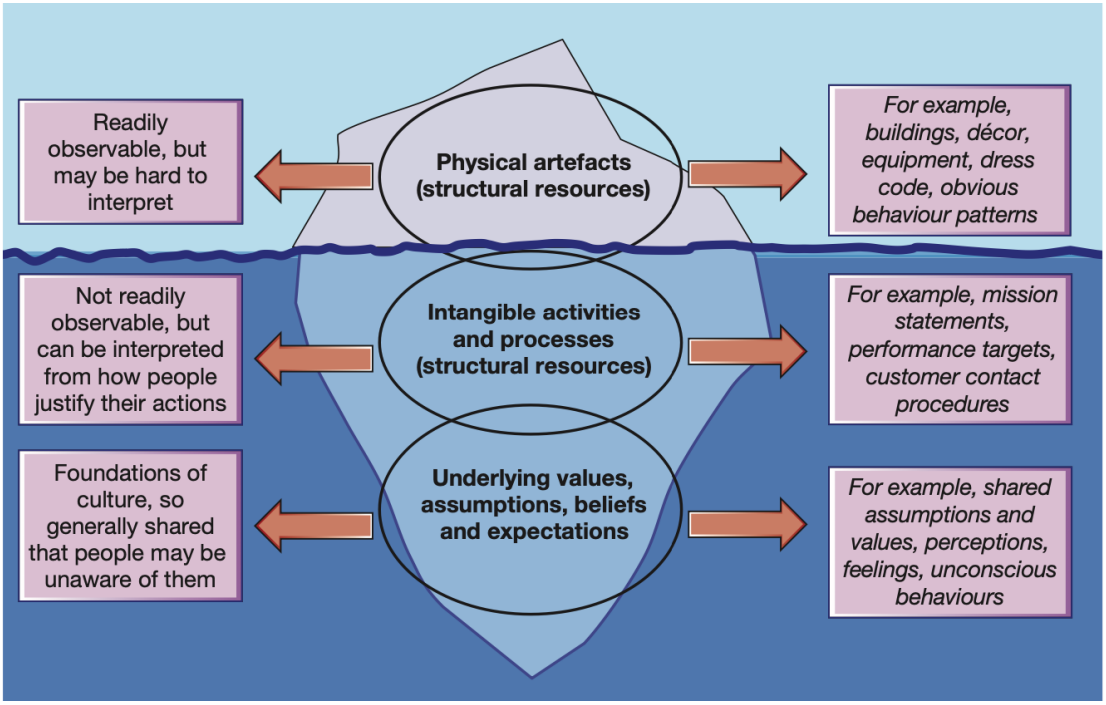
People in operations

9.1 Why are people so important in operations management?

Operations culture

The iceberg metaphor



Organizational culture can be compared to an iceberg. Most of an iceberg's mass is under the surface of the ocean. In the **culture iceberg** the physical artefacts are the outward or surface physical manifestation of culture and are things like premises, the physical elements of a service environment, office chairs etc.

The physical artefacts express some aspects of culture both to customers and service workers

The **middle layer** of the iceberg represents the intangible beliefs and values of the operation. They often cascade from the beliefs and values of the organization's founder or leaders and are passed on to staff through formal instruments such as mission statements or strategy but also by **performance management systems** and **reward systems**

The **deepest levels** of the iceberg are the underlying values, assumptions, beliefs and expectations of the organization and often correspond with the values of the founder or leader. This level is where the most fervently held values and assumption are found. If they can be changed, one risks anxiety and defensive behaviors on the part of those being required to change

