

Chapter 3

A systems approach

The people may be made to follow a path of action, but they may not be made to understand it.

Confucius (551 479 BCE) Chinese philosopher

Systems thinking

A system is an ordered set of ideas, principles and theories or a chain of operations that produce specific results and to be a chain of operations, they need to work together in a regular relationship. Shannon defined a system as a group or set of objects united by some form or regular interaction or interdependence to perform a specified function.¹ Deming defines a system as a series of functions or activities within an organization that work together for the aim of the organization. These three definitions appear to be consistent although worded differently.

A quality management system is not a random collection of procedures, tasks or documents (which many quality systems are). Quality management systems are like air conditioning systems – they need to be designed. All the components need to fit together, the inputs and outputs need to be connected, sensors need to feed information to processes which cause changes in performance and all parts need to work together to achieve a common purpose.

ISO 9000 defines a quality management system as a set of interrelated or interacting elements that achieve the quality policy and quality objective. But the word elements is not defined and the word quality gets in the way of our thinking. It makes us think that quality management systems operate alongside environmental management systems, safety management systems, and financial management systems. In Clause 3.11 of ISO 9000 it is stated that the quality management system is “that part of the organization’s management system that focuses on the achievement of outputs in relation to the quality objectives”, therefore the quality management system must exist to achieve the organization’s quality objectives. It would appear therefore that other parts of the management

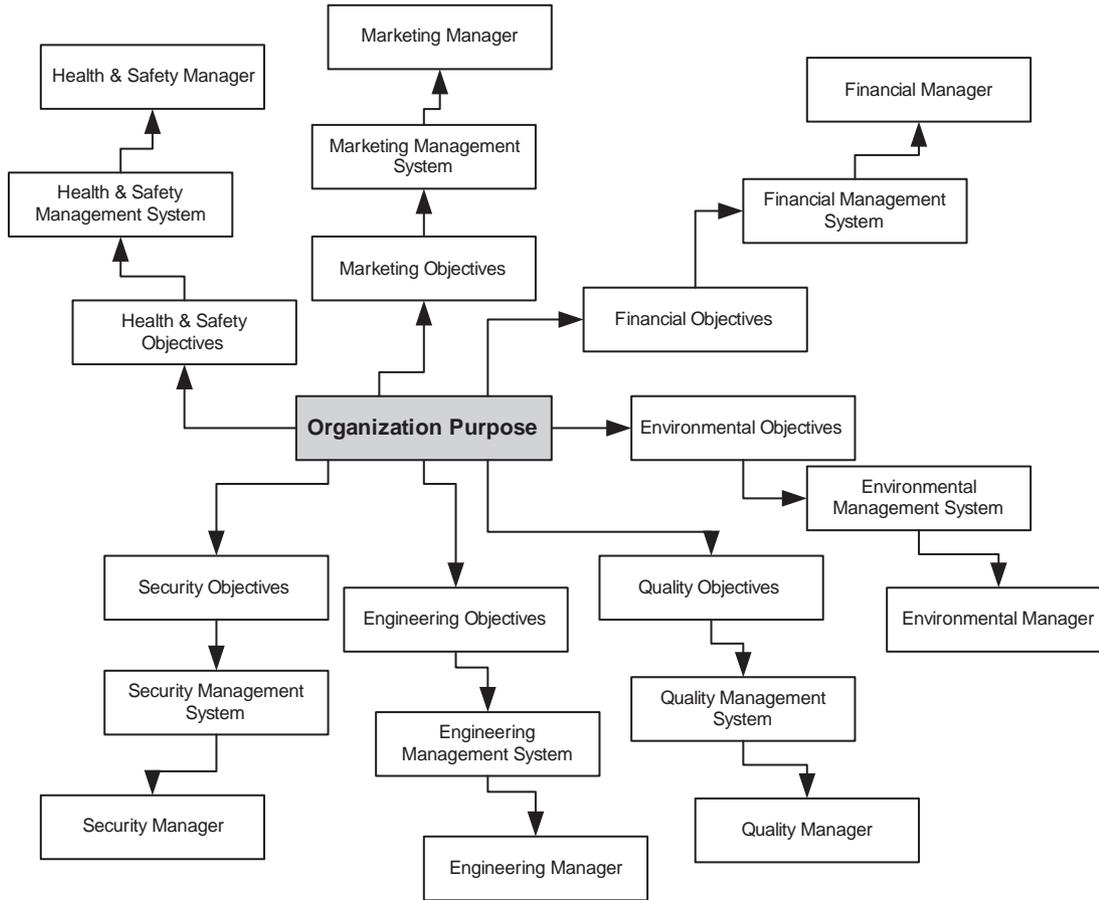


Figure 3.1 Multiple management systems

system are intended to serve the achievement of specific objectives. For example we could establish:

