviously be used for carrying out individual contracts for customers, some higher level structure is required. Do we group projects by market sector or by technical characteristics? It may be that both are appropriate, that is, projects where the risks and problems are technical are grouped into one or more units, depending on the technology required, while projects where application considerations are more important are grouped into units depending on market sector.

Figure 4.4 shows an example of the sort of structure that such a company might adopt.

**Figure 4.4 An organisational structure for a bespoke software house**



## 4.6 JOB DESIGN

Setting up an organisational structure implies designing jobs. As soon as a one-person organisation becomes a two-person organisation, it has to decide who does what; in other words it has to design jobs. In project-based organisations, jobs get designed when the project team is set up and when the project plan is produced. The jobs are ephemeral – they last only as long as the project – and the technical nature of the project determines exactly what tasks the jobs have to cover. Nevertheless, this job

design is done within an established framework: a project-based organisation will have (or should have) procedures that lay down the way in which project teams are to be structured; such procedures may mandate the use of chief programmer teams in certain circumstances or specify the maximum span of control and the responsibilities of team leaders and project QA staff in a hierarchically organised project. The tasks to be carried out will probably be defined by the development methodology that the company uses.

In many large organisations structured along bureaucratic lines, job specialisation leads to very narrow and tightly defined jobs. As a result, the people carrying out those jobs find them dull and unsatisfying. This in turn leads to poor performance and high turnover. In an effort to alleviate this problem, companies have tried three different ways to provide more interesting and satisfying jobs: job rotation, job enlargement and job enrichment.

Few jobs in the IT industry suffer from the extremes of job specialisation that are found in production line jobs, for example. Nevertheless, the manager should bear in mind that a software engineer who is expected to spend a full year on testing a system may well be moved to apply for other jobs and that efforts to reduce staff turnover are unlikely to be successful if staff are expected to spend most of their time carrying out tasks that they find dull or distasteful.

The basic ideas of job design become of major importance when we are designing information systems. The introduction of the system can have a considerable impact on the jobs of its users. Very often this may involve an element of deskilling, that is, the jobs under the new system demand fewer skills or less knowledge from the people doing them; this tends to reduce job satisfaction. The way in which the system is designed can ameliorate this situation or exacerbate it. Information systems engineers should be concerned with the effect the system they are building will have on the work of its users.

**Job rotation**, that is, rotating staff through a series of jobs, is the most obvious way of preventing employees from becoming bored with a very narrow and specialised task.

Consider the handling of creditors' invoices in a large accounts department with a very specialised regime. An analysis of the process might identify the following tasks, which then might be allocated to the individuals named:

1. receive incoming invoice and match to purchase order (Freda);
2. confirm price calculations and despatch to receiving department for confirmation that goods or services have been received (Gareth);
3. receive confirmation from department and pass for payment (John);
4. produce payment (Peter);
5. handle queries arising at any of the above stages (Julie).

Job rotation could be introduced very simply by arranging that in week 1, Freda does task 1, Gareth, task 2, and John, task 3; in week 2, Freda moves to task 2, Gareth to task 3 and John to task 1; and in week 3, Freda moves to task 3, Gareth to task 1, and John to task 2; and in week 4 they return to the tasks they carried out in week 1. Some extra training would be required but any cost would be more than balanced

by the added **resilience** of the department, that is, by its increased ability to handle absence through sickness or holiday. Including tasks 4 and 5 in the cycle is not so easy. The principle of separation of responsibility as a means of reducing fraud means that the payment function should not be given to anyone who is involved at any point in authorising payment. Task 5 is inherently a more sophisticated task requiring both greater intelligence and more experience.

**Job enlargement** means redesign of a job so that it includes more tasks which require essentially the same level of skill and responsibility. Thus, in the case of the example cited in the previous paragraph, Freda, Gareth and John might each be asked to handle all three of tasks 1, 2 and 3. This might be done by allocating each of them responsibility for invoices from certain suppliers or perhaps for orders from certain departments. In this way, they would see more of the whole process and would be more likely to build up relationships with the departments or suppliers with which they deal; this, in turn, is likely to encourage them to take a pride in their work.

**Job enrichment** means redesigning jobs so that the amount of responsibility, discretion and control required of the employee is increased. In the accounts office example, this might mean encouraging Freda, Gareth and John to try to handle simple queries themselves, rather than refer them all to Julie. Care is necessary here. Some staff may be reluctant to take on extra responsibility, either because they fear that they may not be competent to handle it or because they like a simple and quiet life.

### JOB DESIGN IN THE IT INDUSTRY

In the context of professional jobs in the IT industry, job enlargement and job enrichment usually turn out to be synonymous. Since almost all tasks involve an element of discretion, judgement and decision making, adding an extra task will always increase the extent of the job holder's discretion. However, whichever term we use, the idea can be an important and valuable one. Software maintenance is a notoriously unpopular task; it is common for an analyst to analyse and specify users' requests for changes, while a programmer implements them. The job can be made much more attractive, and also valuable from the point of view of staff development, if the job is enlarged so that one individual analyses user requests for changes, specifies the changes and obtains change control board approval, as well as implementing the changes and retesting the system.

### FURTHER READING

There is an enormous amount of literature on organisations and management. At one end of the spectrum are the popular but superficial books to be found on airport bookstalls. The biggest weakness of such books is not that they are wrong nor that their prescriptions are often imprecise. It is that their authors' experience is usually restricted to one type of company, typically in the retail sector, and that this limitation is reflected in their text. At the other extreme, there are jargon-filled books of great length, usually

written by those who have little experience of business or management, which present elaborate theories that are applicable, if at all, only to very large organisations.

Nevertheless, there is a great deal to be learned about the subject from books and this chapter has barely scratched the surface. One writer who avoids the two extremes mentioned above and writes in a thought-provoking way about the topics discussed in this chapter is Charles Handy. Two of his books are strongly recommended:

Handy, C. (1993) *Understanding organisations*. 4th ed. Penguin Books, London.

Handy, C. (1995) *Gods of management*. 3rd ed. Arrow, London.

Microsoft's annual report for 2012 gives a good picture of the way the company is organised:

[www.microsoft.com/investor/annualreports](http://www.microsoft.com/investor/annualreports)

The CGI website is not as informative as Microsoft's but it still contains useful information about the company structure:

[www.cgi.com/en](http://www.cgi.com/en)