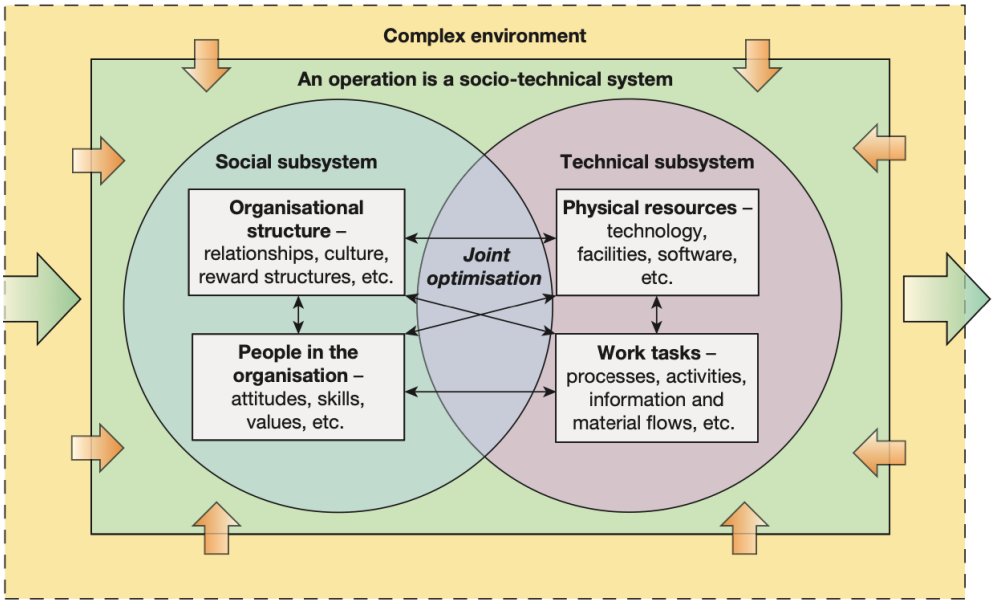
Believe, know and behave

The organizational culture within the operations function can be seen by what the operations team believes, what they know and how they believe it

- **What operations believe** = what the people within the operations function accept as self-evident
- **What operations should know** = should understand the underlying principles that govern how operations and processes work
- **How operations should behave** = how operations managers should behave, many different models of leadership

Operations are socio-technical systems

Effective operations management demands both technical and human understanding



Socio-technical systems = acknowledges the interaction between people and technology within an organization and between both and the complex environment in which they operate. Needs consideration of all aspects of both the social and technical subsystems to achieve **joint optimization.** Principle is that improvements to operations and their systems can only be fully achieved if both the social and technical elements are treated as interdependent because changes to one subsystem will necessitate changes to the other

Social subsystem = includes the formal and informal organizational structures within an operation. Can be seen as reporting relationships, lines of responsibility and reward structures as well as the characteristics of the people within the operation such as their attitudes, skills and values

Technical subsystem = includes the technology that is used to transform inputs into outputs but also embraces software, knowledge, facilities layout, processes and the flow of transformed resources through the operation

9.2 How can the operations function be organized?

Perspectives on organizations

Gareth Morgan's images used to understand organizations are:

- **Organizations are machines** = the resources within organizations can be seen as components in a mechanism whose purpose is clearly understood. Relations within the organization are clearly defined and orderly, processes and procedures that should occur usually do occur, and the flow of information through the organization is predictable
- **Organizations are organisms** = an organization's behavior is dictated by the behavior of the individual humans within them. Individuals and their organizations adapt to circumstances just as different species adapt to the environment. The survival of an organization depends on its ability to exhibit enough flexibility to respond to its environment
- **Organizations are brains** = organizations process information and make decisions. Balance conflicting criteria, weigh up risks and decide when an outcome is acceptable. Capable of learning, changing their model of the world in the light of experience
- **Organizations are cultures** = its shared values, ideology, pattern of thinking and day-to-day ritual
- **Organizations are political systems** = they are governed and the system of government is rarely democratic but nor a dictatorship.

Forms of organization structure

There are dimensions of specialization that should be used when grouping parts of the organization together:

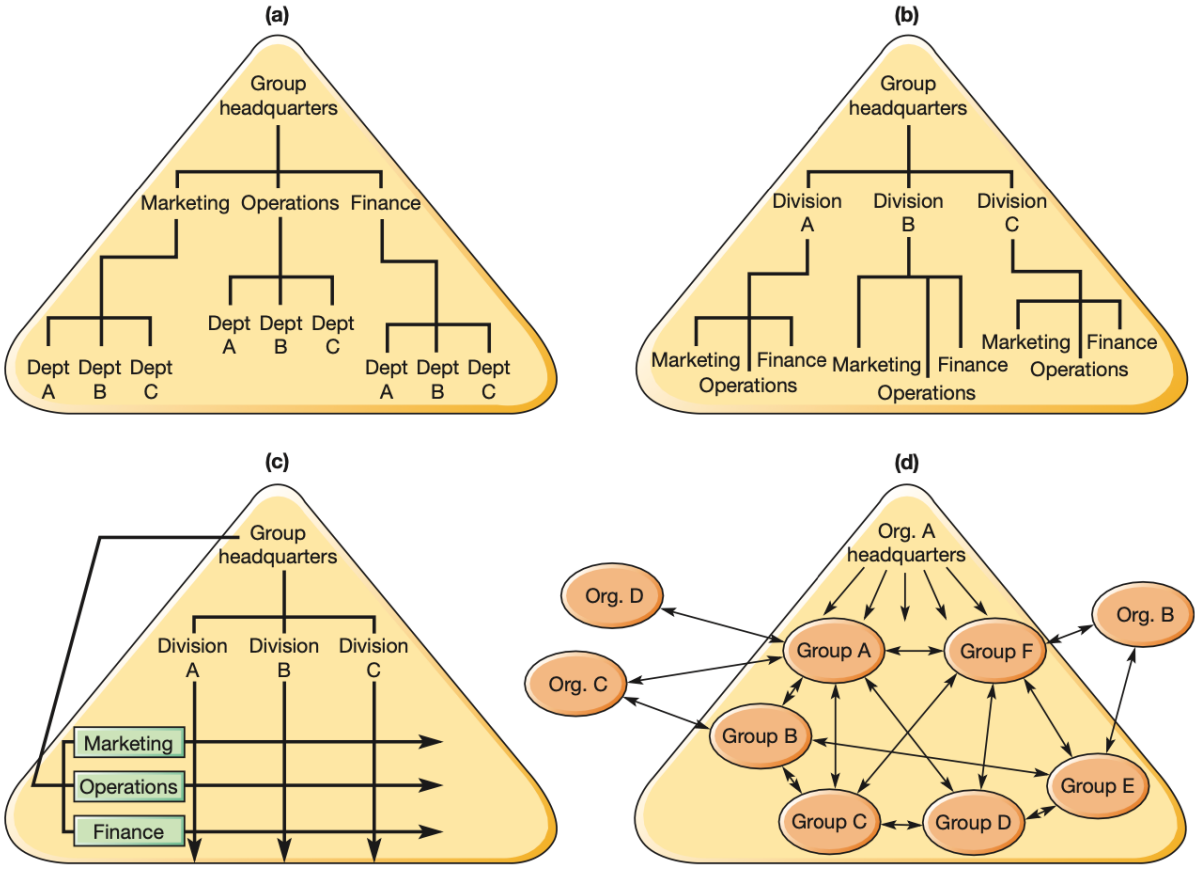
- **Functional purpose** = i.e. sales, marketing etc
- **Characteristics of the resources themselves** = clustering similar technologies together or clustering similar skills together
- **Markets** = by location or type of customer (small firms, large national firms)

Some pure types of organizations are:

- **U-form organization** = the unitary form organization clusters its resources primarily by their functional purpose. Typically a pyramid management structure with each level reporting to the managerial level above. They can emphasise process efficiency above customer service and the ability to adapt to changing markets. It keeps together expertise and can promote the creation and sharing of technical knowledge. **Problem** is that it is not as flexible
- **M-form organization** = groups together either the resources needed for each product or service group, or alternatively those needed to serve a particular geographical market in separate divisions. Can reduce economies of scale

and operating efficiency but does not allow individual division to focus on the specific needs of its markets