- Safety systems to serve safety objectives.
- Environmental systems to serve environmental objectives.
- Security systems to serve security objectives.
- Human resource systems to serve human resource objectives.
- Marketing systems to serve marketing objectives.
- Innovation systems to serve innovation objectives.
- Financial systems to serve financial objectives.

Many organizations have appointed specific managers to achieve each of these objectives so that we have for instance, an Environmental Manager, fulfilling Environmental Objectives through an Environmental Management System and a Quality Manager fulfilling Quality Objectives through a Quality System. Do the same for the others and you would have multiple management systems as illustrated in Figure 3.1. This is what functional management produces and as a result puts the managers in potential conflict with each other as each tries to achieve their objectives independently of the others. Many of these objectives are in reality not objectives at all but constraints that exist only by virtue of the organization's necessity to satisfy customers as is discussed below.

However, several questions arise; "Are quality objectives, objectives of the same kind as the other objectives or are these other objectives a subset of quality objectives?" and "Is the quality management system just one of a series of systems or is it the parent system of which the others are a part?"

To find the answer it is necessary to go back a step and ask: Which comes first an objective or a need? We don't set financial objectives because we think its a good idea, there is a need that has its origins in the organization's mission statement. The mission statement tells us what our goal is and where are we going. Without customers there is no business therefore the basic purpose of a business is to satisfy a particular want in society and so create a customer. Its mission is related to these wants and is expressed in specific terms. To be effective, a mission statement should always look outside the business not inside.² For example a mission that is focused on increasing market share is an inwardly seeking mission whereas a mission that is focused on bringing cheap digital communication to the people is an outwardly seeking mission statement. From the mission statement we can ask, "What affects our ability to accomplish our goal?" The answers we get become our critical success factors and it is these factors that shape our objectives.

- If our success depends on the safety of our products, we need safety objectives.
- If our success depends on securing the integrity of information entrusted to us by our customers, then we need security objectives.

Food for thought

The QMS is not part of the management system – IT IS the management system.

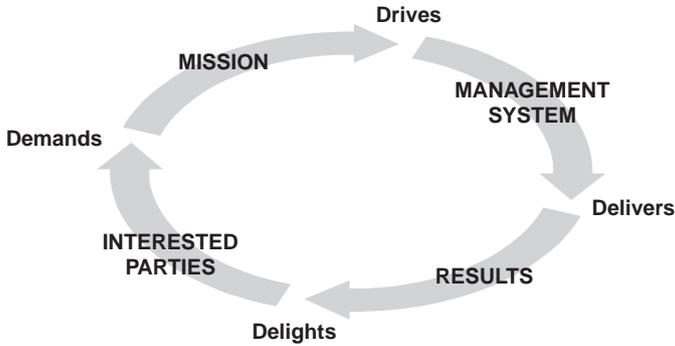


Figure 3.2 The business management cycle (a specialist's view)

Food for thought

Allowing a constraint to become the overriding objective deflects attention away from the true purpose for which the organization was formed.

Outputs and Outcomes

Outputs tend to imply products and services whereas outcomes include impacts of the business on its surroundings and its employees etc.

- If our success depends on the impact our operations have on the environment, we need environmental objectives.
- If our success depends on capital investment in modern plant and machinery, we need financial objectives.

This list is incomplete, but if we were to continue, would we find a reason for having quality objectives? Business will only create customers if it satisfies their needs therefore success in all businesses depends on fulfilling customer needs and expectations.