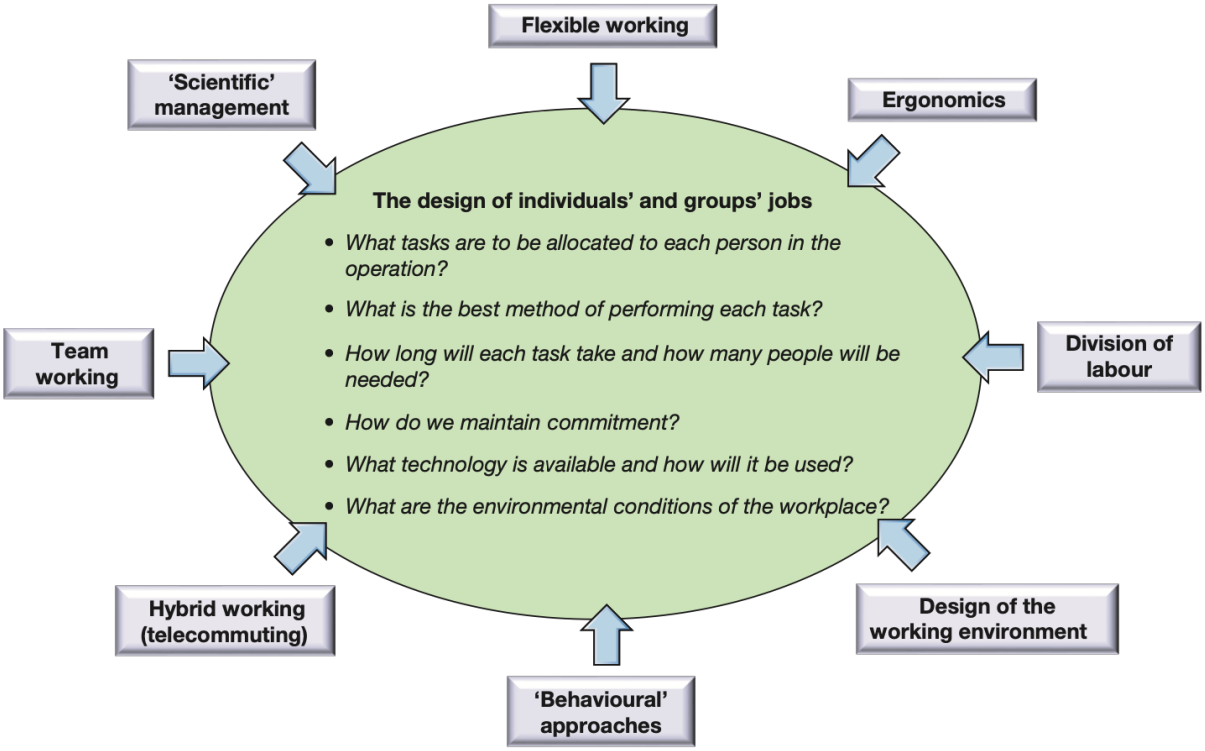
- **Matrix forms** = a hybrid usually combining the M-form with the U-form. The organization has 2 different structures simultaneously. Each resource cluster has at least 2 lines of authority – both to the division and to the functional groups. **Problem** is that it can be complex and confusing
- **N-form organization** = N stands for network. Resources are clustered into groups but with more delegation of responsibility for the strategic management of those resources. Little hierarchial reporting and control. Each cluster of resources is linked to the others to form a network, with the relative strength of the relationships between clusters changing over time depending on circumstances. Senior management set broad goals and attempt to develop a unifying culture but do not command and control as hard as other structures



9.3 How do we go about designing jobs?

Job design = how to structure each individual's jobs, the team they belong to, their workplace, and their interface with the technology they use.

The decisions of job design



The elements which make up job design are:

- **What tasks are to be allocated to each person in the operation** = different approaches to the division of labor leads to different task allocations
- **What is the best method of performing each job** = every job should have an approved method of completion
- **How long will it take and how many people will be needed** = work measurement helps us calculate the time required to do a job and how many people will be needed
- **How to maintain commitment** = encourage people and maintaining job commitment through behavioral approaches like empowerment and teamwork
- **What technology is available and how will it be used** = the technology needs to be appropriately designed and also the interface between the people and the hardware
- **What are the environmental conditions of the workplace** = the conditions under which jobs are performed impacts people's effectiveness

Task allocation – the division of labour

Division of labor = dividing the total task down into smaller parts each of which is accomplished by a single person or team.

Advantages of division-of-labor principles are:

- **Promotes faster learning** = easier to learn how to do a short and simple task compared to a long and complex task. New members of staff can quickly be trained and assigned to their tasks
- **Automation becomes easier** = dividing a total task into small parts raises the possibility of automating some of the small tasks
- **Reduced non-productive work** = specialist equipment and materials-handling devices can be devised to help workers carry out their job more efficiently, Little finding, positioning and reaching is involved

Disadvantages of division-of-labor are:

- **Monotony** = the shorter the task the more often operators need to repeat it which leads to boredom and increased likelihood of absenteeism and staff turnover, errors and deliberate sabotage
- **Physical injury** = a continued repetition of a vary narrow range of movements can lead to physical injury by over-use of some parts of the body
- **Low flexibility** = a small part of a task gives job design a rigidity that is difficult to change under changing circumstances
- **Poor robustness** = highly divided jobs imply materials passing between several stages, if one stage is not working correctly the whole operation is affected

Designing job methods – scientific management

The basic tenets of scientific management is:

- All aspects of work should be investigated on a scientific basis to establish the laws, rules and formulae governing the best methods of working
- An investigative approach to the study of work is necessary to establish what constitutes a fair day's work
- Workers should be selected, trained and developed methodically to perform their tasks
- Managers should act as the planners of the work while workers should be responsible for carrying out the jobs to the standards laid down
- Cooperation should be achieved between management and workers based on the maximum prosperity of both

Designing the human interface – ergonomic workplace design

Ergonomics = concerned with physiological aspects of job design, the way the body functions. How a person interfaces with his immediate working area and how people react with environmental conditions

1. There must be a fit between people and the jobs they do. To achieve the fit there are only 2 alternatives. Either the job can be made to fit the people who are doing it or people can be made to fit the job

2. Important to take a scientific approach to job design

Anthropometric aspects of jobs = the aspects related to people's size, shape and other physical abilities. When it is applied to dimensions of the body it can be used to design work areas

Designing for job commitment – behavioral approaches to job design

Job design must take into account the desire of individuals to fulfil their needs for self-esteem and personal development. Can be done by using motivation theory and its contribution to the behavioral approach

1. It provides jobs that have an intrinsically higher quality of working life – an ethically desirable end in itself
2. Higher levels of motivation leads to better performance of the operation in terms of both quality and quantity of the output

To design the job 2 steps must be done:

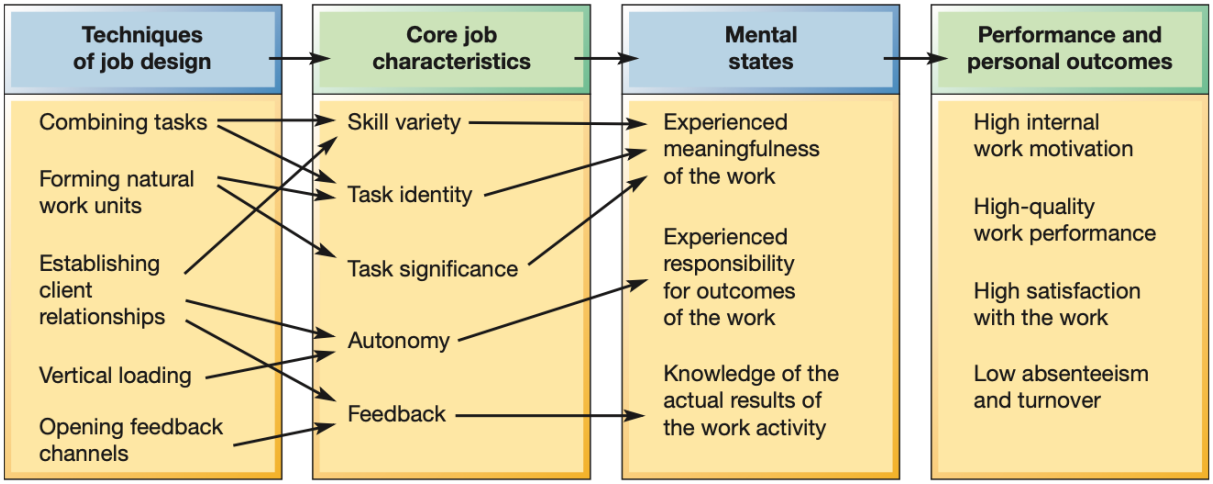
1. Exploring how the various characteristics of the job affect people's motivation
2. Exploring how individuals' motivation towards the job affects their performance at that job