Quality is defined in ISO 9000 as the degree to which a set of inherent characteristics fulfils requirements. Note that the definition is not limited to customer requirements and the inherent characteristics are not limited to products. It could apply to any set of requirements – internal or external, technical or non-technical including health, safety and environmental

requirements. It could also apply to any process outcome: products, services, decisions, information, impacts, etc. It extends to all those with an interest in the business. Quality is therefore a term that describes the condition of business outcomes. Everything a business does must directly or indirectly affect the condition of its outcomes and therefore all business objectives are quality objectives. Consequently, we do not need quality objectives in addition to all the other objectives because all objectives are quality objectives and the quality management system is not part of the management system – it is the management system. We can therefore describe the relationship between the management system and the organization diagrammatically as shown in Figure 3.2.

All the objectives only arise as a result of the organization seeking to create and satisfy customers. There is no environmental objective, impact or anything else if the organization does not have customers. Objectives for the environment, safety, security, finance, human resources etc. only have meaning when taken in the context of what the business is trying to do – which is to create and satisfy customers. While many might argue that *the purpose of business* is to make money for the shareholders or owners this is different from *the purpose of a business*, which is to create and retain customers and do this in a manner that satisfies the needs and expectations of all stakeholders. Without a customer there is no business at all therefore customer needs must come first. Satisfying customers becomes the only true objective – all others are *constraints* that affect the manner in which the organization satisfies its customers. It may help therefore if we view any objective that serves a stakeholder other than the customer as a *constraint* or a *requirement* that impacts the manner in which customer objectives are achieved.

The management system is the way the organization operates, the way it carries out its business, the way things are. Its purpose is to enable the organization to accomplish its mission, its purpose, its goals and its objectives. All organizations possess a management system. Some are formal – some are informal. Even in a one-person business, that person will have a way of working – a way of achieving his or her objectives. That way is the system and it comprises the behaviours, processes and resources employed to achieve those objectives. The system comprises everything that affects the results. It only has to be formalized when the relationships grow too large for one person to manage by relying on memory.

It is unlikely that you will be able to produce and sustain the required quality unless you organize yourselves to do so. Quality does not happen by chance – it has to be managed. No human endeavour has ever been successful without having been planned, organized and controlled in some way.

Scope of the system

As the quality management system is the means by which the organization achieves its objectives, it follows that the scope of the system (what it covers) is every function and activity of the organization that contributes to these objectives. This should leave no function or activity outside the system. The system must also include suppliers because the organization depends on its suppliers to achieve its objectives. The chain of processes from the customer interface and back again includes the suppliers.

Including every function and activity within the system should not be interpreted as compelling every function and activity to certification to ISO 9001 – far from it. The scope of the system does not need to be the same as the scope of certification, a point addressed further in Chapter 5.

Design of the system

Imagine you are designing an air-conditioning system. You would commence by establishing the system requirements, then design a system that meets the requirements, document the design and build a prototype. You would then test it and when satisfied it functions under the anticipated operating conditions, launch into production. If problems are detected during production, solutions would be developed and the design documentation changed before recommending production. If problems were experienced during maintenance, the design documentation would be consulted to aid in the search for the fault. If improvements are to be made, once again the design documentation would be consulted and design changes made and the documentation revised before implementation in production. This traditional cycle for products therefore has some redeeming features:

- Design does not commence without a specification of requirements – if it does, the wrong product is likely to be designed.
- Designs are documented before product is manufactured – if they are not, it is likely that the product cannot be manufactured or will not fit together or function as intended.
- Designs are proven before launching into production – if they are not, the product will probably fail on test or in service.
- Design documentation is changed before changes are implemented in production – if it is not, the product will be different each time it is made; solved problems will recur and no two installations will be alike.

If we apply the same logic to the design and implementation of a management system, we would

- Define the requirements before commencing management system design i.e. we would establish the objectives the system is required to achieve (the vision, mission, corporate goals etc.).
- Document the management system design before implementation i.e. define and document the business processes to a level of detail necessary to ensure objectives can be achieved.
- Verify that the management system meets the requirements before commitment to full operation.
- Document changes to the management system before implementation in practice.

But what often happens is:

- Management system development commences without a specification of requirements or a clear idea of the objectives it needs to achieve; often the system exists only to meet ISO 9000, or some other standard.

- The management system is documented before it has been designed.
- The management system is made fully operational before being verified it meets the requirements.
- Changes are made to practices before they are documented.
- Improvements are made to the management system without consulting the documentation because it is often out of date.

As the management system is the means by which the organization achieves its objectives, the management system delivers the organization's products. (This includes hardware, software, services and processed material including information products.) If we consult ISO 9000:2000 again we will find that a product is defined as a result of a process and so it would appear that it is the organization's processes that produce its products. Therefore the management system must comprise the processes by which the organization achieves its objectives. Perhaps these are the *elements* that are addressed in the ISO 9000 definition of a system.

If we analyse the factors on which the quality of these products depend we would deduce they include:

- The style of management – (autocratic, democratic, participative, directive etc.).
- The attitude and behaviour of the people (positive, negative etc.).
- The capability of the available resources – (capacity, responsiveness, technology).
- The quantity and quality of the available resources – (materials, equipment, finance, people).
- The condition and capability of the facilities, plant and machinery.
- The physical environment in which people work – (heat, noise, cleanliness etc.).
- The human environment in which people work – (freedom, empowerment, health and safety).

It follows therefore that a management system consists of the processes required to deliver the organization's products and services as well as the resources, behaviours and environment on which they depend. It is therefore not advisable to even contemplate a management system simply as a set of documents or a set of processes that simply converts inputs into outputs. Three out of the seven factors above relate to the human element – we therefore cannot afford to ignore it.

Following the argument above, if the management system is a collection of processes, we can think of the organization as a system of interconnected processes and therefore change Figure 3.2 so that it reflects reality as shown in Figure 3.3.

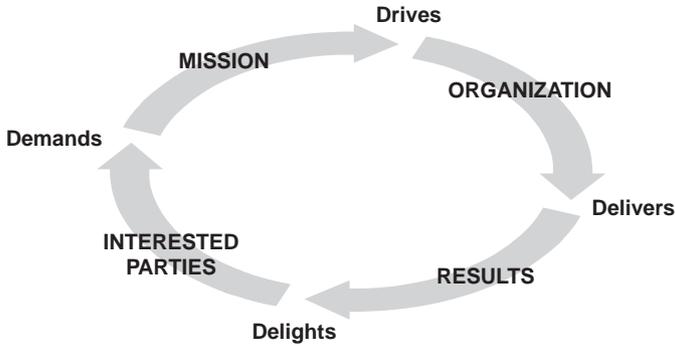


Figure 3.3 The business management cycle (a pragmatic view)

Integrated management

Increasingly, customers, regulatory bodies and the community pressure groups are demanding that organizations demonstrate responsible environmental performance, provide a safe working environment, provide quality products and services and demonstrate Corporate Social Responsibility (CSR). ISO 9000 has been around since 1987 but with the publication of several other management system standards addressing the natural environment, occupational health and safety and information there has been a growing desire to bring together these management systems into one integrated system.

With each new standard a new specialism is born and so there is confusion as to what is being integrated.

Quite literally, to integrate means to combine parts into a whole, bringing parts together or amalgamating parts to make complete, to desegregate or to incorporate into a larger unit.³

In the context of management, integration might be putting all the internal management practices into one system or bringing together separate disciplines to work on a problem, or joining together the processes that serve a particular objective. Many organizations have chosen an approach that they regard as integrated but as there is no universally agreed approach to integrated management they all differ relative to the principles upon which they are based.

If we divide management into general management, quality management, environmental management, security management etc., integrated management might be the bringing together of all these parts into a whole. But dividing management like this is not breaking it into parts. It is simply a way of looking at management. In reality the effectiveness and efficiency of operations is not affected by this unless we start segregating work and responsibilities according to these labels which of course does not happen in practice. The staff responsibilities might be separated so as to focus attention on specific aspects with product

quality, personnel safety, information security etc., planned by different teams but with the implementation carried out simultaneously by line personnel. There is no practical way a job could be passed to one person to satisfy quality requirements and to another to satisfy environmental requirement etc. The nature of work is such that every action has to be an integrated action but it is often the case that the quality, safety and environmental aspects of a job are not managed effectively.