Hackman and Oldham's model = a number of techniques of job design are recommended in order to affect particular core characteristics of the job. The core characteristics of the job are held to influence various positive mental states towards the job and are assumed to give certain performance outcomes

- Combining tasks means increasing the number of activities allocated to individuals
- Forming natural work units means putting together activities that make a coherent whole
- Establishing client relationships means that staff make contact with their internal customers directly
- Vertical loading means including indirect activities (maintenance)
- Opening feedback channels means that internal customers feed back perceptions directly

These techniques shape how the core characteristics influence people's **mental states** = the attitude of individuals towards their jobs:

- How meaningful they find the job
- How much responsibility and control they feel they have over the way the job is done
- How much they understand about the results of their efforts



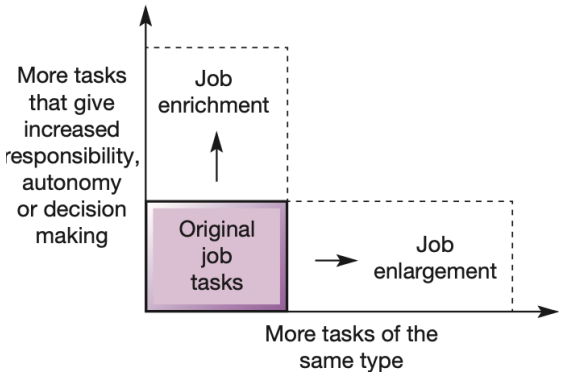
Job rotation = moving individuals periodically between different sets of tasks to provide some variety in their activities. It can increase skill flexibility and make a small contribution to reducing monotony. **Disadvantages** from management side is that it can disrupt the smooth flow of work, and by the people performing the jobs it can interfere with their rhythm of work.

Job enlargement = allocating a larger number of tasks to individuals that are broadly of the same type as those in the original job. May not involve more demanding or fulfilling tasks but may provide a more complete and therefore slightly more meaningful job. People performing an enlarged job will not repeat themselves as often which could make the job less monotonous

Job enrichment = increasing the number of tasks and allocating extra tasks that involve more decision making, greater autonomy and greater control over the job

Horizontal job changes = changes that extend the variety of similar tasks assigned to a particular job

Vertical job changes = changes that add responsibilities, decision making or autonomy to the job.



Empowerment = giving staff the authority to make changes to the job itself as well as how it is performed. **Benefits** are providing fast responses to customer needs, employees feeling better about their jobs and interacting with customers with more enthusiasm. **Disadvantages** are increased costs such as higher selection and training costs and possibility of poor decisions by employees. Can be done to different degrees:

1. Staff could be asked to contribute their suggestions for how the operation might be improved
2. Staff could be empowered to redesign their jobs
3. Staff could be included in the strategic direction and performance of the whole organization

Team working = staff with overlapping skills collectively perform a defined task and have a high degree of discretion over how they actually perform the task. Team controls the task allocation between members, schedules work, quality measurement and improvements. Benefits are:

- Improving productivity through enhanced motivation and flexibility
- Improving quality and encouraging innovation
- Increasing satisfaction by allowing individuals to contribute more effectively
- Making it easier to implement technological changes in the workplace because teams are willing to share the challenges this brings

Flexible working

Three aspects of flexible working are significant:

Skills flexibility = a flexible workforce that can move across several different jobs could be deployed in whatever activity is in demand at the time. Greater emphasis must be placed on training, learning and knowledge management.

Time flexibility = Many people only want to work for part of their time, sometimes only during specific parts of the day or week. Bringing both the supply of staff and the demand for their work together is the objective of flexible time or flexi-time working systems. May define a core working time for each individual member of staff and allow other times to be accumulated flexibly

Location flexibility = many jobs could be performed at any location where there are communication links to the rest of the organization

Work-related stress

Stress can undermine the quality of people's working lives and the effectiveness of the workplace. **Stress** = the adverse reaction people have to excessive pressures or other types of demand placed on them

Business-related benefits of avoiding work-related stress are:

- Staff feel happier at work; their quality of working life is improved and they perform better
- Introducing improvements is easier when stress is managed effectively
- Employment relations: problems can be resolved more easily
- Attendance levels increase and sickness absence reduces

Table 9.1 Causes of stress at work and what can be done about it

Causes of stress	What can be done about it
Staff can become overloaded if they cannot cope with the amount of work or type of work they are asked to do	Change the way the job is designed, assess training needs and whether it is possible for employees to work more flexible hours
Staff can feel disaffected and perform poorly if they have no control or say over how and when they do their work	Actively involve staff in decision making, the contribution made by teams, and how reviewing performance can help identify strengths and weaknesses
Staff feel unsupported: levels of sick absence often rise if employees feel they cannot talk to managers about issues that are troubling them	Give staff the opportunity to talk about the issues causing stress, be sympathetic and keep them informed
A failure to build relationships based on good behaviour and trust can lead to problems related to discipline, grievances and bullying	Check the organisation's policies for handling grievances, unsatisfactory performance, poor attendance and misconduct, and for tackling bullying and harassment
Staff will feel anxious about their work and the organisation if they don't know their role and what is expected of them	Review the induction process, work out an accurate job description and maintain a close link between individual targets and organisational goals
Change can lead to huge uncertainty and insecurity	Plan ahead so change is not unexpected. Consult with employees so they have a real input, and work together to solve problems

Work-life balance

It is difficult to separate work life from personal life:

1. Few people work in operations where working times are delineated towards operations where activities are less formal and/or defined
2. Less distinction between what are clearly work technologies and personal devices, difficult to remain unconnected from work emails and phone calls
3. As more people work from home, the discipline set limited working hours is not always easy
4. Organizational culture might confuse working longer with working better

Work-life balance can be addressed with these benefits:

- **Employee retention is improved**
- **Reputation** = attracts more able staff
- **Without balance, staff burn-out leads to higher incidence of health problems**
- **Higher levels of staff performance**

How should the working environment be designed?

Working temperature = individuals vary in the way their performance and comfort vary with temperature. Other factors such as humidity and air movement also affects performance. Comfortable temperature range depends on the type of work carried out

Illumination levels = intensity of lighting depends on the nature of the job

Noise levels = the recommended maximum noise level to which people can be subjected over the working day is 90 decibels.

9.4 How are work times allocated?

The time taken to do any task depends on how skilled the person is at the task, the experience, energy and motivation, equipment etc

Work time allocation = process of estimating work times. Work times are needed for:

- Planning how much work a process can perform
- Deciding how many staff are needed to complete tasks
- Scheduling individual tasks to specific people
- Balancing work allocation in processes
- Costing the labor content of a product or service
- Estimating the efficiency or productivity of staff and/or processes
- Calculating bonus payments

Work measurement = the process of establishing the time for a qualified worker at a defined level of performance to carry out a specified job

Specified job = specifications have been established to define most aspects of the job

Qualified worker = having the necessary physical attributes, intelligence, skill, education and knowledge to perform the task to satisfactory standards of safety, quality and quantity

Standard performance = the rate of output which qualified workers will achieve without over-exertion as an average over the working day provided they are motivated to apply themselves to their work

The techniques of work measurement

Synthesis from elemental data = work measurement technique for building up the time for a job at a defined level of performance by totalling element times obtained previously from studies of other jobs containing the elements concerned or from synthetic data

Predetermined motion-time systems = times established for basic human motions are used to build up the time for a job at a defined level of performance

Analytical estimating = development of estimating whereby the time required to carry out the elements of a job at a defined level of performance is estimated from knowledge and experience of the elements concerned

Activity sampling = a large number of instantaneous observations are made over a period of time of a group of machines, processes or workers. Each observation records what is happening at that instant and the percentage of observations recorded for a particular activity or delay is a measure of the percentage of time during which that activity or delay occurs