If we assume organizations have several management systems we could formalize and document each one separately. This would result in a set of documents addressing quality management, another set addressing environmental management, another set addressing health and safety management and so on. This approach is illustrated in Figure 3.1. Here we see the result of developing a separate system for each series of business objectives. Quality objectives are made the responsibility of the Quality Manager who achieves them through a Quality Management System. Likewise, Environmental objectives are made the responsibility of an Environmental Manager who achieves them through an Environmental Management System and so on. It is a neat solution but the outputs of the organization cannot be put into these convenient compartments.

An integrated management system therefore might be the bringing together of all these sets of documents into one set thereby eliminating duplication.

This approach opens up a few questions that need to be answered.

- Was the system we are integrating disintegrated beforehand or was it simply not completely documented?
- Did we really have separate management systems or were we deceived by documenting certain aspects of the way we work simply to satisfy external standards?
- While there will be a reduction in documentation how do we gain a significant change in performance by doing this?

A set of documents is not a system in the context of management as explained previously. The definitions of a system given above clearly indicate that its components function together to achieve an objective therefore these components cannot be simply documents – they are dynamic processes.

Even if we were to conceive of separate dynamic systems it is still difficult to imagine a system in which a job could be passed to one person to satisfy quality requirements and to another to satisfy environmental requirement etc. This is not to say that all systems are dynamic. The metric system for example is a system of units for the purpose of measuring physical quantities. A system of government tends to be the principles and laws by which a nation is governed. However, the principles and laws would not be a full description of the system if we said nothing about their effect on society and the mechanism that brings about this effect. In both cases we tend to separate the system from the means

by which it is implemented but perhaps this is not healthy as it leads to the wrong conclusions about systems. *Ryszard Kapuscinski (b. 1932), a Polish journalist* wrote:

“Although a system may cease to exist in the legal sense or as a structure of power, its values (or anti-values), its philosophy, its teachings remain in us. They rule our thinking, our conduct, our attitude to others. The situation is a demonic paradox: we have toppled the system but we still carry its genes”.

The word *system* in the term ‘management system’, as used in ISO 9000 and other management system standards, has become to be understood as a system that functions to achieve objectives thus demonstrating that a system is more than a set of documents. From a study of ISO 9000, the management system is clearly one that is established to achieve quality objectives. Likewise, from a study of ISO 14000, one draws the conclusion that the system is established to achieve environmental objectives. It is therefore more than simply the description or the policies, standards, guides and procedures. It also supports the view that if we were to integrate all these systems we would have just one system, the purpose of which is to achieve all the organizations objectives – in other words a business management system.

The term Integrated Management System or IMS, implies that the word *integrated* is being used as an adjective – it’s a term describing a characteristic of a management system or organization and therefore when describing an integrated management system only the words management and system should have initial capital letters. To do otherwise would be like abbreviating an effective management system as EMS or an ineffective management system as IMS! It is clear that the use of the term Integrated Management System (IMS) only has meaning in the context where specific structures have been established solely for the purpose of satisfying separate and individual external standards such as ISO 9001 and ISO 14001 and there is a need to combine these structures together. Hence the term IMS is a misnomer.

If we view the organization as a system (as recommended by Deming), there is only one system in the organization and this exists (as does the organization) to fulfil the mission. This mission should have been derived from an analysis of stakeholder needs and expectations and as we already know, processes bring together activities, resources and behaviours to achieve results. Therefore *“the set of interconnected and managed processes that function together to achieve goals that have been derived from an analysis of stakeholder needs and expectations”* we can legitimately refer to as the business management system. We don’t need to use the word *integrated* because a management system that functions in this way will be integrated. However, a management system that enables the organization to fulfil a mission that has not been derived from an analysis of stakeholder needs we will have to call an ineffective management system (IMS)!

Summary

In this chapter we have examined the nature of systems and in particular management systems and shown that they all serve to achieve goals. We have shown that the name we give to the system derives from the goals we wish to achieve.

We have exposed the gulf between the customer and management perceptions of quality and the importance of bringing these closer together and concluded that organizations have goals and these goals are achieved through a system of managed processes. We have also exposed the myth that organizations have multiple management systems and in reality have only one system – a system that enables the organization to satisfy all its stakeholders and accomplish its mission. We have also explored the idea of integrated management systems and drawn the conclusion that these too are a myth, created by the proliferation of management system standards rather than a business need. We will now move onto look at two very different ways at establishing a management system.